



# Chronological History Fiscal Year 1983 Budget Submission

Prepared by:  
Comptroller  
Budget Operations Division  
Code BTF-3      Ext. 58466

August 8, 1983

KEY TO PAGE NUMBERS UNDER LEGISLATIVE REFERENCE

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52a- 52c	Authorization Law
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63 - 64	Conference Committee Report
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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

FISCAL YEAR 1983

Item	Statistics	LEGISLATIVE REFERENCE							
		Authorization Page Numbers			P.L. 97-324	Appropriation Page Numbers			P.L. 97-272
		House Auth Comm	Senate Auth Comm	Conference Comm (Auth)		House Approp Comm	Senate Approp Comm	Conference Comm (Appn)	
<b>Summary by Appropriation</b> .....	1,2	8	30	47,50		---	---	---	
<b>Research and Development</b> .....	3	9,13,15	31	47,50	52a	53	59	63	65
Space Shuttle.....	3	9	35	50		---	---	---	
Space Flight Operations.....	3	9	35	---		---	---	---	
Expendable Launch Vehicles.....	3	---	37	50,51		---	---	---	
Physics and Astronomy.....	3	9	37	51		---	---	---	
Planetary Exploration.....	4	10,13	38	51		---	---	---	
Life Sciences.....	4	---	38	---		---	---	---	
Space Applications.....	4	10,14	39	51		---	---	---	
Technology Utilization.....	4	11	40	---		---	---	---	
Aeronautical Research and Technology.....	4	11	40	51		---	---	---	
Space Research and Technology.....	5	12	41	51		---	---	---	
Tracking and Data Acquisition.....	5	12	41	51,52		---	---	---	
<b>Construction of Facilities</b> .....	5	16	42	52	52a	54	61	63	66
Goddard Space Flight Center.....	5	16	42	---		---	---	---	
Langley Research Center.....	5	16	42	---		---	---	---	
Lewis Research Center.....	5	16	42	---		---	---	---	
Wallops Flight Facility.....	6	16	42	---		---	---	---	
Space Shuttle Facilities.....	6	16	42	---		---	---	---	
Shuttle Payload Facilities.....	6	16	42	---		---	---	---	
Repair of Facilities.....	6	16	42	---		---	---	---	
Rehabilitation and Modification.....	6	16	42	---		---	---	---	
Minor Construction.....	6	16	42	---		---	---	---	
Facility Planning and Design.....	6	16	42	---		---	---	---	
<b>Research and Program Management</b> .....	7	12,17	42	52	52a	54	61	63	66
Supplemental.....	1,2,7	---	---	---		68	69	*	70 <sup>1/</sup>
<b>Other Items in Committee Reports</b>									
Regulatory Impact Statement.....	---	---	44	---		---	---	---	
Sectional Analysis.....	---	18	44	---		---	---	---	
Cost and Budget Data.....	---	20	---	---		---	---	---	
Inflationary Impact Statement.....	---	20	---	---		55	---	---	
Changes in Existing Law Made by Bill as Reported...	---	20	45	---		55	---	---	
Oversight Findings and Recommendations.....	---	20	---	---		---	---	---	
Congressional Budget Office - Cost Estimate.....	---	23	43	---		---	---	---	
NASA Recommendations.....	---	23	---	---		---	---	---	
Additional Views.....	---	24	46	---		---	---	---	
<b>General Provisions</b> .....	---	---	---	---	---	54	62	64	66

\*Not included; text contained no direct reference to NASA.

1/ Supplemental Appropriation P.L. 98-63.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Chronological History of the FY 1983 Budget Submission  
(In thousands of dollars)

Item	AUTHORIZATION					APPROPRIATION						Supplemental H.R. 3069 7-20-83 Rpt. 98-308 P.L. 98-63 Appd. 7-30-83
	Initial Budget Submission to Congress	House Comm. H.R. 5890 Rpt. 97-502 5-5-82 Appd. 5-13-82	Sen. Comm. H.R. 5890 Rpt. 97-449 5-13-82 Appd. 6-9-82	Conf. Comm. P.L. 97-324 Rpt. 97-897 9-29-82 Appd. 10-15-82	Difference from Budget Submission	House Comm. H.R. 6956 Rpt. 97-720 8-10-82 Appd. 9-15-82	Sen. Comm. H.R. 6956 Rpt. 97-549 9-9-82 Appd. 9-24-82	Conf. Comm. P.L. 97-272 Rpt. 97-891 9-29-82 Appd. 9-30-82	Difference from Budget Submission	Difference from Budget Authorization		
<b>TOTAL APPROPRIATIONS:</b>												
Research and Development.....	5,334,000	5,378,400	5,324,000	5,504,000	170,000	5,542,800	5,117,800	5,542,800	208,000	38,800	5,542,800	
Construction of Facilities.....	100,000	100,000	110,000	100,000	---	95,000	100,000	97,500	-2,500	-2,500	97,500	
Research and Program Management.	1,178,900	1,168,900	1,178,900	1,168,900	-10,000	1,168,900	1,177,000	1,168,900	-10,000	---	1,197,400 <sup>1/</sup>	
<b>GRAND TOTAL.....</b>	<b>6,612,900</b>	<b>6,647,300</b>	<b>6,612,900</b>	<b>6,772,900</b>	<b>160,000</b>	<b>6,806,700</b>	<b>6,394,800</b>	<b>6,809,200</b>	<b>196,300</b>	<b>36,300</b>	<b>6,837,700</b>	
<b>R&amp;D Appropriation:</b>												
OSTS.....	3,467,800	3,448,300	3,298,800	3,539,800	72,000	3,624,800	3,180,800	3,607,800	140,000	68,000	3,607,800	
OSSA.....	1,002,300	1,036,100	1,087,300	1,052,300	50,000	1,032,100	1,045,100	1,043,100	40,800	-9,200	1,043,100	
OAST.....	355,000	395,100	429,000	408,000	53,000	387,000	403,000	403,000	48,000	-5,000	403,000	
OSTDS.....	508,900	498,900	508,900	503,900	-5,000	498,900	508,900	508,900	---	5,000	508,900	
Undistributed.....	---	---	---	---	---	---	-20,000	-20,000	-20,000	-20,000	-20,000	
<b>TOTAL, R&amp;D.....</b>	<b>5,334,000</b>	<b>5,378,400</b>	<b>5,324,000</b>	<b>5,504,000</b>	<b>170,000</b>	<b>5,542,800</b>	<b>5,117,800</b>	<b>5,542,800</b>	<b>208,800</b>	<b>38,800</b>	<b>5,542,800</b>	
<b>CoF Appropriation:</b>												
OSTS.....	23,145	23,145	21,400	23,145	---	23,145	23,145	23,145	---	---	23,145	
OSSA.....	4,990	4,990	1,700	4,990	---	4,990	4,990	4,990	---	---	4,990	
OAST.....	24,615	24,615	20,100	24,615	---	24,615	24,615	24,615	---	---	24,615	
OSTDS.....	47,250	47,250	56,800	47,250	---	47,250	47,250	47,250	---	---	47,250	
Undistributed.....	---	---	10,000	---	---	-5,000	---	-2,500	-2,500	-2,500	-2,500	
<b>TOTAL, CoF.....</b>	<b>100,000</b>	<b>100,000</b>	<b>110,000</b>	<b>100,000</b>	<b>---</b>	<b>95,000</b>	<b>100,000</b>	<b>97,500</b>	<b>-2,500</b>	<b>-2,500</b>	<b>97,500</b>	
<b>R&amp;PM Appropriation - Total.....</b>	<b>1,178,900</b>	<b>1,168,900</b>	<b>1,178,900</b>	<b>1,168,900</b>	<b>-10,000</b>	<b>1,168,900</b>	<b>1,177,000</b>	<b>1,168,900</b>	<b>-10,000</b>	<b>---</b>	<b>1,197,400</b>	
<b>TOTAL, NASA.....</b>	<b>6,612,900</b>	<b>6,647,300</b>	<b>6,612,900</b>	<b>6,772,900</b>	<b>160,000</b>	<b>6,806,700</b>	<b>6,394,800</b>	<b>6,809,200</b>	<b>196,300</b>	<b>36,300</b>	<b>6,837,700</b>	

<sup>1/</sup> +\$28.5M for Research and Program Management

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

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	<b>RESEARCH AND DEVELOPMENT.....</b>	5,334,000	5,378,400	5,324,000	5,504,000	170,000	5,542,800	5,117,800	5,542,800	208,000	38,800	5,542,800
253	Space Shuttle.....	1,718,000	1,706,500	1,808,000	1,798,000	80,000	1,767,000	1,769,000	1,769,000	51,000	-29,000	1,769,000
253	Space Flight Operations....	1,707,000	1,699,000	1,448,000	1,699,000	-8,000	1,815,000	1,369,000	1,796,000	89,000	97,000	1,796,000
253	Expendable Launch Vehicles.....	42,800	42,800	42,800	42,800	---	42,800	42,800	42,800	---	---	42,800
254	Physics and Astronomy.....	471,700	463,500	491,700	473,700	2,000	456,700	461,700	461,700	-10,000	-12,000	461,700
254	Planetary Exploration.....	154,600	177,600	194,600	177,600	23,000	172,400	182,400	180,400	25,800	2,800	180,400
254	Life Sciences.....	55,700	55,700	55,700	55,700	---	55,700	55,700	55,700	---	---	55,700
254	Space Applications.....	316,300	330,300	336,300	336,300	20,000	338,300	336,300	341,300	25,000	5,000	341,300
254	Technology Utilization.....	4,000	9,000	9,000	9,000	5,000	9,000	9,000	4,000	---	-5,000	4,000
402	Aeronautical Research and Technology.....	232,000	267,100	296,000	280,000	48,000	264,000	280,000	280,000	48,000	---	280,000
254	Space Research and Technology.....	123,000	128,000	133,000	128,000	5,000	123,000	123,000	123,000	---	-5,000	123,000
255	Tracking and Data Acq.....	508,900	498,900	508,900	503,900	-5,000	498,900	508,900	508,900	---	5,000	508,900
	Undistributed.....	---	---	---	---	---	---	-20,000	-20,000	-20,000	-20,000	-20,000
	<b>CONSTRUCTION OF FACILITIES..</b>	100,000	100,000	110,000	100,000	---	95,000	100,000	97,500	-2,500	-2,500	97,500
	Space Shuttle Facilities..	21,405	21,405	21,405	21,405	---	21,405	21,405	21,405	---	---	21,405
	Space Shuttle Payload Facilities.....	1,740	1,740	1,740	1,740	---	1,740	1,740	1,740	---	---	1,740
	Dryden Flight Research Facilities.....	4,500	4,500	4,500	4,500	---	4,500	4,500	4,500	---	---	4,500
	Goddard Space Flight Center.....	2,840	2,840	2,840	2,840	---	2,840	2,840	2,840	---	---	2,840
	Langley Research Center...	16,200	16,200	16,200	16,200	---	16,200	16,200	16,200	---	---	16,200
	Lewis Research Center.....	3,915	3,915	3,915	3,915	---	3,915	3,915	3,915	---	---	3,915
	Wallops Flight Center.....	2,150	2,150	2,150	2,150	---	2,150	2,150	2,150	---	---	2,150
	Repair.....	15,000	15,000	15,000	15,000	---	15,000	15,000	15,000	---	---	15,000
	Rehabilitation and Modification.....	20,000	20,000	20,000	20,000	---	20,000	20,000	20,000	---	---	20,000
	Minor Construction.....	4,000	4,000	4,000	4,000	---	4,000	4,000	4,000	---	---	4,000
	Facility Planning and Design.....	8,250	8,250	8,250	8,250	---	8,250	8,250	8,250	---	---	8,250
	Undistributed.....	---	---	10,000	---	---	-5,000	---	-2,500	-2,500	-2,500	-2,500
	<b>RESEARCH AND PROGRAM MANAGEMENT.....</b>	1,178,900	1,168,900	1,178,900	1,168,900	-10,000	1,168,900	1,177,000	1,168,900	-10,000	---	1,197,400
	<b>TOTAL.....</b>	6,612,900	6,647,300	6,612,900	6,772,900	160,000	6,806,700	6,394,800	6,809,200	196,300	36,300	6,837,700

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	RESEARCH AND DEVELOPMENT....	5,334,000	5,378,400	5,324,000	5,504,900	170,000	5,542,800	5,117,800	5,542,800	208,800	38,800	5,542,800
	OFFICE OF SPACE TRANSPORTATION SYSTEMS....	3,467,800	3,448,300	3,298,800	3,539,800	72,000	3,624,800	3,180,800	3,607,800	140,000	68,000	3,607,800
253	Space Shuttle.....	1,718,000	1,706,500	1,808,000	1,798,000	80,000	1,767,000	1,769,000	1,769,000	51,000	-29,000	1,769,000
	Production.....	1,585,500	1,579,000 <sup>a/</sup>	1,675,500	1,670,500	85,000	1,639,500	1,636,500	1,636,500	51,000	-34,000	1,636,500
	Orbiter.....	(933,500)	(927,000)	(1,023,500) <sup>d/</sup>	(1,018,500)	(85,000)	(987,500)	(984,500)	(984,500)	(984,500)	(51,000)	(984,500)
	Main Engine.....	(262,000)	(262,000)	(262,000)	(262,000)	(---	(262,000)	(262,000)	(262,000)	(262,000)	(---	(262,000)
	Launch and Landing.....	(67,000)	(67,000)	(67,000)	(67,000)	(---	(67,000)	(67,000)	(67,000)	(67,000)	(---	(67,000)
	Spares and Equipment.....	(323,000)	(323,000)	(323,000)	(323,000)	(---	(323,000)	(323,000)	(323,000)	(323,000)	(---	(323,000)
	Changes/System Upgrading....	72,500	72,500	72,500	72,500	---	72,500	72,500	72,500	---	---	72,500
	Performance Augmentation....	60,000	55,000	60,000	55,000	-5,000	55,000	60,000	60,000	---	5,000	60,000
253	Space Flight Operations....	1,707,000	1,699,000	1,448,000	1,699,000	-8,000	1,815,000	1,369,000	1,796,000	89,000	97,000	1,796,000
	Space Transportation System Capability Development.....	85,400	90,400 <sup>b/</sup>	235,400 <sup>e/</sup>	90,400	5,000	193,400	156,400	168,400	83,000	78,000	168,400
	Development, Test and Mission Support.....	82,400	77,400	82,400	77,400	-5,000	82,400	82,400	82,400	---	5,000	82,400
	Advanced Programs.....	11,900	11,900	11,900	*	*	11,900	11,900	11,900	*	*	11,900
	Spacelab.....	113,200	113,200	113,200	*	*	113,200	113,200	113,200	*	*	113,200
	Space Transportation Systems Operations.....	1,414,100	1,406,100 <sup>c/</sup>	1,005,100 <sup>f/</sup>	1,286,100	-128,000	1,414,100	1,005,100	1,420,100	6,000	134,000	1,420,100
253	Expendable Launch Vehicles..	42,800	42,800	42,800	42,800	---	42,800	42,800	42,800	---	---	42,800
	Delta.....	42,800	42,800	42,800	42,800	---	42,800	42,800	42,800	---	---	42,800
	OFFICE OF SPACE SCIENCE AND APPLICATIONS.....	1,002,300	1,036,100	1,087,300	1,052,300	50,000	1,032,100	1,045,100	1,043,100	40,800	-9,200	1,043,100
254	Physics and Astronomy.....	471,700	463,500	491,700	473,700	2,000	456,700	461,700	461,700	-10,000	-12,000	461,700
	Space Telescope.....	137,500	137,500	137,500	137,500	---	137,500	137,500	137,500	---	---	137,500
	International Solar Polar Mission.....	21,000	21,000	21,000	21,000	---	6,000	6,000	6,000	-15,000	-15,000	6,000
	Gamma Ray Observatory Development.....	34,500	34,500	34,500	34,500	---	34,500	34,500	34,500	---	---	34,500
	Shuttle/Spacelab Payload Development and Mission Management.....	81,400	81,400	81,400	81,400	---	81,400	81,400	81,400	---	---	81,400
	Explorer Development.....	34,300	34,300	39,300	34,300	---	34,300	34,300	34,300	---	---	34,300

<sup>a/</sup> \$6.5M reduction for space shuttle/solar maximum mission spacecraft retrieval  
<sup>b/</sup> \$5M added for phase B definition studies of orbital transfer vehicle  
<sup>c/</sup> \$8M reduction for space shuttle/solar maximum mission spacecraft retrieval  
<sup>d/</sup> \$90M added for fifth orbiter  
<sup>e/</sup> \$130M added for Centaur high energy upper stage  
<sup>f/</sup> \$409M reduction for launch services to be reimbursed by Air Force

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	<b>OFFICE OF SPACE SCIENCE AND APPLICATIONS (Cont'd.)</b>											
	Mission Operations and Data Analysis.....	85,600	77,400 <sup>a/</sup>	93,600 <sup>d/</sup>	86,600	1,000	85,600	85,600	85,600	---	-1,000	85,600
	Research and Analysis.....	39,200	39,200	45,200 <sup>d/</sup>	39,200	---	39,200	39,200	39,200	---	---	39,200
	Suborbital Program.....	38,200	38,200	39,200 <sup>d/</sup>	39,200	1,000	38,200	38,200	38,200	---	-1,000	38,200
	Undistributed.....	---	---	---	---	---	---	5,000 <sup>e/</sup>	5,000	5,000	5,000	5,000
254	Planetary Exploration.....	154,600	177,600	194,600	177,600	23,000	172,400	182,400	180,400	25,800	2,800	180,400
	Galileo Development.....	92,600	92,600	92,600	92,600	---	85,600	85,600	91,600	-1,000	-1,000	91,600
	Mission Operations and Data Analysis.....	26,500	38,500	41,500 <sup>e/</sup>	38,500	12,000	49,500	26,500	26,500	---	-12,000	26,500
	Research and Analysis.....	35,500	46,500	60,500 <sup>e/</sup>	46,500	11,000	37,300	37,300	37,300	1,800	-9,200	37,300
	Undistributed.....	---	---	---	---	---	---	33,000 <sup>f/</sup>	25,000	25,000	25,000	25,000
254	Life Sciences.....	55,700	55,700	55,700	55,700	---	55,700	55,700	55,700	---	---	55,700
	Life Sciences Flight Experiments.....	24,000	24,000	24,000	24,000	---	24,000	24,000	24,000	---	---	24,000
	Research and Analysis.....	31,700	31,700	31,700	31,700	---	31,700	31,700	31,700	---	---	31,700
254	Space Applications.....	316,300	330,300	336,300	336,300	20,000	338,300	336,300	341,300	25,000	5,000	341,300
	Resources Observations....	132,200	132,200	132,200	132,200	---	132,200	132,200	132,200	---	---	132,200
	Environmental Observations	128,900	128,900	128,900	128,900	---	128,900	128,900	128,900	---	---	128,900
	Applications Systems.....	11,700	11,700	11,700	11,700	---	11,700	11,700	11,700	---	---	11,700
	Technology Transfer.....	---	4,000	---	---	---	---	---	5,000	5,000	5,000	5,000
	Materials Processing in Space.....	23,600	28,600	23,600	28,600	5,000	23,600	23,600	23,600	---	-5,000	23,600
	Communications and Information Systems.....	19,900	24,900 <sup>b/</sup>	39,900 <sup>f/</sup>	34,900	15,000	41,900	39,900	39,900	20,000	5,000	39,900
254	Technology Utilization.....	4,000	9,000	9,000	9,000	5,000	9,000	9,000	4,000	---	-5,000	4,000
	Technology Dissemination..	3,200	3,200	3,200	3,200	---	3,200	3,200	3,200	---	---	3,200
	Technology Applications...	800	5,800	5,800	5,800	5,000	5,800 <sup>h/</sup>	5,800	800	---	-5,000	800
	<b>OFFICE OF AERONAUTICS AND SPACE TECHNOLOGY.....</b>	355,000	395,100	429,000	408,000	53,000	387,000	403,000	403,000	48,000	-5,000	403,000
402	Aeronautical Research and Technology.....	232,000	267,100	296,000	280,000	48,000	264,000	280,000	280,000	48,000	---	280,000
	Research and Technology Base.....	182,000	188,000 <sup>c/</sup>	182,000	182,000	---	182,000	182,000	182,000	---	---	182,000
	Systems Technology Programs.....	50,000	79,100	114,000 <sup>f/</sup>	98,000	48,000	82,000	98,000	98,000	48,000	---	98,000

a/ \$9.2M reduction for space shuttle/solar maximum mission spacecraft retrieval and \$1M increase for data analysis for HEAO and OAO  
 b/ \$M added for 30/20 gigahertz test and evaluation test flight  
 c/ \$6M committee restoration  
 d/ Increases to counter the slow progress in future programs and basic technology areas  
 e/ Increases to maintain constant level of effort  
 f/ \$20M increase to allow for a large proof-of-concept of communications operations in the 30/20 Ghz frequency range  
 g/ To reverse the withdrawal from technology validation activities by directing restoration of funds for such systems technology programs as Advanced Turboprop, Broad Property Fuels, Composite Structures, etc. (see pages 11, 12, and 40 for committees' list of restorations and amounts)  
 h/ \$M increase may be applied to space applications/technology transfer  
 i/ \$3M increase to physics and astronomy and planetary exploration of which not less than \$M to be for Physics and Astronomy

Prepared by:  
 Comptroller  
 Budget Operations Division  
 Code BTP-3 Ext. 58466

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Chronological History of the FY 1983 Budget Submission  
(In thousands of dollars)

Subfunction Code	Item	AUTHORIZATION					APPROPRIATION					Supplemental H.R. 3069 7-20-83 Rpt. 98-308 P.L. 98-63 Appd. 7-30-83
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	<b>OFFICE OF AERONAUTICS AND SPACE TECHNOLOGY (Cont'd.)</b>											
254	<b>Space Research and Technology.....</b>	123,000	128,000	133,000	128,000	5,000	123,000	123,000	123,000	---	-5,000	123,000
	Research and Technology Base.....	115,600	120,600 <sup>a/</sup>	125,600 <sup>a/</sup>	120,600	5,000	115,600	115,600	115,600	---	---	115,600
	Systems Technology Programs.....	4,400	4,400	4,400	4,400	---	4,400	4,400	4,400	---	---	4,400
	Standards and Practices...	3,000	3,000	3,000	3,000	---	3,000	3,000	3,000	---	---	3,000
	<b>OFFICE OF SPACE TRACKING AND DATA SYSTEMS.....</b>	508,900	498,900	508,900	503,900	-5,000	498,900	508,900	508,900	---	5,000	508,900
253	<b>Tracking and Data Acq.....</b>	508,900	498,900	508,900	503,900	-5,000	498,900	508,900	508,900	---	5,000	508,900
	Operations.....	338,200	338,200	338,200	*	*	338,200	338,200	338,200	---	---	338,200
	Systems Implementation....	96,000	96,000	96,000	*	*	96,000	96,000	96,000	---	---	96,000
	Advanced Systems.....	13,400	13,400	13,400	*	*	13,400	13,400	13,400	---	---	13,400
	TDRSS.....	61,300	51,300 <sup>b/</sup>	61,300	*	*	51,300	61,300	61,300	---	---	61,300
	General Reduction.....	---	---	---	---	---	---	---	-20,000	-20,000	-20,000	-20,000
	<b>CONSTRUCTION OF FACILITIES..</b>	100,000	100,000	110,000	100,000	---	95,000	100,000	97,500	-2,500	-2,500	97,500
	<b>DRYDEN FLIGHT RESEARCH FACILITY.....</b>	4,500	4,500	4,500	4,500	---	4,500	4,500	4,500	---	---	4,500
255	<b>R-Construction of Data Analysis Facility.....</b>	4,500	4,500	4,500	4,500	---	4,500	4,500	4,500	---	---	4,500
	<b>GODDARD SPACE FLIGHT CENTER.</b>	2,840	2,840	2,840	2,840	---	2,840	2,840	2,840	---	---	2,840
255	<b>E-Rehabilitation and Modification of Utility Systems.</b>	2,840	2,840	2,840	2,840	---	2,840	2,840	2,840	---	---	2,840
	<b>LANGLEY RESEARCH CENTER.....</b>	16,200	16,200	16,200	16,200	---	16,200	16,200	16,200	---	---	16,200
402	<b>R-Modifications to 4x7 Meter Low Speed Tunnel (1212-C).</b>	7,200	7,200	7,200	7,200	---	7,200	7,200	7,200	---	---	7,200
402	<b>R-Modifications to Upgrade Transonic Dynamics Tunnel (648).....</b>	9,000	9,000	9,000	9,000	---	9,000	9,000	9,000	---	---	9,000
	<b>LEWIS RESEARCH CENTER.....</b>	3,915	3,915	3,915	3,915	---	3,915	3,915	3,915	---	---	3,915
402	<b>R-Modification of Rocket Engine Test Facility for Altitude Testing.....</b>	995	995	995	995	---	995	995	995	---	---	995
402	<b>R-Modification to 450 PSI Air System in Engine Research Building.....</b>	2,920	2,920	2,920	2,920	---	2,920	2,920	2,920	---	---	2,920

a/ \$5M increase for propulsion research and technology activities  
b/ Adjustment in TDRSS payment schedule  
c/ \$10M increase to strengthen the research and technology base

**NATIONAL AERONAUTICS AND SPACE ADMINISTRATION**  
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	<b>CONSTRUCTION OF FACILITIES (Cont'd.)</b>											
	Wallops Flight Center.....	2,150	2,150	2,150	2,150	---	2,150	2,150	2,150	---	---	2,150
255	E-Rehabilitation of Airfield	2,150	2,150	2,150	2,150	---	2,150	2,150	2,150	---	---	2,150
	<b>SPACE SHUTTLE FACILITIES....</b>	21,405	21,405	21,405	21,405	---	21,405	21,405	21,405	---	---	21,405
253	M-Modifications to Solid Rocket Booster Refurbishment and Subassembly Facilities (KSC).....	1,700	1,700	1,700	1,700	---	1,700	1,700	1,700	---	---	1,700
253	M-Modifications of Manufacturing and Final Assembly Facilities for External Tanks (MAF).....	17,845	17,845	17,845	17,845	---	17,845	17,845	17,845	---	---	17,845
253	M-Minor Shuttle-Unique Projects (Various Locations).....	1,860	1,860	1,860	1,860	---	1,860	1,860	1,860	---	---	1,860
	<b>SHUTTLE PAYLOAD FACILITIES..</b>	1,740	1,740	1,740	1,740	---	1,740	1,740	1,740	---	---	1,740
254	M-Rehabilitation and Modification for Payload Ground Support Operations (KSC)..	1,740	1,740	1,740	1,740	---	1,740	1,740	1,740	---	---	1,740
255	<b>N-REPAIR OF FACILITIES.....</b>	15,000	15,000	15,000	15,000	---	15,000	15,000	15,000	---	---	15,000
255	<b>N-REHABILITATION AND MODIFICATION OF FACILITIES.....</b>	20,000	20,000	20,000	20,000	---	20,000	20,000	20,000	---	---	20,000
255	<b>N-MINOR CONSTRUCTION OF NEW FACILITIES AND ADDITIONS....</b>	4,000	4,000	4,000	4,000	---	4,000	4,000	4,000	---	---	4,000
255	<b>N-FACILITY PLANNING AND DESIGN.....</b>	8,250	8,250	8,250	8,250	---	8,250	8,250	8,250	---	---	8,250
	<b>UNDISTRIBUTED.....</b>	---	---	10,000	---	---	-5,000	---	-2,500	-2,500	-2,500	-2,500

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

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RESEARCH AND PROGRAM MANAGEMENT...	1,178,900	1,168,900	1,178,900	1,168,900	-10,000	1,168,900	1,177,000	1,168,900	-10,000	-10,000	1,197,400	
<b>BY INSTALLATION:</b>												
Johnson Space Center.....	192,396	192,396	192,396	192,396	---	192,396	192,396	192,396	---	---	192,396	
Kennedy Space Center.....	169,500	169,500	169,500	169,500	---	169,500	169,500	169,500	---	---	169,500	
Marshall Space Flight Center....	177,704	177,704	177,704	177,704	---	177,704	177,704	177,704	---	---	177,704	
National Space Technology Laboratories.....	6,252	6,252	6,252	6,252	---	6,252	6,252	6,252	---	---	6,252	
Goddard Space Flight Center.....	173,638	173,638	173,638	173,638	---	173,638	173,638	173,638	---	---	173,638	
Ames Research Center.....	104,893	104,893	104,893	104,893	---	104,893	104,893	104,893	---	---	104,893	
Langley Research Center.....	131,303	131,303	131,303	131,303	---	131,303	131,303	131,303	---	---	131,303	
Lewis Research Center.....	110,591	110,591	110,591	110,591	---	110,591	110,591	110,591	---	---	110,591	
Headquarters.....	112,623	112,623	112,623	112,623	---	112,623	112,623	112,623	---	---	112,623	
Undistributed.....	---	-10,000	---	-10,000	-10,000	-10,000	-1,900 <sup>a/</sup>	-10,000	-10,000	-10,000	+18,500 <sup>c/</sup>	
<b>BY FUNCTION:</b>												
Personnel and Related Costs.....	829,900	829,900	829,900	829,900	---	829,900	829,900	829,900	---	---	829,900	
Travel.....	24,100	24,100	24,100	24,100	---	24,100	24,100	24,100	---	---	24,100	
Facilities Services.....	179,881	179,881	179,881	179,881	---	179,881	179,881	179,881	---	---	179,881	
Technical Services.....	55,526	55,526	55,526	55,526	---	55,526	55,526	55,526	---	---	55,526	
Management and Operations Support.....	89,493	89,493	89,493	89,493	---	89,493	89,493	89,493	---	---	89,493	
Undistributed.....	---	-10,000	---	-10,000	-10,000	-10,000	-1,900 <sup>a/</sup>	-10,000 <sup>b/</sup>	-10,000	-10,000	+18,500 <sup>c/</sup>	

a/ \$1.9M reduction in area of management, operations, and headquarters travel  
b/ \$10M reduction to be applied to "contractual and consultant services and public affairs"  
c/ -\$10M undistributed reduction; +\$28.5M supplemental appropriation

Prepared by:  
Comptroller  
Budget Operations Division  
Code BTF-3 Ext. 58466

**AUTHORIZING APPROPRIATIONS TO THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION FOR FISCAL YEAR 1983**

MAY 5, 1982.—Committed to the Committee of the Whole House on the State of the Union and ordered to be printed

Mr. FUQUA, from the Committee on Science and Technology, submitted the following

**REPORT**

together with

**ADDITIONAL VIEWS**

[To accompany H.R. 5890]

[Including cost estimate of the Congressional Budget Office]

The Committee on Science and Technology, to whom was referred the bill (H.R. 5890) to authorize appropriations to the National Aeronautics and Space Administration for research and development, construction of facilities, and research and program management, and for other purposes, having considered the same, report favorably thereon with amendments (shown in italic in the bill accompanied by this report) and recommend that the bill, as amended, do pass.

The amendments are as follows:

On page 2, line 1, strike out "\$1,718,000,000" and insert "\$1,706,500,000".

On page 2, line 2, strike out "\$1,707,000,000" and insert "\$1,699,000,000".

On page 2, line 4, strike out "\$471,700,000" and insert "\$463,500,000".

On page 2, line 5, strike out "\$154,600,000" and insert "\$177,600,000".

On page 2, line 7, strike out "\$316,300,000" and insert "\$330,300,000".

On page 2, line 8, strike out "\$4,000,000" and insert "\$9,000,000".

On page 2, line 10, strike out "\$232,000,000" and insert "\$267,100,000".

On page 2, line 12, strike out "\$123,000,000" and insert "\$128,000,000".

On page 2, line 13, strike out "\$508,900,000" and insert "\$498,900,000".

On page 4, line 4, strike out "\$1,178,900,000" and insert "\$1,168,900,000".

On page 10, after line 5, add the following:

(c) No monies authorized by this title shall be used to transfer to the private sector the ownership or management of any civil land remote sensing space satellite system and associated ground system equipment unless (1) the Secretary of Commerce or his designee has presented, in writing, to the Speaker of the House of Representatives and the President of the Senate, and to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science and Transportation of the Senate, a comprehensive plan for the proposed transfer, and (2) each such committee has transmitted to the Secretary written notice (within 30 days after receipt of the plan) to the effect that such committee has no objection to the proposed action.

**PURPOSE OF THE BILL**

**TITLE I**

The purpose of title I is to authorize appropriations to the National Aeronautics and Space Administration for fiscal year 1982 as follows:

Programs	Authorization fiscal year 1983	Page No.
Research and development.....	\$5,378,400,000	21
Construction of facilities.....	100,000,000	177
Research and program management..	1,168,900,000	199
Total.....	\$6,647,300,000	.....

**TITLE II**

The purpose of title II is to authorize appropriation of \$14,955,000 for the National Oceanic and Atmospheric Administration to operate a land remote sensing system.

## SPACE FLIGHT OPERATIONS

## COMMITTEE ACTIONS

## TITLE I

## RESEARCH AND DEVELOPMENT

## SPACE SHUTTLE

NASA requested \$1,718,000,000 for the Space Shuttle program in fiscal year 1983. The funds will support the Space Shuttle production activities, changes/system upgrading activities, and performance augmentation activities leading to a space transportation system with a four orbiter fleet. The Committee deleted \$6,500,000 in production activities related to the Space Shuttle/Solar Maximum Mission Spacecraft Retrieval and Repair demonstration and reduced Performance Augmentation activities by \$5,000,000 resulting in a total recommended authorization of \$1,706,500,000.

*Production and Changes/Systems Upgrading.* NASA requested \$1,585,500,000 for the Space Shuttle Production program in fiscal year 1983. Within this program, the Committee deleted \$6,500,000 related to the Space Shuttle/Solar Maximum Mission Spacecraft Retrieval and Repair demonstration resulting in an authorization of \$1,579,000,000, for Space Shuttle Production activities in fiscal year 1983.

Last year the Committee requested that NASA and the Air Force review the requirements for additional orbiter vehicles and further requested that the results of this review be submitted to the Congress in December 1981. The Committee is concerned that this review did not get underway in a timely manner to provide an input into the fiscal year 1983 budget process. The Committee continues to believe that additional orbiters will be required to accomplish critical civil and defense missions, to provide flexibility for exploitation of the orbiter capabilities, to provide a backup for an unforeseen loss of an orbiter vehicle, and to eliminate the need for use of expendable launch vehicles.

Within the production and changes/system upgrading line items, the Committee directs NASA to provide appropriate funding for long-lead materials to maintain an option for procurement of additional orbiters. The Committee further requests that the joint NASA/Air Force review of requirements for additional orbiters be submitted to the Congress by August 1, 1982.

*Performance Augmentation.* NASA requested \$60,000,000 for Performance Augmentation activities to meet a Department of Defense launch requirement in October 1985. The Committee recommends a reduction of \$5,000,000 and believes that procurement activities can be phased in a manner to avoid any cost and schedule impact. Therefore, the recommended authorization for Performance Augmentation activities in fiscal year 1983 is \$55,000,000.

(5)

NASA requested \$1,707,000,000 for Space Flight Operations programs in fiscal year 1983 including funds for space transportation systems operations capability development activities; development, test and mission support/engineering and technical base activities; advanced programs activities; Spacelab activities; and space transportation system operations activities. Within this line item the Committee recommended an increase of \$5,000,000 to space transportation systems operations capability development activities; a reduction of \$5,000,000 in development, test and mission support/engineering and technical base activities; and a reduction of \$8,000,000 in Space Transportation System Operations activities related to the Space Shuttle/Solar Maximum Mission Spacecraft Retrieval and Repair Demonstration. Therefore, that total recommended authorization for Space Flight Operations activities is \$1,699,000,000 in fiscal year 1983.

*Space transportation systems operations capability development.* NASA requested \$85,400,000 for space transportation systems operations capability development activities in fiscal year 1983. This funding request reflects the Administration's decision not to proceed with the sole source acquisition of a modified Centaur for launching Galileo and the International Solar Polar Mission but to launch Galileo and the International Solar Polar Mission with an Inertial Upper Stage. Currently, NASA and the Air Force are proceeding with joint studies related to development of a high energy upper stage. The Committee agrees that there is a requirement for a high energy upper stage but believes that NASA should serve as the procuring agency for the development of a high energy upper stage and that the design should accommodate future modification for reusability. Therefore, the Committee recommends and addition of \$5,000,000 to complete Phase B definition studies leading to the competitive procurement of an orbital transfer vehicle beginning in fiscal year 1984. The total recommended authorization for Space Transportation Systems Operations Capability Development activities is \$90,400,000 in fiscal year 1983.

*Development, Test and Mission Support/Engineering and Technical Base.* NASA requested \$82,400,000 for Development, Test and Mission/Engineering and Technical Base activities in fiscal year 1983. The Committee recommends a reduction of \$5,000,000 resulting in a total authorization of \$77,400,000.

*Space Transportation Systems Operations.* NASA requested \$1,414,100,000 for Space Transportation Systems Operations activities in fiscal year 1983. The Committee deleted \$8,000,000 related to the Space Shuttle/Solar Maximum Mission Spacecraft Retrieval and Repair demonstration resulting in a total recommended authorization of \$1,406,100,000.

## PHYSICS AND ASTRONOMY

NASA requested \$471,700,000 for Physics and Astronomy programs in fiscal year 1983. Within this line item the Committee reduced Mission Operations and Data Analysis activities by \$8,200,000 resulting in a total authorization of \$463,500,000 for Physics and Astronomy programs in fiscal year 1983.

### *Mission Operations and Data Analysis*

NASA requested \$85,600,000 for Mission Operations and Data Analysis activities in fiscal year 1983. The Committee deleted \$9,200,000 related to the Space Shuttle/Solar Maximum Mission Retrieval and Repair Demonstration and increased funding available for analysis of data from the High Energy Astronomical Observatory and the Orbiting Astronomical Observatory by \$1,000,000. Therefore, the total recommended authorization for Mission Operations and Data Analysis activities in fiscal year 1983 is \$77,400,000.

### PLANETARY EXPLORATION

NASA requested \$154,600,000 for Planetary Exploration programs in fiscal year 1983. Within this line item the Committee increased funding for Mission Operations and Data Analysis activities by \$12,000,000 and funding for Research and Analysis activities by \$11,000,000 resulting in a total authorization of \$177,600,000 for Planetary Exploration programs in fiscal year 1983. The fiscal year 1983 budget would reduce the support for planetary research in universities by approximately fifty percent.

*Mission Operations and Data Analysis.* NASA requested \$26,500,000 for Mission Operations and Data Analysis activities, a reduction of \$11,800,000 below the level of the fiscal year 1982 operating plan and a reduction of \$23,300,000 below the March 1981 fiscal year 1982 budget request. The fiscal year 1983 budget request would result in the termination of the Pioneer Venus spacecraft, the Pioneer 6-9 spacecraft, Pioneer 10 and 11, as well as Viking mission operations. The Committee recommended an addition of \$12,000,000 to Mission Operations and Data Analysis activities resulting in a total authorization of \$38,500,000 in fiscal year 1983.

*Research and Analysis.* NASA requested \$35,500,000 for Research and Analysis activities, a reduction of \$11,200,000 below the level of the fiscal year 1982 operating plan and a reduction of \$16,000,000 below the level of the March 1981 fiscal year 1982 budget request. The fiscal year 1983 budget request would result in termination of the Lunar Curatorial Facility activities, termination of the Infrared Telescope Facility activities, and a significant reduction in support to planetary research in the university community.

The Committee is particularly concerned about NASA's plans to cease support for the Infrared Telescope Facility (IRTF) only three years after completion of the facility which originally cost more than \$10 million. Although, NASA expressed a hope that the National Science Foundation would pick up support for the IRTF, no funds were included in the National Science Foundation budget for this purpose nor has such an approach been effectively coordinated with the Foundation. A research facility such as the Infrared Telescope Facility cannot operate efficiently when funding crises occur every fiscal year. Therefore, the Committee directs NASA to continue support for the Infrared Telescope Facility until an inter-agency agreement between NASA and NSF is completed which provides for NSF support of the facility, or until an independent, outside, scientific peer review finds that the facility should be closed.

The technological strength of our nation depends in great part on the health and vigor of research activities carried out in our universities. The planetary research and data analysis programs within our universities are dependent solely on federal funds and are a resource necessary to maintain world leadership in this area. A declining budget has put severe strains on the health of our planetary exploration program and particularly on the academic space science community. In order to prevent deeper erosion of this valuable technological resource, the research and data analysis authorization for NASA's planetary exploration program was increased by \$11,000,000 (including funding for the Infrared Telescope Facility). It is essential that such a minimum research base and the necessary related facilities survive within our universities while a solid planetary exploration strategy is being defined. Therefore, the total recommended authorization for Research and Analysis activities is \$46,500,000 in fiscal year 1983.

### SPACE APPLICATIONS

NASA requested \$316,300,000 for Space Applications programs in fiscal year 1983. Within this line item the Committee recommended an increase of \$4,000,000 to continue Technology Transfer activities, an increase of \$5,000,000 in Materials Processing in Space activities, and an increase of \$5,000,000 in Communications and Information Systems activities. Therefore, the total recommended authorization for Space Applications program in fiscal year 1983 is \$330,300,000.

*Technology Transfer.* In the amended fiscal year 1982 budget request NASA proposed to eliminate technology transfer activities. However, the Congress authorized and appropriated fiscal year 1982 funds for these activities and \$5,000,000 was included in the NASA fiscal year 1982 operating plan. NASA has again proposed to eliminate these activities in the fiscal year 1983 budget. The efforts funded in this area are primarily to transfer land remote sensing technology to state and local governments. The Committee notes that the importance of providing a mechanism for transferring remote sensing technology for operational use by public and private organizations requires the applications of NASA expertise and physical resources. Continuing this activity in fiscal year 1983 is particularly important to assure maximum utilization of data from the Thematic Mapper instrument planned for launch on LANDSAT D in September 1982. In order to ensure that the capabilities of remote sensing obtained at great cost are made available for the economic and social benefit of the Nation, the Committee believes it is necessary to continue these activities and recommends an authorization of \$4,000,000 for technology transfer activities in fiscal year 1983.

*Materials Processing in Space.* NASA requested \$23,600,000 for Materials Processing in Space activities in fiscal year 1983. In recognition of the potential benefits of materials processing in space and the efforts by other countries in the area, the Committee recommended an increase of \$5,000,000 to augment the national effort in exploiting this technology by expanding the materials science and engineering base in the university community. Therefore, the

total recommended authorization for Materials Processing in Space activities is \$28,600,000 in fiscal year 1983.

*Communication and Information Systems.* NASA requested \$19,900,000 for Communication and Information Systems activities in fiscal year 1983. The Office of Management and Budget reduced the NASA request of \$73.4 million for these efforts by \$53.4 million in large part due to the deletion of a 30/20 gigahertz test and evaluation flight mission. This deletion was made in part based on the fact that the Department of Defense is proceeding with the Milstar program which would demonstrate 44/20 gigahertz technology. In considering this issue the Committee heard conflicting testimony with regard to the degree to which the Milstar program could satisfy civil requirements. A representative of the Space Applications Board maintained that: "In summary, the military R&D program cannot be expected to demonstrate any systems capability of value to the civil commercial sector. It can be expected to demonstrate some component technology that should be of important value, but probably restricted to the area of microwave transmitters and receivers—not elements such as antennas or switches. And, of course, the military program can be expected to benefit from some NASA supported technology developments in these areas." The Committee has heard convincing testimony with regard to the importance of making the 30/20 gigahertz portion of the frequency spectrum available to the Nation. The Committee continues to believe that advanced communications research and development is an important part of the agency's responsibility to the civilian sector. Therefore, the Committee recommends an increase of \$5,000,000 for technology development and for further study and resolution of the issues associated with any duplication associated with a NASA 30/20 gigahertz test and evaluation flight mission and the DOD Milstar program. The Committee further directs that NASA submit a rescoped 30/20 gigahertz test and evaluation flight mission which would take advantage of appropriate technology from the Milstar program but which would also satisfy the civil commercial sector. Therefore, the total recommended authorization for Communication and Information Systems activities is \$24,900,000 in fiscal year 1983.

#### TECHNOLOGY UTILIZATION

The NASA fiscal year 1983 budget request included \$4,000,000 for Technology Utilization activities. The amended fiscal year 1982 budget request for this area was \$4,600,000 but through additions in the fiscal year 1982 NASA authorization and appropriations legislation, the funding level was increased to \$8,000,000 in the NASA fiscal year 1982 operating plan. The Committee is concerned that the 1983 budget request ignores Congressional direction and intent. The Committee continues to recognize the Technology Utilization program as a model federal program dedicated to the transfer of NASA technology and know-how for social and economic benefits. NASA has reported results of studies which indicate that demonstrated economic benefits are six times the cost of the Technology Utilization program. In addition, the National Aeronautics and Space Administration Act of 1958, as amended, declares that NASA

shall assist in bioengineering research, development and demonstration programs. The Stevenson-Wydler Technology Innovation Act of 1980 in further recognition of the importance of programs exemplified by NASA Technology Utilization, mandated such activities be established across federal agencies. The Committee fully supports the NASA Technology Utilization program and encourages NASA to establish State Technology Application Centers in other states where the potential for industrial innovation through this type of technology utilization program can be demonstrated and where there is a state commitment to support such a program both financially and through complementary state government and private sector initiatives.

In order to assure the continued development and implementation of a technology utilization function that actively applies the full range of the Agency's institutional expertise to non-aerospace technology problems of the industrial and public sectors, the Committee recommends an increase of \$5,000,000 for a total authorization of \$9,000,000. The Committee directs NASA to maintain a technology applications engineering program that permits field center personnel, associated contractors and the required institutional facilities to be used in applying aerospace technology to such problems. The Agency should as appropriate, develop cooperative arrangements with prospective users of this technology for purposes of defining priority technology utilization objectives, identifying cofunding requirements and assuring expeditious implementation of the transferred technology by the users.

#### AERONAUTICAL RESEARCH AND TECHNOLOGY

NASA requested \$232,000,000 for Aeronautical Research and Technology. This amount represents an 18.6 percent reduction from the amount authorized in fiscal year 1982.

Funding for the aeronautics program has been on a downward path in recent years. For example, actual spending in fiscal year 1980 was \$308 million. Exacerbating this trend, the Administration took unilateral action this year to fundamentally change NASA's role in aeronautics as a way of achieving further large reductions in this Federal effort. The vehicle for achieving this action was a revised fiscal year 1982 operating plan, about which the Committee was not consulted. The change implemented therein was a withdrawal from all technology validation activities, except where a clear military application existed. The underlying assumption is that industry will pick up the slack.

The Committee has been presented with no evidence to indicate that this will be the case. Moreover, the facts show that past investments in research and technology have led to very large commercial benefits for the United States. The Committee sees no justification for tinkering with such a time-proven and cost-effective system.

Therefore, the Committee directs the following restorations: Energy Efficient Transport (\$1.1 million); Composite Primary Aircraft Structures (\$2.0 million); Advanced Turboprops (\$9.8 million); Energy Efficient Engine (\$7.0 million); Terminal Configured Vehicle (\$5.0 million); Turbine Engine Hot Section Technology (\$4.7 mil-

lion); Advanced Rotocraft Technology and Helicopter Transmission Research (\$4.5 million); Broad Property Fuels Technology (\$4.2 million); Powered Lift and Tilt Rotor Technology (\$3.8 million); and, Research and Technology Base (\$6.0 million). To partially offset these additions and to encourage the Department of Defense to reimburse NASA for work that is conducted in its behalf, the Committee directs the following general reduction to be taken from activities that are primarily directed at military application: Low Speed Systems Technology and High Speed Systems Technology (\$13.0 million). The new total is \$267,100,000.

#### SPACE RESEARCH AND TECHNOLOGY

The NASA budget request included \$123,000,000 for space research and technology in fiscal year 1983. If in the future our Nation is to be in a position to embark on aggressive space initiatives, NASA must strengthen the space propulsion research and technology base. The Committee recommends a total authorization of \$128,000,000 for space research and technology base activities including \$5,000,000 to augment propulsion research and technology activities.

#### TRACKING AND DATA ACQUISITION

NASA requested \$508,900,000 for Tracking and Data Acquisition programs in fiscal year 1983. Of that amount, \$61,300,000 represents funding for the Tracking and Data Relay Satellite System (TDRSS). TDRSS funding for fiscal year is to initiate the repayment of the construction loan, to make operations and award fee payments to the Space Communications Company, and to provide support to the NASA TDRSS project management staff for systems engineering and operations planning activities. The Office of Management and Budget reduced the fiscal year 1983 TDRSS funding by \$77,800,000 through an adjustment in TDRSS payment schedules. The Committee believes that additional reductions of \$10,000,000 can be made through further adjustments in the TDRSS payment schedule and management support efforts. Therefore, the Committee recommends a total authorization of \$498,900,000 for Tracking and Data Acquisition activities in fiscal year 1983.

#### RESEARCH AND PROGRAM MANAGEMENT

NASA requested \$1,178,900,000 for Research and Program Management activities in fiscal year 1983. With only one new start in the past four budget years the Committee believes that the agency's institutional funding can be reduced by \$10,000,000 without significant impact. The Committee, therefore, recommends a total authorization of \$1,168,900,000 for Research and Program Management activities in fiscal year 1983.

## LANGUAGE AMENDMENT

### FISCAL YEAR 1983 NOAA LANDSAT AUTHORIZATION

Title II provides authority for the Secretary of Commerce to operate a civil land remote sensing system. The Subcommittee adopted an amendment to Title II which would prohibit the use of funds authorized in Title II to transfer land remote sensing ownership or management to the private sector without approval of the authorizing Committees of the House and the Senate.

## COMMITTEE VIEWS

### U.S. CIVILIAN SPACE POLICY

Our country's space policy is outlined in the National Aeronautics and Space Act of 1958. It is significant that the Nation's leaders made a major provision of that Act the establishment of a civilian agency, separate from the military, to conduct the aeronautical and space activities of the United States government. In addition, the Act provided that the government's aeronautics and space program be balanced across disciplines of space flight, space science, space applications and aeronautics.

In the mid-1970's when the Administration proposed that all production orbiters would be funded in the NASA budget, it was understood that funds for the Air Force orbiters would be provided to NASA over and above NASA ongoing programs. However, NASA has had to absorb these costs, which has increased the budget constraints on other program areas. The resulting reductions and deferrals of high-priority space science, applications and aeronautics programs reflect a lack of understanding on the need for balance.

Press reports of NASA internal memoranda outlining a future agency direction of increasing emphasis on military technology raise additional concerns. As pointed out above, the National Aeronautics and Space Act of 1958 provides for Independent civil and defense programs which would, however, share information and technology; share launch vehicles; and, where appropriate, operate cooperative programs. Any deemphasizing of efforts on civil space applications and the increased emphasis on military space applications technology as outlined in the internal memorandum is clearly in conflict with the 1958 Act and contradicts Congressional intent, direction, and commitment expressed over two decades.

In order to maintain an appropriate balance in the civil program there is the need for vision, leadership, and continuity of commitment. The recent successes of Voyager and the Space Shuttle have reaffirmed America's present leadership in space technology, but it is questionable whether any vision for the future or continuity of commitment remains.

Then there remains that intangible element called vision. Vision in this case may be defined as long-range planning or goal setting that allows numerous space program possibilities and opportunities to be *balanced* against each other and against other existing national needs. Out of this balancing a program direction could be chosen which would be in the best interest of the Nation. The United States does not have a long-range vision of where we are going in civil space activities. The absence of the vision of a desired future makes it difficult to identify criteria for program decisions.

The failure to set long-range goals and to do long-range planning results in short-term policies which change too often to allow for a cohesive, rational view of our future direction.

NASA's contribution not only to national defense but also to our national economy must be recognized. Only through a strong economy and successful competition in the international civil marketplace can we sustain our national prestige, provide for economic growth, and maintain a strong defense program. Therefore, the Nation must continue to make the incremental investment necessary to strengthen and increase commercial aerospace sales through exploitation of civil space and aeronautical technology having both civil and military applications. The existence of the open space and aeronautics program conducted by NASA contributes significantly to this end.

#### SPACE SHUTTLE PROGRAM

The Committee congratulates the NASA and industry team for the great success of the first three Space Shuttle flights which have once again demonstrated to the world unexcelled technological genius and greatness. However, major challenges lie ahead before the promise of a flexible, efficient, operational space transportation system can be fulfilled.

##### *Orbiter Fleet Size*

The Committee continues to believe that additional orbiters beyond the currently planned four will be needed to accomplish critical civil and defense missions, to provide flexibility for exploitation of the Space Shuttle's capabilities, and to provide a backup to an already committed fleet. Auxiliary systems are also needed to provide increased on-orbit power and mission life. The Committee strongly believes that the Administration should request funds for additional orbiters with plans for shared funding by the Department of Defense and NASA.

##### *Pricing Policy*

Since the Space Shuttle pricing policy was first established in 1977, the cost per flight to launch and operate the Space Shuttle has significantly exceeded the original estimates. At the time Congressional approval was given to the pricing policy, NASA projected paying 82 percent of the costs, while flying 55 percent of the flights. More recent estimates indicate that NASA will pay 80 percent of the costs, while flying only 36 percent of the flights. The 1977 pricing policy also gave the Department of Defense a "special

customer" status which set a fixed price for defense flights during the initial 6 years of Shuttle operations. The Committee is very concerned that under the 1977 NASA/DOD pricing agreement, shuttle launch costs for Department of Defense missions greatly exceed Department of Defense reimbursements. Therefore, the Committee directs NASA to renegotiate the NASA/DOD pricing agreement to reflect full reimbursement of costs for DOD flights beginning in 1985.

##### *Shuttle Operations*

The major goals for the operational success of the Space Shuttle are establishing an adequate orbiter fleet, increasing the number of flights, decreasing turn-around time, and decreasing the cost per flight. NASA faces a major challenge in shifting the organizational and institutional bias from a research and development character to an operational character. NASA's success in meeting this challenge will depend largely on achieving self discipline within the agency in avoiding unnecessary engineering changes, in reducing duplication between government and contractor responsibilities and capabilities, and in evolving an acquisition strategy which makes maximum use of competitive procurements.

#### UNIVERSITY BASED SPACE SCIENCE

The Committee recognizes that universities, research institutes and NASA centers have all made vital contributions to space science and exploration, and together with the Aerospace industry have brought the United States to its current leadership position in space.

The Committee reaffirms the special importance of university participation in space science research as essential to the "preservation of the role of the United States as a leader in aeronautic space science and technology." (Sec. 102 (c)(5) of the NASA Act of 1958) since only through strong university programs can the preparation of the next generation of space scientists and engineers be assured.

Therefore, the Committee encourages NASA to include in its program planning specific steps designed to ensure the future vitality and productivity of university-based research and training in the space sciences. Such proposals should clearly reflect the importance of balanced programs in Planetary Exploration, Physics & Astronomy, and the Life Sciences to the continued health of basic space science and education.

#### PLANETARY EXPLORATION

The planetary exploration program has been the source of much national pride and international prestige. The program objectives are to understand the origin and evolution of the solar system, to better understand the Earth through comparative studies with the other planets, and to understand how the appearance of life in the solar system is related to the chemical history of the system. The preeminence of the United States program of planetary exploration has been based on technology leadership and on a foundation of strong, coordinated research and analysis programs.

The Committee is deeply concerned with the deemphasis of NASA's planetary activities just at the time other nations are planning increased planetary efforts. The Soviets have successfully landed spacecraft on, and drilled into the surface of Venus. The Soviets, Europeans, and Japanese are planning to launch spacecraft to study Halley's comet, while the United States has no plans. While the Soviets and others gain knowledge and improve their systems and sensors for the future, NASA is preparing to retire from the competition.

The fiscal year 1983 budget request reflects the beginning of the end for planetary exploration with the deletion of the Venus Orbiting Imaging Radar mission, termination of operations of the Pioneer spacecraft, and reduction of support to the university community by fifty percent.

In April 1981, the Subcommittee on Space Science and Applications recommended that NASA should reaffirm the Nation's commitment for continued exploration of our solar system through intensive investigation of other planets. The Space Science board recently released a report, "Strategy for Earth Science from Space in the 1980's" which concluded—"A continuing challenge to the earth and planetary sciences is to account for the profoundly unique attributes of the Earth in the context of the common processes that have shaped the formation and evolution of the solar system."

The Committee on Science and Technology disagrees with the view expressed by critics that planetary exploration activities should be relegated to a position of secondary importance but supports the following view put forth in the 1978 Space Science Board Report, "Strategy for Exploration of the Inner Planets:"

Scientific interest in the planets lies in the expectation that investigation of these bodies will contribute greatly not only toward unraveling the evolution of the solar system but also that it will enhance our understanding of the processes that take place in the atmosphere, the oceans, and the deep interior of the earth. . . . By acquiring an understanding of the solar system and its components, our ability to decipher the evolutionary course of the earth and its environments will be significantly enlarged.

The Committee firmly believes that a renewed commitment to the planetary exploration program will expand the frontiers of technology as well as the scope of human inquiry and imagination. These are the basic ingredients necessary for sustaining a productive, inventive Nation.

#### SOLAR ELECTRIC PROPULSION

After the completion of Galileo and VOIR, a major gap in our basic comprehension of the solar system will be the knowledge of the primitive bodies—comets and asteroids. They thus take on special priority for near-term reconnaissance missions. The multitude and diversity of the primitive bodies and their orbital characteristics argue strongly that the most efficient mode of exploration uti-

lizes low-thrust propulsion. Low-thrust propulsion also provides a beneficial flexibility in the conduct of other outer planetary missions and in launch-date flexibility. Therefore, the Committee urges that the basic low-thrust technology be maintained in a state of readiness for initiation of development.

#### SPACE APPLICATIONS

The Committee continues to express strong support for a vigorous program of civilian space applications as the key element of assuring maximum utilization of space technology for the benefit of mankind. Although the United States has served as the leader in development of satellite communications technology and remote sensing technology, this leadership is being challenged by the Europeans and Japanese.

The successful exploitation of space technology for practical earth benefit involves not only the development of the technology but the transfer of technology and development of an infrastructure involving institutions and people outside the aerospace community who are unfamiliar with space applications capabilities. Institutional issues involving the respective roles of NASA and other Federal agencies and the role of government vis a vis the private sector are the major inhibition to broader application of space capability. Therefore, NASA must present itself as a steady and reliable partner in developing and demonstrating space technology for earth applications.

The Committee believes that we have only scratched the surface in the application of remote sensing to the oceans, to the weather, and to the land. While weather satellites have been in use for 22 years, we continue to improve our use of the information they provide. LANDSAT D, when launched later this year, will begin to provide information from totally new spectral regions. If the appropriate research investment is made, we can anticipate great benefits from this information. The short-lived SEASAT gave us a hint of what can be learned from sensing the oceans in new spectral regions. The Committee emphasizes that we need more research on the meaning of the remotely-sensed data and more interaction with the user communities in order to discover and develop the most productive applications. Further, a better understanding in both these areas will enable NASA to better plan their future research programs.

Another area the Committee believes to have great potential is materials processing in space. This potential probably will take two different routes: Certain very high-value, low-volume materials—such as pharmaceuticals—may actually be produced, purified, or otherwise processed in space where zero-gravity makes possible some things that cannot be done on earth. Other materials or processes will be studied in space in order to improve the understanding of processes to be carried out on earth. This improved understanding can then be used to improve yield, performance or cost of the terrestrial processing. Again there is a need for technology transfer activities to develop understanding and an infrastructure

to take advantage of the technology associated with materials processing in space. The Committee strongly encourages NASA to conduct the vigorous applications program needed to develop such an infrastructure.

#### PROGRAM MANAGEMENT

The Committee requests that NASA submit on a semiannual basis project status reports on major programs including the Space Shuttle, Galileo, Space Telescope, Landsat D, International Solar Polar Mission, and the Gamma Ray Observatory. These reports should contain descriptive information about the programs including progress, problems and pending decisions. Any variance in the program milestones, cost, scope or performance should be analyzed.

In addition, the Committee requests that NASA report to it within 30 days of determining that an overrun of 15 percent or more will occur on any major project, including the Space Shuttle and associated projects such as the Filament Wound Case for the Solid Rocket Boosters, Space Telescope, Galileo, Landsat D, Gamma Ray Observatory, and any development of a new upper stage for the Shuttle.

The Committee also requests that NASA provide a detailed assessment on each new program start of how the recommendations of the Hearth study are being implemented for that program. The Committee further requests such an assessment for the Gamma Ray Observatory be submitted by September 30, 1982.

#### DOE SPONSORED ENERGY R&D

The Committee is concerned that NASA's reported plan to phase down and eliminate its management of Department of Energy R&D programs during fiscal year 1982 and 1983 will foreclose Congressional options on the fiscal year 1983 DOE budget. Therefore, the Committee directs NASA to protect the capability at the Lewis Research Center and the Jet Propulsion Laboratory to continue managing the large wind, vehicle propulsion, electric and hybrid vehicle, photovoltaic, solar and fossil R&D programs until final Congressional decisions are reached. The Committee believes that an energy staff of at least 160 civil service personnel at Lewis is required to maintain the current high quality operation of these important national programs.

## EXPLANATION OF THE BILL

### TITLE I

The bill authorizes Research and Development in section 101(a), Construction of Facilities in section 101(b), and Research and Program Management in section 101(c). These activities are explained below.

### RESEARCH AND DEVELOPMENT

#### SUMMARY

	Authorization, FY 1983	Page No.
1. Space Shuttle .....	\$1,706,500,000	.....
2. Space flight operations .....	1,699,000,000	.....
3. Expendable launch vehicles .....	42,800,000	.....
4. Physics and astronomy .....	463,500,000	.....
5. Planetary exploration .....	177,600,000	.....
6. Life sciences .....	55,700,000	.....
7. Space applications .....	330,300,000	.....
8. Technology utilization .....	9,000,000	.....
9. Aeronautical research and technology .....	267,100,000	.....
10. Space research and technology .....	128,000,000	.....
11. Tracking and Data Acquisition .....	498,900,000	.....
<b>Total .....</b>	<b>5,378,400,000</b>	

#### 1. SPACE SHUTTLE, \$1,706,500,000

##### FISCAL YEAR 1983 FUNDING LEVEL

Production .....	\$1,579,000,000
Changes/systems upgrading .....	72,500,000
Performance augmentation .....	55,000,000
<b>Total, Space Shuttle .....</b>	<b>1,706,500,000</b>

The Space Shuttle is the key element of a versatile, economical space transportation system that will provide a wide variety of national and international users with round trip access to space be-

**CONSTRUCTION OF FACILITIES**

**Summary**

Projects	Authorization FY 1983	Page No.
1. Space Shuttle facilities at various locations, as follows:		
A. Modifications to solid rocket booster refurbishment and subassembly facilities; Kennedy Space Center.....	\$1,700,000	.....
B. Modifications of manufacturing and final assembly facilities for external tanks; Michoud Assembly Facility.....	17,845,000	.....
C. Minor shuttle—unique projects; various locations.....	1,860,000	.....
2. Rehabilitation and modification for payload ground support operations; Kennedy Space Center.....	1,740,000	.....
3. Rehabilitation and modification of utility systems; Goddard Space Flight Center.....	2,840,000	.....
4. Rehabilitation of airfield; Wallops Flight Center.....	2,150,000	.....
5. Construction of data analysis facility; Dryden Flight Research Facility.....	4,500,000	.....
6. Modifications to the 4- by 7-meter low-speed tunnel (1212-C); Langley Research Center.....	7,200,000	.....
7. Modifications to upgrade the Transonic Dynamics Tunnel (648); Langley Research Center.....	9,000,000	.....
8. Modification of rocket engine test facility for altitude testing; Lewis Research Center.....	995,000	.....
9. Modification of 450 psi air system in engine research building; Lewis Research Center.....	2,920,000	.....

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Projects	Authorization FY 1983	Page No.
10. Repairs of facilities at various locations.....	15,000,000	.....
11. Rehabilitation and modification of facilities at various locations.....	20,000,000	.....
12. Minor construction of new facilities and additions to existing facilities at various locations.....	4,000,000	.....
13. Facility planning and design.....	8,250,000	.....
Total construction at facilities.....	100,000,000	.....

**1. SPACE SHUTTLE FACILITIES AT VARIOUS LOCATIONS, \$21,465,000**

**A. MODIFICATIONS TO SOLID ROCKET BOOSTER REFURBISHMENT AND SUBASSEMBLY FACILITIES; KENNEDY SPACE CENTER, \$1,700,000**

This project provides for modifications to facilities used in the refurbishment and subassembly of solid rocket booster (SRB) forward and aft skirts at the Kennedy Space Center (KSC). These facilities include the Vehicle Assembly Building (VAB) low bay, the Hypergol Maintenance Facility (HMF) and Hangar N, which sequentially process forward and aft skirts to ready them for subsequent flights.

The first modifications to the VAB low bay and to the HMF were programmed in the FY 1976 budget and were intended to provide the initial operational capability. It was recognized from the outset that additional modifications would be necessary once refurbishment procedures were refined and matured. Experience from processing STS-1 indicates that both the VAB low bay and the HMF SRB operations can support only eight flights per year. In the low bay, the present curing cells block efficient access to the spray booths, and additional curing cells are needed. To add new curing cells and to eliminate the congestion near the spray booths, a partial rearrangement of the low bay is required. Similarly, in the hmf, tvc processing would be greatly enhanced by the rearrangement of interior floor space, including the relocation of some shop areas to Hangar N.

**B. MODIFICATION OF MANUFACTURING AND FINAL ASSEMBLY FACILITIES FOR EXTERNAL TANKS; MICHLOUD ASSEMBLY FACILITY, \$17,845,000**

This project continues work funded in Fiscal Year 1982 and prior years for modification of manufacturing and final assembly facilities at the Michoud Assembly Facility (MAF) for the Space Shuttle External Tank (ET) production. The ET is the component of the Space Shuttle that supplies propellants to the Orbiter's main engines. Each ET consists of three major components: a liquid oxygen (LO<sub>2</sub>) tank, an intertank and a liquid hydrogen (LH<sub>2</sub>) tank. The facility modifications at MAF are required to provide capability for fabrication and assembly, testing and cleaning, application of a

## RESEARCH AND PROGRAM MANAGEMENT, \$1,168,900,000

### SUMMARY OF BUDGET PLAN BY FUNCTION

Personnel and Related Costs .....	\$829,900,000
Travel.....	24,100,000
Operation of Installation.....	324,900,000
General reduction .....	-10,000,000
<b>Total.....</b>	<b>1,168,900,000</b>

The Research and Program Management appropriation funds the performance and management of research, technology and test activities at NASA installations, and the planning, management and support of contractor research and development tasks necessary to meet the Nation's objectives in aeronautical and space research. Objectives of the efforts funded by the Research and Program Management appropriation are to (1) provide the technical and management capability of the civil service staff needed to conduct the full range of programs for which NASA is responsible, (2) maintain facilities and laboratories in a state of operational capability and manage their use in support of research and development programs, and (3) provide effective and efficient technical and administrative support for the research and development programs. For FY 1983, an appropriation of \$1,178,900,000 is requested.

More than 21,200 civil service personnel at eight installations and Headquarters are funded by the Research and Program Management appropriation. This civil service workforce is NASA's most important resource and is vital to future space and aeronautics research activities. Seventy percent of the Research and Program Management appropriation is needed to provide for salaries and related costs of this civil service workforce. About two percent is for travel, which is vital to successfully manage the Agency's in-house and contracted programs. The remaining amount of the Research and Program Management appropriation provides for the research, test and operational facility support, and for related goods and services necessary to successfully operate the NASA installations and to efficiently and effectively accomplish NASA's approved missions.

In 1981 a Headquarters organizational change provided for the NASA field centers to report to the Program Associate Administrator responsible for the major portion of their technical program. Each of the eight NASA installations is assigned certain principal roles of fundamental importance in meeting NASA's overall program goals. These roles reflect the characteristic competence of each installation based on demonstrated capabilities and capacities. They are summarized by the cognizant program office as follows:

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### Office of Space Transportation Systems

*Johnson Space Center:* Principal roles are management of the integrated Space Shuttle program and Orbiter development and production; astronaut and mission specialist selection and training; STS Operations including mission planning, operational procedures and flight control; and application of remote sensing to agricultural assessments and other Earth resources uses.

*Kennedy Space Center:* Principal roles are the launch of Space Shuttle development and test flights; the ground operational phase of the Space Transportation System; and the preparation and launch of payloads on expendable launch vehicles.

*Marshall Space Flight Center:* Principal roles are management of the Space Shuttle main engine, solid rocket booster and external tank projects; management of NASA's development activities on the Spacelab and Inertial Upper Stage projects; management of large automated spacecraft projects such as the Space Telescope; and experiments in materials processing in space.

*National Space Technology Laboratories:* Principal roles are the support of Space Shuttle engine development and testing; regional Earth resources research and technology transfer; and support functions for other Government agencies located there.

### Office of Space Science and Applications

*Goddard Space Flight Center:* Principal roles are the development and operation of Earth orbital flight experiments and automated spacecraft to conduct scientific investigations and demonstrate practical applications; the management of the tracking and data acquisition activities for Earth orbital missions; management of the Delta launch vehicle program; management and launch of sounding rockets and balloons; and operation of an instrumented flight range for aeronautical and space research. In 1981, the Wallops Flight Center was consolidated with the designated an operational element and component installation of the Goddard Space Flight Center.

### Office of Aeronautics and Space Technology

*Ames Research Center:* Principal roles are short haul aircraft and rotorcraft research and technology, computational fluid dynamics, planetary probe research, life sciences, aeronautical flight research and testing, as well as providing the primary landing site for Space Shuttle orbital test flights and a contingency landing site for operational missions. In 1981, the Dryden Flight Research Center was consolidated with the Ames Research Center and became the Dryden Flight Research Facility, an operational element and component installation of Ames.

*Langley Research Center:* Principal roles are long haul aircraft research and technology, emphasizing fuel conservation, safety and environmental effects; aerospace structures technology; environmental quality monitoring by remote sensing; and advanced space systems technology.

*Lewis Research Center:* Principal roles are aeronautical and space propulsion research and technology; space communications research and technology; space energy systems research and tech-

nology; and management of the Centaur expendable launch vehicle program.

The 1983 budget provides the necessary resources to apply these in-house capabilities to appropriate program activities. Detailed data on funding requirements is provided in the section on each installation. A summary description of, and the funding required by functional category, are as follows:

#### PERSONNEL AND RELATED COSTS

##### Compensation and Benefits

###### Compensation:

(a) *Permanent Positions*—This part of Personnel and Related Costs covers the salaries of the full-time permanent civil service workforce and is the largest part of the functional category. As noted above, the 1983 funds will provide for 21,219 full-time permanent civil service employees.

(b) *Other Than Full-Time Permanent Positions*—This category includes the salaries of NASA's non-permanent workforce. Programs such as students participating in cooperative training, summer employment, youth opportunity, and temporary clerical support are covered in this category.

(c) *Reimbursable Detailees*—In accordance with existing agreements, NASA reimburses the parent Federal organizations for the salaries and related costs of persons detailed to NASA.

(d) *Overtime and Other Compensation*—Overtime, holiday, post and night differential, and hazardous duty pay are included in this category. Also included are incentive awards for outstanding achievement and superior performance awards.

###### Benefits:

In addition to compensation, NASA makes an employer's contribution to personnel benefits as authorized and required by law. These benefits include contributions to the Civil Service Retirement Fund, employees' life and health insurance, and social security contributions for non-permanent personnel. Payments for severance pay are made to former employees involuntarily separated through no fault of their own.

##### Supporting Costs

*Transfer of Personnel:* Relocation costs, such as the expenses of selling and buying a home, and the movement and storage of household goods are provided under this category.

*Office of Personnel Management Services:* The Office of Personnel Management is reimbursed for certain activities such as security investigations on new hires, recruitment advertising, and career-maturity surveys.

*Personnel Training:* Training is provided within the framework of the Government Employees Training Act of 1958. Part of the training costs consist of courses offered by other Government agencies, and the remainder provides for training through nongovernment sources.

## SECTIONAL ANALYSIS

A BILL To authorize appropriations to the National Aeronautics and Space Administration for research and development, construction of facilities, and research and program management, and for other purposes

### TITLE I

#### Section 101

*Subsections (a), (b), and (c)* would authorize to be appropriated to the National Aeronautics and Space Administration funds, in the total amount of \$6,612,900,000, as follows: (a) for "Research and development," a total of 11 program line items aggregating the sum of \$5,334,000,000; (b) for "Construction of facilities," a total of 13 line items aggregating the sum of \$100,000,000; and (c) for "Research and program management," \$1,168,900,000. Subsection (c) would also authorize to be appropriated such additional or supplemental amounts as may be necessary for increases in salary, pay, retirement, or other employee benefits authorized by law.

*Subsection 101(d)* would authorize the use of appropriations for "Research and development" without regard to the provisions of subsection 101(g) for: (1) items of a capital nature (other than the acquisitions of land) required at locations other than NASA installations for the performance of research and development contracts; and (2) grants to nonprofit institutions of higher education, or to nonprofit organizations whose primary purpose is the conduct of scientific research, for purchase or construction of additional research facilities. Title to such facilities shall be vested in the United States unless the Administrator determines that the national program of aeronautical and space activities will best be served by vesting title in any such grantee institution or organization. Moreover, each such grant shall be made under such conditions as the Administrator shall find necessary to insure that the United States will receive benefit therefrom adequate to justify the making of that grant.

In either case, no funds may be used for the construction of a facility in accordance with this subsection, the estimated cost of which, including collateral equipment, exceeds \$250,000, unless the Administrator notifies the Speaker of the House, the President of the Senate and the specified committees of the Congress of the nature, location, and estimated cost of such facility.

*Subsection 101(e)* would provide that, when so specified and to the extent provided in an appropriation act, (1) any amount appropriated for "Research and development" or for "Construction of facilities" may remain available without fiscal year limitation, and (2) contracts for maintenance and operation of facilities, and support services may be entered into under the "Research and pro-

gram management" appropriation for periods not in excess of twelve months beginning at any time during the fiscal year.

*Subsection 101(f)* would authorize the use of not to exceed \$25,000 of the "Research and program management" appropriation for scientific consultations or extraordinary expenses, including representation and official entertainment expenses, upon the authority of the Administrator, whose determination shall be final and conclusive.

*Subsection 101(g)* would provide that of the funds appropriated for "Research and development" and "Research and program management", not in excess of \$75,000 per project (including collateral equipment) may be used for construction of new facilities and additions to existing facilities, and for repair, rehabilitation, or modification of facilities.

#### *Section 102*

Section 102 would authorize upward variations of the sums authorized for the "Construction of facilities" line items (other than facility planning and design) of 10 percent at the discretion of the Administrator or his designee, or 25 percent following a report by the Administrator or his designee to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate on the circumstances of such action, for the purpose of meeting unusual cost variations. However, the total cost of all work authorized under these line items may not exceed the total sum authorized for "Construction of facilities" under subsection 101(b), paragraphs (1) through (12).

#### *Section 103*

Section 103 would provide that not more than one-half of 1 percent of the funds appropriated for "Research and development" may be transferred to the "Construction of facilities" appropriation and, when so transferred, together with \$10,000,000 of the funds appropriated for "Construction of facilities", shall be available for the construction of facilities and land acquisition at any location if the Administrator determines (1) that such action is necessary because of changes in the aeronautical and space program or new scientific or engineering developments, and (2) that deferral of such action until the next authorization act is enacted would be inconsistent with the interest of the Nation in aeronautical and space activities. However, no such funds may be obligated until 30 days have passed after the Administrator or his designee has transmitted to the Speaker of the House, the President of the Senate and the specified committees of Congress a written report containing a description of the project, its cost, and the reason why such project is necessary in the national interest, or each such committee before the expiration of such 30-day period has notified the Administrator that no objection to the proposed action will be made.

#### *Section 104*

Section 104 would provide that, notwithstanding any other provision of this Act—

(1) no amount appropriated pursuant to this Act may be used for any program deleted by the Congress from requests as originally made to either the House Committee on Science and Technology or the Senate Committee on Commerce, Science, and Transportation,

(2) no amount appropriated pursuant to this Act may be used for any program in excess of the amount actually authorized for that particular program by subsections 101(a) and 101(c), and

(3) no amount appropriated pursuant to this Act may be used for any program which has not been presented to or requested of either such committee,

unless (A) a period of 30 days has passed after the receipt by the Speaker of the House, the President of the Senate and each such committee of notice given by the Administrator or his designee containing a full and complete statement of the action proposed to be taken and the facts and circumstances relied upon in support of such proposed action, or (B) each such committee before the expiration of such period has transmitted to the Administrator written notice to the effect that such committee has no objection to the proposed action.

#### *Section 105*

Section 105 would express the sense of the Congress that it is in the national interest that consideration be given to geographical distribution of Federal research funds whenever feasible and that the National Aeronautics and Space Administration should explore ways and means of distributing its research and development funds whenever feasible.

#### *Section 106*

Section 106 would provide that the Act may be cited as the "National Aeronautics and Space Administration Authorization Act, 1983."

### TITLE II

Title II provides authorization for the Secretary of Commerce to operate a civil land remote sensing space satellite system.

Section 201(a) authorizes the Secretary to provide for the management and operation of such a system, to provide for user fees, and to plan for the ownership and operation of such future systems by the private sector when in the national interest.

Section 201(b) authorizes \$14,955,000 for fiscal year 1983 for the purpose of carrying out the provisions of this title.

### COST AND BUDGET DATA

The bill will authorize appropriations for fiscal year 1983 in the amount of \$6,662,300,000. In accordance with the requirements of Rule XIII, clause 7 of the Rules of the House of Representatives, the Committee's estimate for the next five years of the NASA budget request is as follows:

Fiscal year—	
1983.....	6,662,300,000
1984.....	6,522,400,000
1985.....	6,069,500,000
1986.....	5,517,300,000
1987.....	5,463,700,000

These estimates do not include provisions for any new program or program augmentation that may be recommended nor do they include any provisions for administrative adjustments that may be required.

### EFFECT OF LEGISLATION ON INFLATION

In accordance with rule XI, clause 2(1)(4) of the Rules of the House of Representatives this legislation is assessed to have no adverse long-run inflationary effects and, in fact, to have positive economic benefits. NASA expenditures are labor intensive, with more than 80 percent of spending directly for jobs and the remainder for materials. NASA employs about 21,000 civil servants and supports about 107,000 contractor employees. Assuming a multiplier effect of 2.5, the total, short-run employment effect on the United States' economy is about 320,000 jobs. This represents less than one-half of one percent of the total civilian labor force in the United States—to small a number for NASA alone to have a significant national inflationary effect, although there could be some specific cases of industrial and regional employment and price changes influenced by NASA expenditures.

The most significant economic effects of NASA spending are the long-run economic growth from new technologies developed for the space and aeronautics programs. Many NASA-sponsored advances in air and space transportation communications satellites, remote sensing satellites, and other innovations have improved the productive capacity of industry and stimulated the development and growth of many new businesses. These expanded business opportunities have and are expected to continue to stimulate more productive, non-inflationary private sector economic growth and job creation.

Although it is difficult to assess the results of the various macroeconomic studies of the effects of NASA spending on GNP, it is apparent from analyses done by the Midwest Research Institute, Mathematics, Inc., and others, that NASA high technology research

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and development expenditures have returned more to the economy in substantial and long-lasting productivity gains than has been spent. Therefore, we believe that NASA expenditures are non-inflationary and show positive economic returns in the long-run.

### CHANGES IN EXISTING LAW MADE BY THE BILL, AS REPORTED

In compliance with clause 3 of Rule XIII of the Rules of the House of Representatives no changes in existing law are made by the bill, as reported.

### OVERSIGHT FINDINGS AND RECOMMENDATIONS

Pursuant to clause 2(1)(3)(A), rule XI, and under the authority of rule X, clause 2(b)(1) and clause (3)(f), of the Rules of the House of Representatives the following findings and recommendations are under consideration by the Committee on Science and Technology:

[Excerpted from pages 1-2, NASA Space Communications Program Report, Serial S, February 1982]

#### FINDINGS AND RECOMMENDATIONS

##### FINDING NO. 1

No single private company can afford to finance the large capital outlays nor bear the high risks that broad-scale space communications R. & D. efforts require. This is not to say that private industry has not in the past and will not in the future engage in significant R. & D. Unlike NASA's R. & D., industrial research and development is product- or service-oriented. At this point in the development of 30/20 GHz technology, there appears to be too many technical uncertainties and too much financial risk for private industry to undertake a 30/20 GHz demonstration program.

##### FINDING NO. 2

NASA's space communications R. & D. has been successful. NASA's work from 1960 to 1973 provided the basic R. & D. on which low-risk commercial systems could be developed in the private sector. These commercial systems, in turn, provide services to millions of people throughout the world. Furthermore, the success of U.S. firms in the satellite communications industry have given the U.S. a strong lead in this important segment of business. This lead is now threatened by increased foreign competition.

##### FINDING NO. 3

The private sector should continue to be invited to participate in shaping the direction of NASA's work in 30/20 GHz R. & D. Participation by users in these experiments is essential in order to develop user acceptance and demand, and to demonstrate mission cost-effectiveness. Only such demonstrations can provide the commercial communications satellite industry with reasonable assur-

ance of potential economic payoff and thus encourage the implementation operational service on a timely basis.

FINDING NO. 4

Without the continuation of a strong Federal R. & D. program, dominance by foreign countries of the strategic multi-billion dollar international communications satellite market of the 1990's is likely. The sale by U.S. manufacturers of \$14 to \$20 billion worth of satellite communications equipment has obvious balance of payments benefits. If the U.S. buys its 30/20 GHz equipment from abroad, then there could be an outflow of as much as \$10 to \$15 billion from the U.S. during the 1990 to 2000 period for equipment purchases.

*Recommendation: The Federal Government should continue high-risk, long-term, and expensive R. & D. activities that will not likely be undertaken by private industry. Foreign competition in space communications is subsidized by their respective governments, and the Federal Government should continue R. & D. activities to guarantee the U.S. a substantial portion of the future space communications market.*

FINDING NO. 5

A private consortium of satellite carriers and builders to share the developmental costs of the 30/20 GHz R. & D. program is a possible alternative. Witnesses agreed that resolution of the many economic, corporate, and legal obstacles of such a consortium would be too involved and too lengthy a process to allow U.S. involvement in the technology development that would guarantee a 1986-88 flight demonstration of 30/20 GHz technology.

*Recommendation: The satellite carriers and builders consortium alternative should receive further consideration by industry and the government for future space communications research and development activities.*

[Excerpted from pages 1-4, Civil Land Remote Sensing System Report, Serial T, December 1981]

FINDINGS AND RECOMMENDATIONS

FINDING NO. 1

The United States has a preeminent position in remote sensing technology for monitoring and detecting earth resources and environmental quality which is a source of international responsibility as well as national pride.

FINDING NO. 2

As the innovator of global remote sensing technology the United States has an opportunity and an obligation to exploit this capability to promote more harmonious international relations and Third World development.

FINDING NO. 3

France, Japan, India, and European Space Agency are each involved in the development of space borne remote sensing systems with launches planned in the 1980's. Therefore, in the mid-1980's, the United States will no longer be the sole source of satellite remotely sensed data.

*Recommendation: The United States should develop a foreign policy initiative to exploit our remote sensing capability to promote more harmonious international relations and Third World development. The National Aeronautics and Space Administration in coordination with the State Department should develop a long range plan that would optimize global capability to utilize satellite remote sensing data for consideration at the upcoming United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE-82).*

FINDING NO. 4

The multi spectral scanner (MSS) instrument which has been carried on Landsats 1, 2, and 3 has been adequately demonstrated for deployment on an operational space system.

FINDING NO. 5

Landsat D is expected to demonstrate the technology for an operational land observing system. However additional spacecraft will be required to provide assurance of timely and uninterrupted service.

FINDING NO. 6

Elimination of funding for follow-on space hardware due to budget constraints has again threatened long-term data continuity, a major inhibition to market development.

FINDING NO. 7

Under current administration plans the United States earth remote sensing program will terminate when the last of two Landsat D satellites fail unless by then the private sector has taken over the program.

FINDING NO. 8

To date the most serious concept advanced by the private sector involves merging the weather satellite and land remote sensing satellites into a single system operated by a designated private sector entity.

*Recommendation: The National Oceanic and Atmospheric Administration should carefully assess the feasibility of private sector operation of both the weather satellites and land remote sensing satellites and report findings to the Congress by August 31, 1982. Any selection of a designated private sector entity should be accomplished through a competitive process.*

## FINDING NO. 9

The management and technical requirements of an operational system can be met by a number of private organizations. One of the major unknowns confronting commercialization is the lack of market definition. Although the Government may represent 50 percent of the market, neither the actual size of the Government market, nor the technical requisites for compliance of Government needs have been defined.

*Recommendation: A set of federally funded, competitive, detailed definition studies should be contracted to industry by the National Oceanic and Atmospheric Administration to define the technical, market, investment and operational aspects of a system that would meet government and private sector needs. The primary objective of each study would be to provide a realistic basis for the determination of optimum government and industry roles and a development schedule for an operational civil land remote sensing system.*

## FINDING NO. 10

Private sector ownership of a civil land remote sensing system would likely involve exclusive rights to the Government market and protection from competition for a period after selection. The value added segment of the market should be open to encourage new users, industries and market expansion. Copyright provisions will be necessary to protect both the operator and the additive value industry.

## FINDING NO. 11

The current policy of non-discriminatory access to data creates a favorable climate for national and international data exchange.

*Recommendation: The United States should continue the policy of open access to civil remote sensing data and continue to encourage international exchange and assistance.*

## FINDING NO. 12

Many of the operational guidelines for a private sector operator could be written into a contractual agreement. The framework should include: (1) protection from competition for a period after selection, (2) compliance with U.S. foreign policy and security requirements, (3) minimum performance standard for raw data, (4) nondiscriminatory access to data, (5) assurance of fair pricing policies and (6) a performance review process.

## FINDING NO. 13

Since the Federal Government may represent approximately half of the initial market base of any private operation, significant influence on pricing policy by Government and promulgation of regulations or specifications will be inevitable.

## FINDING NO. 14

Government should continue high risk research and development on next-generation components and systems after the commercialization of current generation remote sensing technology occurs.

## FINDING NO. 15

Government/industry joint ventures represent an institutional mechanism which should receive further consideration for the transition of financial responsibility for land observing systems from the Government to the private sector.

## FINDING NO. 16

Government should recover a larger share of Landsat costs, but this should be done in steps and with caution to encourage market expansion and growth of users. Research and development costs should be considered as sunk costs and should not be amortized.

## FINDING NO. 17

State and federal agencies make extensive use of Landsat data for resource inventories, monitoring and planning. Fifteen states have routine operational capabilities to use Landsat data; state use of Landsat data has grown 61 percent since 1978. States are more concerned that data be continuously provided at a fair price than with who operates the system.

*Recommendation: Long-lead data pricing schedules should be provided to enable state governments to adjust their legislative budgets in order to alleviate adverse impacts on state programs.*

## FINDING NO. 18

Universities continue to be a major contributor in remote sensing research and training activities which are important in expanding the use of this complex technology. University research and training will be inhibited by significant cost increases for data.

## FINDING NO. 19

In a historical perspective the premier policy decisions that have had a positive effect on the development of civil land remote sensing technology have been: (1) long-range development of research and development beginning in the early 1970's, and (2) non-discriminatory international dissemination of data.

## FINDING NO. 20

The greatest negative influence on the evolution of an operational civil land remote sensing system has been the inability to fully evaluate the relationship between Landsat and national needs and to provide a long-range policy that is continuously reflected in the budget.

## CONGRESSIONAL BUDGET ACT INFORMATION

This bill provides for new authorization rather than new budget authority and consequently the provisions of section 308(a) of the Congressional Budget Act of 1974 are not applicable. No authorization for State or local financial assistance is included in the bill.

### ESTIMATE AND COMPARISON, CONGRESSIONAL BUDGET OFFICE

Pursuant to clause (2)(1)(3)(C) of rule XI of the Rules of the House of Representatives the report of the Congressional Budget Office is included.

#### CONGRESSIONAL BUDGET OFFICE—COST ESTIMATE

MAY 5, 1982.

1. Bill number: H.R. 5890.
  2. Bill title: National Aeronautics and Space Administration Authorization Act, 1983.
  3. Bill status: As ordered reported by the House Committee on Science and Technology, April 28, 1982.
  4. Bill purpose: The bill authorizes the appropriation to the National Aeronautics and Space Administration (NASA) of \$6,647 million for fiscal year 1983: \$5,378 million for research and development, \$100 million for construction of facilities, and \$1,169 million for research and program management. The authorization for research and development includes \$1,706 million for the space shuttle, \$1,699 million for space flight operations, \$464 million for physics and astronomy, \$330 million for space applications, \$267 million for aeronautical research, and \$499 million for tracking and data acquisition. The bill also authorizes such additional amounts as may be necessary for increases in salary, pay, retirement, or other employee benefits.
- The amounts authorized exceed the President's request of \$6,613 million for NASA in fiscal year 1983 by \$34 million, and are \$707 million above fiscal year 1982 appropriations to date for NASA.
- In addition, title II of the bill authorizes an appropriation of \$15 million for fiscal year 1983 for the management and operation of a civil land remote sensing space satellite system, including the LANDSAT D and D' satellite systems, transferred from NASA to the Department of Commerce. The title also authorizes the Department to recover its costs through the imposition of user fees and to plan for the ownership and operation of future civil remote sensing systems by the private sector, which must be approved by both the House Committee on Science and Technology and the Senate Committee on Commerce, Science, and Transportation.

5. Cost estimate:

(By fiscal year, in millions of dollars)

	1983	1984	1985	1986	1987
<b>Estimated authorization level:</b>					
NASA—Civilian space program (Function 250)	6,380				
NASA—Aeronautics (Function 400)	267				
NASA—Allowance for pay increase (Function 920)	55				
Department of Commerce (Function 300)	15				
Offsetting receipts (Function 300)	-15				
<b>Total</b>	<b>6,702</b>				
<b>Estimated outlays:</b>					
NASA—Civilian space program (Function 250)	4,675	1,468	223	12	2
NASA—Aeronautics (Function 400)	249	12	6		
NASA—Allowance for pay increase (Function 920)	52	3			
Department of Commerce (Function 300)	15				
Offsetting receipts (Function 300)	-15				
<b>Total</b>	<b>4,976</b>	<b>1,483</b>	<b>229</b>	<b>12</b>	<b>2</b>

6. Basis of estimate: The estimate assumes that the full amounts authorized will be appropriated prior to the beginning of fiscal year 1983. The increase in salaries and benefits was estimated at 6.74 percent of the personnel compensation provided by the authorization. CBO estimates that an additional \$55 million will be necessary for this increase. CBO also assumes that the National Oceanic and Atmospheric Administration will recover all of the costs associated with the civil land remote sensing system. Estimated annual outlays are based on historical spending patterns of the major NASA programs.

7. Estimate comparison: None.

8. Previous CBO estimate: None.

### OVERSIGHT FINDINGS AND RECOMMENDATIONS, COMMITTEE ON GOVERNMENT OPERATIONS

No findings or recommendations on oversight activity pursuant to clause 2(b)(2), rule X, and clause 2(1)(3)(D), rule XI, of the Rules of the House of Representatives have been submitted by the Committee on Government Operations for inclusion in this report.

### COMMITTEE RECOMMENDATIONS

A quorum being present, the Committee approved the bill by voice vote.

### NASA RECOMMENDATIONS

This is a National Aeronautics and Space Administration legislation item approved with the exceptions noted in this report by the Office of Management and Budget, as indicated by the following letters:

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION,  
OFFICE OF THE ADMINISTRATOR,  
Washington, D.C., February 9, 1982.

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Hon. THOMAS P. O'NEILL, Jr.,  
Speaker of the House of Representatives,  
Washington, D.C.

DEAR MR. SPEAKER: Submitted herewith is a draft of a bill, "To authorize appropriations to the National Aeronautics and Space Administration for research and development, construction of facilities, and research and program management, and for other purposes," together with the sectional analysis thereof. It is submitted to the Speaker of the House of Representatives pursuant to Rule XL of the House.

Section 4 of the Act of June 15, 1959, 73 Stat. 75 (42 U.S.C. 2460), provides that no appropriation may be made to the National Aeronautics and Space Administration unless previously authorized by legislation. It is a purpose of the enclosed bill to provide such requisite authorization in the amounts and for the purposes recommended by the President in the Budget of the United States Government for fiscal year 1983. For that fiscal year, the bill would authorize appropriations totaling \$6,612,900,000, to be made to the National Aeronautics and Space Administration as follows:

- (1) for "Research and development" amounts totaling \$5,334,000,000;
- (2) for "Construction of facilities" amounts totaling \$100,000,000; and
- (3) for "Research and program management," \$1,178,900,000.

In addition, the bill would authorize such sums as may be necessary for fiscal year 1984, i.e., to be available October 1, 1983.

The enclosed draft bill follows generally the format of the National Aeronautics and Space Administration Authorization Act, 1982 (Public Law 97-96). However, the bill differs in substance from the prior Act in several respects.

First, subsections 1(a), 1(b), and 1(c), which would provide the authorization to appropriate for the three NASA appropriations, differ in the dollar amounts and/or the line items for which authorization to appropriate is requested.

Second, section 6 of Public Law 97-96, which added a new paragraph (6) to section 7 of title 18, United States Code, has been omitted since the amendment is now permanent law.

Third, section 7 of Public Law 97-96, which added new subsections (k) and (l) to section 305 of the National Aeronautics and Space Act of 1958, as amended, has been omitted since the amendment is now permanent law.

Fourth, section 8 of Public Law 97-96, which repealed section 6 of the National Aeronautics and Space Administration Authorization Act, 1970, as amended (42 U.S.C. 2462), has been omitted.

Fifth, section 9 of Public Law 97-96, which dealt with a one-time requirement for an assessment and report concerning Space Transportation System Upper Stages, has been omitted since the report was submitted to the appropriate Congressional committees.

Sixth, in addition to providing authorization of appropriations in the amounts recommended by the President in his Budget for fiscal

year 1983, the bill also would provide authorization for such sums as may be necessary for fiscal year 1984. It is specified that all of the limitations and other provisions of the bill applicable to amounts appropriated pursuant to section 1 shall apply in the same manner to amounts appropriated pursuant to section 6.

Finally, the last section of the draft bill, section 7, has been changed to provide that the bill, upon enactment, may be cited as the "National Aeronautics and Space Administration Authorization Act, 1983," rather than "1982."

Where required by section 102(2)(C) of the National Environmental Policy Act of 1969, as amended (42 U.S.C. 4332(2)(C)), and the implementing regulations of the Council on Environmental Quality, environmental impact statements covering NASA installations and the programs to be funded pursuant to this bill have been or will be furnished to the Committee on Science and Technology as appropriate.

The National Aeronautics and Space Administration recommends that the enclosed draft bill be enacted. The Office of Management and Budget has advised that such enactment would be in accord with the program of the President.

Sincerely,

JAMES M. BEGGS,  
Administrator.

ADDITIONAL VIEWS OF CONGRESSMAN GEORGE E. BROWN,  
JR. ON THE NATIONAL AERONAUTICS AND SPACE AD-  
MINISTRATION FY '83 AUTHORIZATION

Our deliberations on the FY '83 NASA authorization have been greatly limited by the absence of a coherent national space policy. This has come about because of the Committee's desire to stay within the Administration's arbitrarily constrained budget. The lack of a space policy, coupled with a limited budget results in a kind of haphazard program.

Congress, in the past, has generally played the limited role of reacting to White House initiatives in the development of space policy and programs. However, there seems to be no indication of vigorous Executive leadership at this time, and it appears unlikely to develop. With the ebbing of the forces generated by the launching of Sputnik, and the successful completion of the resulting Apollo program, our space policy is presently in disarray. Clearly if our space programs are to endure, we must direct our attention toward rearticulation of a national space policy. If we do not direct attention to this need, we will slowly erode our science and technology base in space and ultimately threaten the goal of economic recovery which we all want.

At first glance, the NASA budget seems to fare well under this Administration. However, when the increases in the shuttle program are taken into account, most other programs have suffered cuts. Of particular note is the planetary program. I commend the Committee for adding funding back to the planetary program, but even with the addition, the program is only funded at its FY '81 operating level. No 'new starts' are planned in the planetary program and we have yet to receive concrete proposals from the Ad-

ministration on its plans for restoring a vigorous planetary exploration program.

The refusal by the Committee to support the Solar Maximum Mission is just one example of the lack of leadership from the Administration in support of an important program. The Committee disagreed on priorities, while agreeing to the overall budget. Some programs had to be hurt under these constraints. Casual observers may note the spectacular missions conducted by this nation, but I would only indicate the lack of an aggressive plan for exploration of the solar system in the future.

I would like to comment along these same lines on the 'flip-flop' of the Committee on the question of an upper stage for future launches. The arguments for various stages have been made before, and I will not go into them here. I would only like to point out that here again we have an example of how the absence of a space policy, and therefore of a coherent program, has led to confusion of our needs for an upper stage. We need to know what we want to do in order to know what technology we need to develop and we need to know in a timely fashion.

Finally, I am equally disturbed by the lack of an aggressive stance taken by the Committee on the LANDSAT program. The Administration would like to see a transfer to the private sector, but does not know how it can be done. The result of this on our Committee consideration of the issue is a feeble attempt to retain some control of the situation without doing what is necessary to address the serious problems and questions. We are essentially 'treading water' on this issue as on most of our space programs as we await policy directives.

We are in difficult budgetary times. The answer in times such as these is to look very hard at our policies. With these clearly in mind we can decide the best course of action to achieve the economic recovery and progress which we all want.

GEORGE E. BROWN, Jr.

#### ADDITIONAL VIEWS OF HON. DAN GLICKMAN

The Science and Technology Committee has proposed a FY 1983 budget of \$267.1 million for NASA Aeronautical research and technology. While that is a \$35.1 million increase over the Administration's proposal of \$232 million, it is still well below the FY 1982 authorization and below the FY 1982 appropriation of \$270.6 million. In fact, the Committee proposal reflects the continuing trend of decreased government support for aeronautics research from the 1980 expenditure of \$308 million.

The NASA Aeronautical Research and Technology program is exceptionally well managed and uniquely effective in getting advanced technology into practical commercial use. It is probably the most effective technology transfer organization in the world.

In spite of this, in my judgment, the Administration seems intent on taking the first "A" out of NASA. This year, the Committee was faced with a budget proposal that sought to eliminate all of NASA's ongoing aeronautical technology validation work, except work in areas that had clear military application and support. The civil systems technology projects targeted for termination included many vital, high-risk, "next-generation" technologies that industry is simply unable to undertake alone, such as the Advanced Turbo-prop, Energy Efficient Engine, Advanced Rotorcraft, Composite Primary Aircraft Structures, Terminal Configured Vehicle, Energy Efficient Transport, and other programs. The Committee could not accept such a radical departure from the traditional role that NASA (and NACA) have utilized successfully for more than 65 years in supporting civil aeronautics research and technology. I strongly endorse the Committee's decision to restore the funding necessary to complete the most critical of these programs.

The NASA Aeronautics program is small, accounting for only 10% of NASA's total budget. But its impact reaches to the very core of our national security and economic well being. The U.S. aeronautics industry is a \$60 billion business, providing a \$35 billion payroll, and employing 1.25 million Americans. It is by far our largest source of manufactured exports, with \$18 billion in shipments during 1981, of which only \$4 billion were military.

The historical superiority of the U.S. aeronautics industry is no accident. It is the direct result of an outstandingly effective partnership between government and industry which began in 1915 with the creation of the National Advisory Committee for Aeronautics (NACA) and continued when NACA was assimilated into NASA. The purpose of this partnership was to maintain the role of the U.S.A. as a leader in aeronautical science and technology.

For the first time, however, as government is decreasing its support for aeronautics research, America's leadership in aviation is being seriously challenged. The projected 2% decline in exports for 1982 marks the first year-to-year decrease in history for the U.S. aerospace industry. General aviation exports declined by 36% in 1981, while imports of foreign aircraft increased by 23%. Perhaps the most astonishing example is Europe's government supported civil transport consortium, Airbus Industrie, which sold more wide bodied aircraft last year (64) than all U.S. suppliers combined (43). This is a far different situation than the historic 90% share of the world market that the U.S. used to enjoy.

The message is clear. The U.S. aviation industry is—not might, but already is—going the way of the U.S. auto industry. The key issue is jobs. When we allow our technological superiority to slip away, we are exporting American jobs to Europe, Japan, Brazil, and other areas of the world. The U.S. aviation industry has already been forced to lay-off thousands of employees. This week it was announced that 10,000 more aircraft workers will lose their jobs this year.

Now is not the time to experiment with one of our few remaining economic winners. We have a system that works. We should support it. We must not be misguided by dogmatic theorists who have no understanding of the historic importance of government's role in the success of U.S. aeronautics. We cannot afford to tinker with a system that has proven, time and time again, to be a high-payoff cost-effective investment for America's future.

DAN GLICKMAN.

#### ADDITIONAL VIEW OF HAROLD C. HOLLENBECK, RAYMOND J. McGRATH, AND BILL LOWERY

An issue which has been of concern to several Committee Members is the selection by NASA of an upper stage for the Space Shuttle. In FY '81 NASA planned to fly the Galileo and Solar/Polar Mission with one type of launch vehicle. In FY '82 that planning changed for technical reasons. In FY '83 planning was changed for fiscal reasons to the vehicle that had been deleted in FY '82 for technical reasons. The year to year inconsistency of budget submissions for a Shuttle upper stage for these missions and for future use is deeply disturbing.

Last year our Subcommittee Chairman had the foresight to request that NASA and DoD study this matter thoroughly. Subsequent to the completion of "upper stage alternatives" report, we are concerned that NASA is not adhering to its own recommendations.

It is our desire that NASA proceed along a course that is technically appropriate. It is similarly our desire that the development of a high energy upper stage for the Shuttle be carried out without spending an extraordinary amount of federal money while developing a stage that will maximize the capability of the Shuttle as soon as possible.

Such an approach may avert the necessity for the protracted debate that should not be necessary at all.

HAROLD C. HOLLENBECK.  
RAYMOND J. McGRATH.  
BILL LOWERY.

#### ADDITIONAL VIEW OF RAYMOND J. McGRATH

During the Subcommittee mark-up of the 1983 NASA Authorization, I raised the issue of New York State's interest in NASA's State Technology Applications Program.

NASA's State Technology Applications Centers (STACs) were established to investigate the viability of decentralizing the functions performed by the Industrial Applications Centers on a regional basis to the state and local level. This approach utilizes the relationships between state universities and local industry and government to assist in the technology transfer process. There are currently two STACs—one in Florida and the other in Kentucky. Both

STACs have proven very successful in providing beneficial assistance to their clients. Key to their success is a strong commitment by their respective state governments. Last year, the NASA STACs experienced a client growth rate of approximately 45 percent over the previous year.

The State of New York has taken a number of important steps in recent years to foster the growth of technologically innovative firms in our state. This year, the State Legislature is considering several additional proposals for significant investments of state funds in various types of university-based centers for research and development of new technologies. Because of the importance of the dissemination of research findings to businesses facing particularly challenging problems or opportunities, New York is very interested in the establishment of a Technology Application Center in our State.

I would like to take this opportunity to encourage NASA to consider establishing a STAC in New York State. I sincerely believe NASA's commitment to acquiring and disseminating to the public technology and information developed in the Space Program would be enhanced by the location of a State Technology Application Center in New York State.

RAYMOND J. McGRATH.

#### ADDITIONAL VIEW OF MR. LOWERY

I take exception to this committee's action on the proposed revisions of NASA's space transportation upper stages program and related changes in the Galileo mission to Jupiter and the International Solar Polar Mission (ISPM).

Last year, after reviewing the NASA FY 1982 budget request to develop a modified Centaur to support planetary exploration programs, this committee directed that NASA and the DOD conduct a joint study to determine our nation's upper stage requirements and to define the most appropriate program for meeting these needs. Both agencies proceeded to examine current and projected mission requirements and evaluated the following upper stages against those requirements: Inertial Upper Stage (IUS), Centaur, Transstage, Interim Orbital Transfer Vehicle (IOTV).

The agencies concluded that the IUS is the only available stage capable of meeting the near term earth-orbiting requirements and, with modifications, could satisfy NASA and DOD earth-orbiting missions through the 1980's. However, the study clearly indicated that the Centaur is the only vehicle capable of meeting near term NASA planetary requirements, particularly the need for a Galileo combined Orbiter/Probe mission on a direct trajectory to Jupiter. Additionally, it was determined that the Centaur will satisfy the future envisioned and proposed NASA planetary missions through the mid-1990's.

Such findings led NASA and the DOD to recommend that the Air Force continue IUS development and production while NASA begin developing the Centaur. In the intervening four months since this report was released, nothing has significantly changed to warrant reprogramming monies from Centaur to IUS in the NASA budget.

In fact, an IUS/Galileo mission, utilizing the IUS on a delta-Vega trajectory, was specifically rejected by the joint study:

... an IUS Galileo ... on a delta-Vega trajectory (provides), at best, major compromise to the mission ... In addition to mission deficiencies, the combination of weight and CG location for a Galileo combined spacecraft with kick stage would represent a load to the generic IUS which is greater than design limits. This fact would require, as a minimum, structural modifications to stiffen that upper stage ... While it is apparent that a mission with a combined Galileo spacecraft can be accomplished with upper stage performance characteristics equivalent to an IUS, it is not clear that such a mission could be accomplished without major science compromises as well as high cost and schedule risks which would make a single launch in 1985 undesirable ...

Because this committee's decision to cancel Centaur has very serious ramifications on our civilian space program, not to mention our defense, intelligence, and telecommunications capabilities, I believe it is necessary to reiterate the compelling reasons for proceeding with Centaur development for Galileo:

IUS cannot meet high energy upper stage requirements for NASA, DOD, and commercial missions;

Failure to move decisively now to develop a high energy upper stage for Shuttle will result in an increasing loss of business to foreign competition;

Development of a "new" high energy upper stage, coupled with the decision to reprogram IUS for Galileo, will cost at least \$700-800 million more than Centaur, take at least two years longer to complete, and yield no significant performance improvement;

Launching Galileo on Centaur in 1986 has two critical advantages over a 1985 IUS/Galileo mission: cost and benefit.

First, IUS cannot meet high energy upper stage requirements for NASA, DOD, and commercial missions. IUS has a basic design capability of 5,000 pounds to geosynchronous orbit compared to 10,000-13,000 pounds for Centaur (depending on which Centaur configuration is utilized). Consequently, as lift requirements increase, the need for an adequate upper stage intensifies. Again, the joint NASA/DOD study accurately summarized this issue:

The collective trends illustrated as a result of the current analysis of earth-orbiting payload requirements show that in the late 80's, a need will exist to deliver payloads greater than 5,000 pounds into geosynchronous orbits and that the existing vehicles of the 1980's will determine the spacecraft designs of the late 1980's and the early 1990's. The results also indicate that geosynchronous spacecraft development/growth rate was slowed considerably during the last decade. Should a higher performance vehicle become available at affordable per flight cost, by 1985, spacecraft requirements will grow and effectively utilize the carrier capability in the late 1980's.

Second, failure to move decisively now to develop a high energy upper stage for Shuttle will result in an increasing loss of business to foreign competition. Unquestionably, launches for foreign payloads, mainly communications satellites, yield a large, favorable balance of payment to the United States. It is almost an assurance that the failure to continue Centaur development for the Shuttle will open this launch market to the Europeans and Japanese.

INTELSAT and COMSAT have indicated that commercial payload developers desire spacecraft with lift capacities which far exceed existing carrier capability. According to the joint study, INTELSAT would probably plan earlier conversion to Shuttle capability of Centaur proceeded through development.

Significantly, the Direct Broadcast Satellite Corporation, in a recent letter to this committee, stated that as a practical matter, the IUS will not be used for commercial space programs because of its cost and lack of flexibility. The letter goes on to say that what is clearly needed is a flexible, high-performance, and reasonably priced upper stage of the kind we thought we had in the Centaur program until the funds for it were recently suspended.

Third, development of a "new" high energy upper stage, coupled with the decision to reprogram IUS for Galileo, will cost at least \$700-800 million more than Centaur, take at least two years longer to complete, and yield no significant performance improvement. Furthermore, a new development, as conceived by this committee, would not approach the maturity and reliability of Centaur for at least several years of operation. Recall that Centaur has flown 66 times and has achieved 100% reliability over the last 10 years (40 consecutive successful launches).

Experience suggests that a competitive new development program, while appealing on the surface, is not as cost effective or beneficial as the evolutionary method of upgrading systems. Specific examples in the NASA launch vehicle program include: (1) Centaur integration with the Titan launch vehicle; (2) the many upgrades of the Delta vehicle; (3) the evolution of the Saturn F IVB stage into the Skylab program. Accordingly, the evolution of Centaur into the Space Shuttle would capitalize on the \$3 billion of U.S. taxpayer investment in the Centaur program, spanning the last 20 years.

Fourth, launching Galileo on Centaur in 1986 has two critical advantages over a 1985 IUS/Galileo mission: cost and benefit. Although launched one year later, Centaur/Galileo will arrive at Jupiter in 1988, nineteen months earlier than the arrival of the '85 IUS/Galileo. This substantial delay will add an additional \$120 million to the mission.

Also, Centaur will not compromise the scientific value of the Galileo mission. In comparison, IUS will only provide enough energy to complete 6-8 Jovian encounters instead of the 11 planned with a high energy upper stage.

In addition to the above factors supporting a Centaur development program, I would like to address two major concerns surrounding this debate: cost comparisons and sole-source procurement.

To this date, I have not seen accurate, reliable and meaningful cost comparisons for IUS, Centaur, and a new high energy upper stage. Even as we marked up NASA's authorizations, the agency continued to send mixed signals as to various costs associated with upper stage development. Needless to say, I am appalled at both NASA and DOD conduct in this regard, and hope that such action can be avoided in the future.

Importantly, the costs associated with Centaur and IUS for Galileo, whatever they actually are, are not significantly different enough to justify one vehicle over the other. Simply stated, the cost issue is a wash. What is not so simple is the added factor of developing a "new" high energy upper stage, in lieu of Centaur, while proceeding with IUS for Galileo and ISPM. Clearly, the costs associated with such a decision are not a wash, but tilt strongly in favor of continuing Centaur development. In fact, by approving NASA's reprogramming to IUS for Galileo, this committee has tacitly embraced an unnecessary federal expenditure of \$750 million over the next 5-6 years. Thus, I consider this reprogramming and subsequent decision to "compete" a new stage to be imprudent and impractical.

Finally, NASA can convincingly justify a sole-source procurement for Centaur, despite a 1986 Galileo launch date and vociferous protests. Sole-source procurements are authorized under 10 U.S.C. 2304(a)(10) and NASA Procurement Regulation 3-210.

Because of the requirement for maximum practical competition in the conduct of Government procurements, agency decisions to procure sole-source must be adequately justified and are subject to close scrutiny. However, the General Accounting Office (GAO) will not substitute its judgment for that of NASA when reviewing the justification for a sole-source procurement, but will only determine whether the agency decision has a reasonable basis. Hence, the burden is on the protester to make a clear showing that NASA's decision is unreasonable.

As we learned last year, "time-is-of-the-essence" is a circumstance that alone may justify a sole-source award. The timing for the launch of a space mission is clearly within NASA's discretion and the GAO has held that mere disagreement with a contracting agency's discretionary decision is not grounds to disturb it. To be sure, if Galileo and ISPM are to use a high energy upper stage, time is of the essence.

Alternatively, I would point out that Centaur design, production, and launch operations teams are now at work on continuing orders extending through 1984. NASA management and support staffs are also functioning. Tools and equipment for production, testing, and launch support exist now in mature form.

Centaur for the Shuttle has been studied by three NASA Centers and various contractors. Safety aspects have undergone particularly close scrutiny again over the last several years. Consequently, sole-source procurement of the Centaur would take advantage of this wealth of hardware and experience.

Moreover, the development of Centaur would, in fact, initiate a more meaningful competition within the Shuttle's upper stage program. By allowing Centaur to compete with IUS for Shuttle launches, just as the Atlas/Centaur now competes with the Ariane, we would be promoting significant cost de-escalations. Accordingly, the question is not "competition or no competition," but "development competition or production competition." Incisively, a production competition, focusing on price and performance, is in the best interests of the American taxpayer and our civilian space program.

In sum, developing a new high performance stage would unquestionably take longer than modifying an existing stage. To run a full competition, as contemplated by this committee, would also delay the availability of a high performance stage. A new stage also would not approach the maturity and reliability of a modified Centaur and, undoubtedly, costs would be much higher than for a modified Centaur.

I strongly urge my House and Senate colleagues to pursue Centaur development in the NASA FY 1982 and 1983 budgets for a 1986 Galileo launch.

BILL LOWERY.

#### ADDITIONAL VIEW OF JOE SKEEN

These views are presented to underscore our strong support for the Solar Maximum Mission (SMM) as a key element in demonstrating the shuttle's unique capability to retrieve and either repair or refurbish an orbiting spacecraft or return it to earth.

The Space Science and Applications Subcommittee's rejection of NASA's proposed reprogramming of fiscal 1982 funds clearly result in the loss of valuable scientific and technological information required for planning and executing future flights, particularly the space telescope maintenance and upgrading missions, where this capability is an essential part of the planned long-term use of the research capability of the spacecraft. Other users await more evidence that in-orbit repair and maintenance is a cost-effective alternative to launching replacement spacecraft when the spacecraft in orbit experiences a malfunction or needs a Solar Maximum Mission spacecraft specifically designed for on-orbit repair, is so feasible. Replacement of the spacecraft's attitude control system and repair of three instruments will restore the solar maximum spacecraft to full operational status. This will permit continuation of solar observations of considerable importance to the scientific community and the understanding of the earth's environment.

In addition to the benefits mentioned above, this mission now offers the opportunity to gather very specific radar and optical data to confirm the tumble rates and breakup characteristics for the STS external tanks as it re-enters the atmosphere. Previous plans to gather this data involved expensive deployment of a spe-

cial tracking ship to the Indian Ocean. The special orbit for this mission allows the external tank re-entry to occur at a safe distance from the Hawaiian Islands but within tracking range of radar and optical sensors located there. Therefore, the mission as now planned offers multiple benefits, including that of refining the external tank re-entry model, which should offer safer and more flexible future shuttle orbital planning.

JOE SKEEN.

#### ADDITIONAL VIEWS OF HON. JIM DUNN

I am opposed to the action taken on the fiscal year 1983 budget. First, the Minority recommended that the total NASA R&D budget remain at the Reagan level of \$6.613 billion, which represented an approximate 11% increase over the fiscal year 1982 budget. In addition, I also opposed the distribution of the budget amongst the various line items.

Specifically, while I advocate enhancements to the proposed budget, I feel that any increases to the aeronautics authorization should come from the space program budget. The Administration's policy shift away from system development and toward greater basic aeronautical research activities is reflected by the 12% increase in the "Research and Technology Base" budget. The further enhancement of \$6 million by the Committee to the basic research program is not justified in view of the fact that the majority of this increase is aimed at accelerating existing activities in materials (\$2M), human factors (\$1M), aerodynamics (\$1.5M) and multidisciplinary research (\$1.5M) items already sufficiently funded in the Administration's Research and Technology base program at \$31.3M, \$9.6M, \$42.3M and \$3.5M, respectively.

I also disagree with the Committee recommendation in the "Low Speed Aircraft System Technology" line item. I recognize and accept the importance of this technology work, and under other circumstances would undoubtedly support such enhancements. Because of the serious budget constraints, however, I do not believe that the increases are warranted. The Administration's action to move the critical technology elements of the advanced rotorcraft program into the research and technology base is adequate at this time. In addition, much of the technology to be derived from the remaining NASA/military helicopter projects has direct application to the civil aeronautics field.

Similarly, a third area of disagreement is the "High Speed Aircraft Systems Technology" line item. The most important elements of the turbine engine activities continue under the Administration's budget. In addition, related work is also incorporated into the research and technology base budget. The argument was made by the Majority that aeronautics research is dominated by the military at the expense of the civilian is not a sound argument. In the first place NASA is directed in section 102 of the National Aeronautics and Space Act of 1958 to conduct research specifically aimed at maintaining the "general welfare and security" of the United States. Secondly, and more importantly, the research

being conducted is basic generic research which has application to both civilian and military systems. Therefore, I would argue that it is not possible to discriminate between the two. The NASA/military relationship has been a long established arrangement with NASA funding approximately 60 percent of joint projects. There are no plans by the military to increase their aeronautical research budget. Further, I feel that failure to provide sufficient basic research support of military aeronautical R&D could create serious strategic capability problems in the future.

I share the Committee's concern with the need for greater emphasis on high risk technology for civil aviation applications, but disagree with the Committee's recommended levels of enhancement for specific projects. The Committee levels assume an appropriation increase to the fiscal year 1982 budget. In contrast, I suggest enhanced civil aviation levels for the Energy Efficient Transport, Composite Primary Aircraft Structures, and Advanced Turboprop projects based on existing FY 1982 funding levels; my recommended levels would provide adequate funding to continue research on these projects in a timely and orderly manner.

JIM DUNN.

# Calendar No. 637

97TH CONGRESS }  
2d Session }

SENATE

REPORT }  
No. 97-449 }

## NATIONAL AERONAUTICS AND SPACE ADMINISTRATION AUTHORIZATION ACT

MAY 28, 1982.—Ordered to be printed

Filed under authority of the order of the Senate of May 12 (legislative day, May 11), 1982

Mr. PACKWOOD, from the Committee on Commerce, Science, and Transportation, submitted the following

### REPORT

together with

### ADDITIONAL VIEWS

(To accompany S. 2604)

The Committee on Commerce, Science, and Transportation, having considered an original bill (S. 2604) to authorize appropriations to the National Aeronautics and Space Administration for research and development, construction of facilities, and research and program management, and for other purposes, reports favorably thereon and recommends that the bill do pass.

### COMMITTEE ADJUSTMENTS TO NASA REQUEST FOR FISCAL YEAR 1983—SUMMARY

	Fiscal year 1983	Administration request	Committee authorization
<b>Research and development:</b>			
Space Shuttle .....	\$1,718,000,000		\$1,800,000,000
Space flight operations .....	1,767,000,000		1,448,000,000
Expendable launch vehicles .....	42,000,000		47,000,000
Physics and astronomy .....	471,700,000		491,700,000
Planetary exploration .....	154,000,000		194,000,000
Life sciences .....	55,700,000		55,700,000
Space applications .....	316,300,000		336,300,000
Technology utilization .....	4,000,000		9,000,000
Aeronautical research and technology .....	232,000,000		296,000,000
Space research and technology .....	123,000,000		133,000,000
Energy technology .....			
Tracking and data acquisition .....	500,900,000		500,900,000
<b>Total .....</b>	<b>5,334,000,000</b>		<b>5,324,000,000</b>
Construction of facilities .....	100,000,000		110,000,000
Research and program management .....	1,178,900,000		1,178,900,000
<b>Grand total .....</b>	<b>6,612,900,000</b>		<b>6,612,900,000</b>

### PURPOSE OF THE BILL

The purpose of this bill is to authorize appropriations to the National Aeronautics and Space Administration totaling \$6,612,900,000 for fiscal year 1983 as follows:

	Fiscal year 1983	Budget request	Committee authorization
Research and development .....	\$5,334,000,000		\$5,324,000,000
Construction of facilities .....	100,000,000		110,000,000
Research and program management .....	1,178,900,000		6,612,900,000

### LEGISLATIVE HISTORY

On February 8, 1982, the fiscal year 1983 budget request for the National Aeronautics and Space Administration (NASA) was submitted to Congress. The Committee held hearings on February 23 and 25, March 16, 18, and 30 and April 1 to consider the budget request. Testimony was received from the NASA Administrator, various Associate Administrators of NASA, representatives from the Department of Defense, and outside witnesses. On May 11, 1982, the Committee considered an original bill and ordered it reported without amendment.

### SUMMARY

For fiscal year 1983, NASA requested a budget totaling \$6,612,900 of which \$5,334,000 was for Research and Development, \$100,000,000 for Construction of Facilities, and \$1,178,000 for Research and Program Management.

The Space Transportation System is funded at a level to continue production of the first four orbiters and support a flight rate and build up to 24 flights per year. The Space Flight Operations funding level will support five operational Space Shuttle flights in fiscal year 1983. The increase from the budget of \$3,000,100 in fiscal year 1982 to \$3,467,800 for the Space Transportation System primarily supports NASA's preparations for the operational phase of the Space Shuttle program.

The budget request for Space Science Programs increased from \$568,000 in fiscal year 1982 to \$682,000 in fiscal year 1983. The increase is largely due to peak funding levels in major flight programs. However, the mission operations and data analysis portions of the budget which represent the continued operations of existing spacecraft as well as support for basic research and technology and data reduction from past missions has been severely reduced. Specifically, the planetary program budget request for fiscal year 1983 is \$154,600,000, down from \$205,000,000 in fiscal year 1982. NASA requested \$316,300,000 in fiscal year 1983 for space applications program. This is a reduction from \$325,800,000 in fiscal year 1982. For Space Research and Technology the request was \$123,000,000. NASA's request for technology utilization for fiscal year 1983 was \$4 million. This represents a reduction of 50 percent from NASA's fiscal year 1982 operating plan.

The request for Aeronautical Research and Technology was \$232,000,000. The budget request for the research and technology base is \$182,000,000, and the request for systems technology programs is \$50 million. While the overall budget request represents a reduction of 18.6 percent from the amount authorized in fiscal year 1982, the systems technology request for fiscal year 1983 is 61 percent below that which was authorized for fiscal year 1982 and 53 percent below the fiscal year 1982 request.

NASA requested \$508,900,000 for Tracking and Data Acquisition programs in fiscal year 1983. For Construction of Facilities, the request was \$100 million. The budget request for Research and Program Management was \$1,178,900,000.

The Committee carefully reviewed the fiscal year 1983 budget request and recommends a total of \$6,612,900,000 be authorized which is the funding level requested by NASA. Whereas the Committee continues to place the Space Shuttle and its transition from a research and development program to an operational system as the highest priority, the Committee is extremely concerned about the erosion of other NASA programs at the expense of the Space Shuttle. Since fiscal year 1980, the Shuttle program has grown by 10 percent in constant dollars and space science research, space applications and aeronautic research and technology have declined by an average of 26 percent.

The 1958 Space Act lists as one of its principal objectives "The preservation of the role of the United States as a leader in aeronautical and space science and technology and in the application thereof to conduct of peaceful activities within and outside the atmosphere." Careful analysis shows that the administration's budget decisions

made the fiscal years 1982 and 1983 time period do not comply with the objectives of the Space Act. The Committee believes it is now time to restore the balance between the Shuttle program which provides a national capability for both the civilian and military sectors and those programs which support the space and aeronautics research and technology base upon which this Nation's competitive edge, economic stability and national security depend.

The Committee is also concerned that the Department of Defense is not paying its fair share for Shuttle operations. Consequently, the Committee included language in the bill directing the Department of Defense to reimburse NASA for full costs of placing Department of Defense payloads in orbit using the Space Shuttle. These funds would be paid on a yearly basis and at the same rate that NASA pays for launches of civilian flights, with adjustment for services of equal value. The Committee made a reduction of \$409 million in Space Flight Operations to reflect this policy.

The Committee provided:

\$20 million for Physics and Astronomy to be applied to the Explorer program, mission operations and data analysis, research and analysis, and the suborbital program.

\$40 million for Planetary Exploration to be applied to mission operations and data analysis and research and analysis.

\$64 million for Aeronautical Research and Technology to maintain a strong systems technology program \$20 million for advanced satellite communications.

\$90 million for the fifth Shuttle orbiter

\$150 million for space transportation capability development to be applied to development of the centaur high energy upper stage

\$5 million for the Technology Utilization program

\$10 million for Space Research and Technology

\$10 million for Construction of Facilities.

The authorization for NASA for fiscal year 1983 contains no new program starts. However, the Committee believes that a strong civilian space program is vital to the leadership of this nation in space and contributes significantly to the economic as well as the technological strength of this Nation.

#### RESEARCH AND DEVELOPMENT—SUMMARY

	Fiscal year 1983	Administration request	Committee authorization
<b>Research and development:</b>			
Space Shuttle		\$1,718,000,000	\$1,808,000,000
Space flight operations		1,787,000,000	1,448,000,000
Expendable launch vehicles		42,800,000	42,800,000
Physics and astronomy		471,700,000	491,700,000
Planetary exploration		154,600,000	194,000,000
Life sciences		55,700,000	55,700,000
Space applications		316,300,000	336,300,000
Technology utilization		4,000,000	9,000,000
Aeronautical research and technology		232,000,000	296,000,000
Space research and technology		123,000,000	133,000,000
Energy technology			
Tracking and data acquisition		508,900,000	508,900,000
Total		5,334,000,000	5,324,000,000

## SPACE SHUTTLE PROGRAM, \$1,508,000,000

The Space Shuttle is the key element of a versatile and unique space transportation system that will provide a wide variety of national and international users with routine roundtrip access to space beginning in 1982. The Space Shuttle is the first reusable space vehicle, and is configured to carry many different types of payloads to and from low Earth orbit. The Shuttle provides multipurpose space operations for Earth applications, scientific, and defense requirements.

The Space Shuttle is, however, much more than just a transportation vehicle. It will offer unique capabilities that cannot be achieved with today's expendable launch vehicles—to retrieve payloads from orbit for reuse; to service and repair satellites in space; to transport to orbit, operate, and return space laboratories; to transport materials and equipment to orbit; and to perform rescue missions. These capabilities will greatly enhance flexibility and productivity, and result in savings in the cost of space operations.

The Space Shuttle consists of four basic flight hardware elements—the orbiter, the main engines, an expendable external propellant tank (ET), and twin solid rocket boosters (SRB)—plus launch and landing systems. The orbiter is the reusable spacecraft portion of the Space Shuttle. Its large payload volume of 285 cubic meters (370 cubic yards) and cargo carrying capacity of up to 29,500 kilograms (65,000 pounds) will permit payloads to be built to less restrictive design requirements. The orbiter vehicle will carry personnel and payloads into orbit to perform their assigned tasks and return them to Earth. The orbiter is roughly the size of a DC-9 aircraft and contains three liquid fueled reusable main engines. It also provides a habitable environment for a crew which will include scientists and engineers.

The Space Shuttle usually will have a crew of three: the commander, the pilot, and the mission specialist. On some missions, up to four more mission or payload specialists may be added. The crew will experience forces not greater than three times that of gravity during launch and landing. They will be able to perform their work in a shirt-sleeve environment.

Three highly successful test flights of the Space Shuttle have been accomplished. Prelaunch preparations are underway for the fourth and final (STS-4) of the Space Shuttle test flights. Orbiter 102 (Columbia) is currently in the Kennedy Space Center's Orbiter Processing Facility (OPF) undergoing checkout. The STS-4 launch is scheduled for June 27, 1982, and is scheduled to land at the Dryden Flight Research Facility—Edwards Air Force Base.

The main engines performed flawlessly during the first three flights of the Columbia, requiring only inspections and minor maintenance to prepare them for the future flights. Testing was initiated on the full power level (FPL) version of the main engine during fiscal year 1981. The technical problems which were discovered in this early development testing (two main injector liquid oxygen pump failures, a fuel preburner liquid oxygen pump failure, and a fuel turbopump turbine failure) have been corrected. Testing is continuing in support of the FPL certification program which was initiated early in fiscal year 1982.

The external tank for the fourth launch has been delivered to the Kennedy Space Center (KSC). The two remaining tanks of the heavyweight configuration, along with the first six lightweight tanks, are in various stages of manufacture at the Michoud Assembly Facility.

At the Kennedy Space Center, the Space Shuttle processing facilities and ground support equipment are fully operational and have successfully supported the vehicle assembly, tests, servicing, checkout and launches for STS-1, STS-2, and STS-3. The processing activities include the replacement of defective vehicle parts, changeout of payloads, orbiter deservicing and ferrying from the Dryden Flight Research Facility and White Sands Space Harbor landing site to the Kennedy Space Center, and retrieval of SRB's from the Atlantic Ocean and subsequent disassembly. The processing procedures, software, and launch processing system are functioning well. Assembly of the SRB and ET elements and premate testing of the orbiter is underway in preparation for launching STS-4 in June 1984.

The second, third, and fourth flight orbiters are in various stages of manufacturing. Challenger, Orbiter 099, is scheduled for delivery in mid-1982. Substantial parts of its airframe were used during the development phase to test the structural dynamics of the Shuttle vehicle under various load conditions; the modifications to convert it into a flight orbiter are nearly complete. Discovery, Orbiter 103, is well into the structural assembly phase at the Rockwell facility in Downey, Calif., and at the various subcontractor facilities around the country; OV-103 is planned for delivery in September 1983. Atlantis, Orbiter 104, is in the early stages of primary structure build-up; its delivery is scheduled to occur in December 1984.

Within the available funding for fiscal year 1982, the highest priority has been assigned to maintaining the delivery schedule for Orbiter-099 and Orbiter-103; certain Orbiter-104 activities scheduled for fiscal year 1982 may have to be rephased. Procurement of the necessary supporting hardware, such as the remote manipulator system and television cameras, is underway on a schedule which supports the above orbiter delivery dates.

The production main engines required to support the testing and flight program are currently being delivered. These engines are constructed in the full power level configuration, providing thrust levels at 109 percent of the rated power level engines used for the first flights of Orbiter Vehicle-102, Columbia. Seven production engines are scheduled for delivery in fiscal year 1982.

At the Kennedy Space Center, a number of the additional, second line processing facilities are nearing completion. Activation of the second bay of the Orbiter Processing Facility, the second SRB and ET checkout bay and second vehicle assembly bay in the Vehicle Assembly Building, and the second mobile launcher platform have been accelerated to receive and process Challenger independently of Columbia when Challenger is delivered in mid-1982. The readiness date for the software development facility in the launch control center firing room is also being accelerated to support this independent second line. Work on the second firing room, second launch pad, and increased rate capability in other work stations is underway, with activation planned for subsequent years.

**Milestone schedule**

- First orbital test flight, April 12-14, 1981.
- Second orbital test flight, November 12-14, 1981.
- Third orbital test flight, March 22-30, 1982.
- Fourth orbital test flight, June, 1982.
- Initial operational capability (fifth orbital flight), 3rd Quarter 1982.
- Delivery of 2nd Orbiter (099), June, 1982.
- Delivery of 3rd Orbiter (103), September 1983.
- Delivery of 4th Orbiter (104), December 1984.
- Five flights are scheduled for fiscal year 1983.

**Summary of funding levels, fiscal year 1983**

Design, development, test and evaluation-----	
Orbiter-----	
Main engine-----	
External tank-----	
Solid rocket booster-----	
Launch and landing-----	
Production-----	\$1, 675, 500, 000
Orbiter-----	1, 023, 500, 000
Main engine-----	282, 000, 000
Launch and landing-----	67, 000, 000
Spares and equipment-----	323, 000, 000
Changes/systems upgrading-----	72, 500, 000
Performance augmentation-----	60, 000, 000
Total-----	1, 808, 000, 000

**Design, Development, Test and Evaluation (D.D.T. & E.).**—Columbia (Orbiter 102)—the DDT&E flight vehicle—has flown three very successful flights: STS-1 in April 1981, STS-2 in November 1981 and STS-3 in March 1982. STS-1 was the first flight in the four-flight orbital flight test program. The orbiter systems performed almost flawlessly on the first flight. Some minor thermal protection system (TPS) damage was noted, with one whole tile and pieces of 15 other tiles missing. This minor tile damage caused no mission problems. All flight objectives were achieved and the landing took place as planned at Edwards Air Force Base (EAFB).

The second Space Shuttle flight lasted approximately 54 hours, shortened from the planned 124 hours due to a problem with one of the fuel cells. However, despite the shortened mission, nearly 90 percent of the high priority mission objectives were attained and the flight has been classified as very successful. All systems worked well and only minor anomalies were reported. Tile damage was limited to small nicks with no missing tiles. Most of the damage was caused by launch and ascent debris. The remote manipulator system's overall performance was excellent. The general status of the vehicle was better than after STS-1. Once again, the crew commented on the precise handling characteristics of the orbiter.

The third launch of Columbia occurred on March 22, 1982. The prelaunch processing demonstrated considerable improvement in the amount of time required to ready the orbiter and the stacked Shuttle vehicle for launch. Instead of the 19 workdays required in the VAB and 34 days on the pad for STS-2, the preparations for STS-3 consumed only 12 days and 30 days, respectively.

In general, the STS-3 mission was quite successful, and revealed the flexibility of the crew and the ground, flight operations and landing operations teams in adjusting to different flight plans. The planned landing at Edwards was changed to the Northrup Strip, New Mexico, at the White Sands Missile Range) with only a few days of notice. Furthermore, the crew and flight operations teams adapted quickly and smoothly to the unacceptable landing conditions at Northrup on the planned seventh and final mission day by extending the mission another day. The Space Shuttle landed the next day.

After the fourth flight, minor modifications will be made to Columbia in preparation for its fifth flight—and the first operational flight of the Space Shuttle in November 1982.

**Production.**—The Space Shuttle orbiter production program is based on a national fleet of vehicles currently approved as four orbiters. Three orbiter vehicles are now in the production phase: Challenger, Discovery, and Atlantis.

Challenger (Orbiter 099), used in the Design, Development, Test, and Evaluation (DDT&E) program as the structural test article, is being modified to an operational vehicle while Discovery (Orbiter 103), and Atlantis (Orbiter 104) are being manufactured as new vehicles. Columbia (Orbiter 102—the DDT&E vehicle) will be modified to an operational configuration after completion of the orbital flight test program. The prime contractor for the production orbiters is Rockwell International, Shuttle Orbiter Division. The planned delivery schedule for orbiters are: Orbiter 099—June 1982; Orbiter 103—September 1983; and Orbiter 104—December 1984.

The main engine production budget provides for the material procurement, fabrication, and assembly operation necessary to support the orbiter fleet with full power level (EPL) engines. The first production (FPL configuration) engine was assembled in early fiscal year 1982. From materials procurement to final main engine assembly covers a time span of about 42 months. Then another few months are required for shipping to the National Space Technology Laboratories (NSTL), test stand installation, acceptance testing, final checkouts, and inspections before delivery to KSC.

In fiscal year 1983, the materials procurements, fabrication, and assembly operations necessary to support the orbiter production and flight schedule will continue. Residual development activity will also be pursued starting in fiscal year 1983 within the production program. This includes single FPL engine testing, culminating in certification during fiscal year 1983. Subsequent testing will be focused on demonstrating the life capability of the main engine; this effort will demonstrate appropriate maintenance intervals for flight program use, identify components which should be redesigned for longer life, and continue the expansion of the engine certification program to certify the engine for an increased number of missions. Eventually, the main engine is planned to be certified for 55 missions.

An additional launch and landing project will provide for the production and activation of a second line of vehicle processing stations at the Kennedy Space Center (KSC) to support the processing of two or more Space Shuttle vehicles simultaneously. Included in the second line facilities are a second high bay in the Orbiter processing facility

(OPF), a second set of high bays in the Vehicle Assembly Building (VAB), a second mobile launch platform (MLP), a second launch pad, a third firing room in the launch control center (LCC), and a solid rocket motor (SRM) processing facility. A systems engineering effort is required to ensure the orderly activation of facilities and implementation of changes to specifications, drawings, and documentation that have occurred during first line activation efforts. The basic facilities exist for the second line high bays in the OPF and BAV, and for the second MLP, second launch pad and third firing room in the LCC. Ground support equipment is being procured and installed in all of these second line processing stations; the OPF, MLP, and VAB second line facilities will all be activated during fiscal year 1982. The firing room is to be activated in fiscal year 1983 and the launch pad is to be activated at the end of fiscal year 1986. Construction of the solid rocket booster processing facility is scheduled to be initiated in fiscal year 1982 and activation is scheduled in fiscal year 1984. The temporary office housing will consist of railroad boxcars and leased trailers which will be obtained, situated, and activated in fiscal year 1982. All of these second line facilities are on schedule to meet the activation dates stated. The thrust of the fiscal year 1983 effort will be to design, install, checkout, and validate the second line of facilities and ground support equipment for the DOD-secure third firing room, the solid rocket motor processing station set and Launch Pad B.

*Spare and equipment.*—This program element provides for the initial lay-in of spares adequate for replacement of Shuttle components, the tooling requirements for higher external tank and solid rocket booster production rates and the procurement of adequate levels of flight crew equipment.

Sufficient initial spares are being procured to provide support for a flight rate of 13 flights in 1985, with the provision to procure at least one of every functional line replaceable units by that time. Test and turnaround support will also be commensurate with that rate. External tank productivity efforts initiated under the design, development, test and evaluation program in prior years will be pursued in the production program. The goal of this activity is to reduce future external tank costs by identifying productivity improvements in assembly and manufacturing operations. Tooling modifications and additional tools to accommodate a higher hardware production rate will continue at both external tank and solid rocket booster prime contractor and subcontractor facilities.

The production of crew items will result in a space suit inventory of 13 training and 19 flight suits at the end of fiscal year 1983, with all five sizings available. This inventory plus the life support system and related spares will support flight and backup crew needs for training through STS-15 and for flights through STS-14.

*Changes and systems upgrading.*—Management, technical flight experience, and cost reviews of the Space Shuttle program have stressed the need for providing an adequate allowance for changes and modifications which inevitably are required in a large, complex, and technically demanding space system. The changes and systems upgrading budget represents the estimated requirement for potential changes and systems modifications and unanticipated developments which are not

included in the budget estimates for development and production. Such funds are necessary to provide for programmatic and technical changes which result from Space Shuttle development ground and flight testing, and experience in the production phase. Those changes include modification to the orbiters to improve flight performance and system reliability, changes and upgrading of ground systems to reduce turnaround time between missions, and replacement/modification of hardware elements to achieve increased operating economics.

*Performance Augmentation.*—As Space Shuttle development progressed, some erosion in payload capability and performance margins occurred, primarily as a result of growth in the system's inert weight, particularly in the orbiter. Present projections show that even if planned orbiter weight reduction measures and other system improvements are fully successful, some augmentation of ascent performance will be needed to support certain national security missions. This additional capability will be required to support a scheduled launch from the Western Space and Missile Center in October 1985.

Based upon comprehensive assessments of mission requirements and detailed systems engineering and tradeoff studies of several performance augmentation options, NASA has decided to reduce the inert weight of the solid rocket boosters by using filament wound motor case segments to replace the heavier steel cases. This augmentation in performance would be available for missions launched from both the east coast and the west coast launch sites. In addition to satisfying the performance requirements of certain national security missions, the availability of the lighter weight filament wound motor case segments for other missions—where performance margins would otherwise require higher performance levels from the main engine and fine tuning of mission plans—is expected to lower the operating and maintenance costs. In order to meet the October 1985 flight availability date, filament wound case design and overall space transportation system integration activities are being initiated in fiscal year 1982.

#### *Committee comment*

The Space Shuttle remains the key to a viable space transportation system that is enabling the United States to maintain its leadership in space technology and in the utilization of the space environment to meet national needs. Furthermore, in order to meet the commercial, civilian and national security demand for the Space Shuttle system, the Committee has consistently recognized and supported the need for a Shuttle fleet consisting of at least five orbiters.

Testimony presented at the Committee's hearings has only served to reinforce this view. Additionally, the French launch system, Ariane, recently has been declared operational and the French have embarked on an aggressive marketing strategy with the goal of capturing 30 percent of the market between 1985 and 1991. They are well on their way to achieving this goal. At the Committee's hearing, the president of Arianespace stated, "As of today 32 satellites are firmly booked (contracts signed) on Ariane for the benefit of 15 customers around the world. In addition, Arianespace has signed launch reservations agreements with 7 customers for 9 payloads." What is even more startling is that several customers who were signed onto the Space

Shuttle have already switched to Ariane. The president of Arianespace goes on to say that "In our Western world, commercial application in a worldwide launch service market of some \$10 billion (in the 1980's only) means competition."

The Committee strongly believes that if we are going to compete we are going to have to have the capacity to meet the growing demand by all sectors. Consequently, the Committee's recommendation included \$90 million to begin production of the fifth orbiter.

It is the Committee's understanding that NASA is currently reviewing a proposal for private sector funding of the fifth orbiter. The inclusion of these funds by the Committee are not to be interpreted as to either prejudice or preempt a decision on this proposal. It is expected that accommodations and adjustments can be made should a positive decision be reached on the proposal for private sector purchase of the fifth orbiter. The Committee expects to review any decision by the administration including the terms thereof. In any event, the Committee does feel that a commitment must be made to a fifth orbiter in order to keep the production lines going to avoid increased costs and schedule delays.

On a related matter, the Committee is distressed that the report which was requested by the Committee in its report accompanying the National Aeronautics and Space Administration Authorization Act of 1982 dealing with examining ways to reduce orbiter production costs while still meeting projected national needs has still not been received. The Committee directs NASA to submit that report to the Congress by August 1, 1982.

#### SPACE FLIGHT OPERATIONS PROGRAM, \$1,448,000,000

The Space Flight Operations program includes space transportation systems operations capability development; the common support activities conducted under development, test and mission support (engineering and technical base); advance programs, Spacelab; and space transportation system operations. It includes the activities listed in the following table:

##### Summary of funding levels, fiscal year 1983

Space transportation systems operations capability development	\$235,400,000
Development, test and mission support/engineering and technical base	82,400,000
Advanced programs	11,900,000
Spacelab	118,200,000
Space transportation systems operations	1,005,100,000
<b>Total</b>	<b>1,448,000,000</b>

Space transportation system (STS) operations capability development provides for space transportation system development activities other than the Space Shuttle. These development and support activities are necessary for the orderly transition to STS operations. Principal areas of activity include the STS upper stages, multimission and payload support equipment, Mission Control Center upgrading (Level II), payload and operation support, and STS operation effectiveness.

The STS upper stages proposed by NASA consist of the inertial upper stage (IUS) and the spinning solid upper stage (SSUS). They

are expendable, propulsive stages required to provide the capability to deploy Shuttle-launched payloads to high energy orbits not attainable by the Shuttle alone. Multimission and payload support equipment consists of ground and flight hardware used for interfaces between the payloads and the Space Transportation system, as well as test equipment to verify payload integration compatibility. This class of hardware will be developed into a standard reusable inventory to support a variety of payloads. The Mission Control Center (MCC) upgrading (Level II) is the reconfiguration of the Johnson Space Center Mission Control Center to support the STS operations flight schedule requirements. Level II will provide additional hardware, equipment, and software to upgrade the MCC to provide the capability to support three simultaneous orbiter operations. This effort will continue during fiscal year 1983. The payload and operations support activity consists of two major efforts: orbital flight test (OFT) payload integration and the Payload Operations Control Center (POCC). The orbital flight test payload integration provides for the integration of payloads on the OFT flights. The POCC, to be located at the Johnson Space Center, will provide facilities for command and control of Shuttle/Spacelab attached payloads. Finally, STS operations effectiveness involves developing ways to improve the operational effectiveness and performance of the STS in the following areas: vehicle hardware, vehicle turnaround/cargo processing, system software automation, mission operations, and management procedures.

Performance augmentation will be initiated to improve Shuttle performance capability. Improved performance is necessary for certain missions launched from Vandenberg Air Force Base (VAFB) and to accommodate new payloads and new space utilization concepts.

Development, test, and mission support (DTMS) continues to provide the common engineering scientific and technical support required to conduct space transportation system (STS) research and development at the Johnson Space Center, the Kennedy Space Center, the Marshall Space Flight Center, and the National Space Technology Laboratories. The DTMS effort is focused on four areas: research and testing, data systems and flight activities and operations and launch systems. These activities include engineering support for in-depth technical examination of flight hardware and Shuttle related systems. DTMS also provides necessary equipment and supplies and performs alternative design, testing, and analysis in high technology areas of design and development.

The Spacelab is a major element of the space transportation system. The program is being carried out jointly by NASA and the European Space Agency (ESA) to provide a versatile, reusable space laboratory which will be flown to and from Earth orbit in the cargo bay of the Shuttle. The Spacelab will consist of a pressurized module and unpressurized pallet segments which can be used in various combinations to support mission requirements. It will permit researchers to conduct a wide range of experiments in a ground-type laboratory while operating in the unique environment of space. Ten European nations, nine of which are members of the European Space Agency, are participating in the program. NASA and ESA are committed to bear the cost of their respective program responsibilities. ESA responsibilities include the design, development, production, and delivery of the first Spacelab,

associated ground support equipment, and the Instrument Pointing System (IPS). NASA funding responsibilities include development of flight and ground support equipment not provided by ESA, development Spacelab operations capabilities, and procurement of additional flight and ground hardware needed to support NASA's Spacelab mission. Fiscal year 1983 funding is required to continue the procurement of the Spacelab follow-on hardware from ESA and to provide for a first flight in September 1983. The procurement includes a second set of flight elements and spares to support early Spacelab flights.

The advanced program effort provides technical as well as programmatic data for the definition and evaluation of potential future space missions and systems. In support of this effort, advanced development activities are conducted to provide a basis for obtaining significant performance reliability improvements and reducing future program risks and development costs through the effective use of new technology.

The advanced programs effort will be focused on conducting system and subsystem development for studies for the definition of space platforms for low and geosynchronous orbits and tether systems; the continued definition of alternative facility concepts to support the permanent presence of man in low Earth orbit; assembly and construction operations for large space systems and structures in orbit; the investigation of systems and subsystems concepts involving satellite services (i.e., placement, retrieval, and on-orbit maintenance and repairs); the definition of advanced transportation vehicle concepts including orbital transfer vehicles and Shuttle-derived launch vehicles; and the definition and analysis of satellite placement and retrieval systems remote from the orbiter. Completion of the alternative systems concept studies for the space platform will be accomplished.

Space transportation system operations will provide the transportation services and operational activities to bring about more effective access to, and utilization of space for the expansion of human knowledge and for practical benefits on Earth. The space transportation system will provide for the delivery of free-flying payloads to low Earth orbit, facilitate the conduct of experiments using the Shuttle orbiter as a carrier vehicle for experiments mounted in Spacelab pressurized modules and on Spacelab pallets in the combined capabilities of the Shuttle and upper stages, retrieve free-flying payloads from Earth orbit, and provide on-orbit servicing of satellites.

#### *Committee comment*

The administration request for Space Flight Operations is \$1,707,000,000. The increase from the level of \$895 million in fiscal year 1982, results from a change of emphasis from the developmental stage to an operational stage for the Shuttle program. A small amount of funding remains in the Development, Test and Mission Support/Engineering and Technical Base to carry out necessary follow-up development work. The Space Transportation Systems line item has increased by \$891,100,000 to reflect the funding requirements for external tanks and solid rocket boosters, as well as the production of flight hardware to support the currently planned flight rate. The budget request also includes funds for procurement of inertial upper stages for NASA launches in later years.

In 1977 the National Aeronautics and Space Administration and the Department of Defense entered into an agreement on how much

the Defense Department would pay for total launch services using the Shuttle. This agreement was based on the Department of Defense's paying its fair share of launch costs with some adjustment for services of equal value performed by each agency for the other. Certain fees were established based on expected flight rates and operational costs of the Shuttle. However, changes in flight manifests, a severe reduction in NASA's planned missions and an unpredictable economy have resulted in a severe imbalance in the conditions on which this fee agreement was based. If continued in its present form, the fee agreement would effectively tax the non-Shuttle related NASA space and aeronautics research and development programs to subsidize Department of Defense flights on the Shuttle.

The Committee's 1983 Authorization bill contains language which states that the Department of Defense shall pay to NASA full costs of placing its payloads into orbit using the Space Shuttle, on a yearly basis, at the same rate that NASA pays for launches of civilian flights, with adjustment for services of equal value. The intent of this language is that NASA will estimate each year the full cost of a Shuttle flight occurring during the next fiscal year and the Defense Department will reimburse NASA for Shuttle flights at this rate in the fiscal year prior to launch of their payloads. Costs will include those for launching, servicing and retrieving Department of Defense payloads. NASA will also estimate any adjustments for services of equal value performed by each agency for the other.

To reflect this policy a reduction of \$409 million has been made in the Space Flight Operations line item. This represents the Committee estimate of services performed by NASA for the Department of Defense for Shuttle launches in fiscal year 1984 to be paid to NASA in fiscal year 1983.

The Committee bill contains a net increase of \$150 million for development of a Centaur high energy upper stage vehicle to be used for NASA's planetary missions (including Galileo and International Solar Polar Mission) and for Department of Defense and commercial requirements during the late 1980's. It is the Committee's belief that a NASA development of the Centaur vehicle is the most cost effective way of meeting all of the needs of the civilian and defense sectors in the most timely way. The inertial upper stage program should be continued for the other purposes to which it was intended including launch of the Tracking and Data Relay Satellites and various defense geosynchronous orbital missions.

The Committee is concerned about a smooth transition from a developmental program for the Space Shuttle to a fully operational system. NASA is a R & D agency and is not intended to be an operational agency. One part of the Committee's concern is that NASA may be basing management decisions primarily on budgetary constraints, rather than the economically optimal way to manage an operational space shuttle system. Consequently, the Committee requests NASA to have their operational plans, cost analyses and pricing policies reviewed by independent financial management experts outside the agency to examine the proposed operational system and recommend the most economically optimal alternatives to implement an operational system.

Secondly, in order to obtain better projections of actual operations costs, the Committee directs NASA to delineate more clearly the direct operations costs such as launch, flight and landing services in its budget justification for future years.

The current Office of Space Transportation Systems manages the Space Shuttle production and operations as well as the development of new programs including the possibility of a new initiative for a permanent manned presence in space. The Committee encourages NASA to clearly distinguish those aspects of the Office of Space Transportation systems which deal only with the Space Shuttle from those aspects which deal with future development programs.

#### EXPENDABLE LAUNCH VEHICLES PROGRAM, \$42,800,000

The objective of the Expendable Launch Vehicles program is to provide for the centralized procurement of launch vehicles and launch support services for NASA's automated spacecraft missions, and for other agencies and private organizations utilizing these systems and services on a reimbursable basis.

NASA's expendable launch vehicle transportation system consist of the Scout, the Atlas Centaur, the Delta and the Atlas-F vehicles. This family of launch vehicles has been developed to support NASA's automated spacecraft launch requirements and, on both a cooperative and a reimbursable basis, to support other government, international, and commercial agencies and organizations. The expendable launch vehicle program includes the procurement of vehicle hardware, launch services, engineering and maintenance support, including the necessary reliability improvement of the launch vehicle, and the ancillary ground equipment. In fiscal year 1983, all launches of the Scout, Atlas Centaur, and Atlas-F vehicles will be reimbursable.

Launches under this program are conducted from sites located at the Eastern Space and Missile Center (ESMC) formerly called the Eastern Test Range (ETR) in Florida, the Western Space and Missile Center (WSMC) formerly called Western Test Range (WTR) in California, the Wallops Flight Center in Virginia, and the San Marco Platform off the African coast near Kenya.

#### Funding levels fiscal year 1983

Scout .....	
Centaur .....	
Delta .....	\$42,800,000
Total .....	52,800,000

The Scout launch vehicle was initiated by NASA in 1959 with the goal of economically launching a wide variety of small scientific satellites, space probes, and re-entry experiments. The first Scout launch occurred in July 1960. In the ensuing 21 years, there have been 102 launches. The Scout vehicle is the smallest launch vehicle employed by NASA. It is a four-stage, solid propellant launch vehicle. The vehicle is approximately 22.4 meters in length (73 feet) and the first stage booster has a diameter of 1.14 meters (3.75 feet). It is capable of placing a 180 kilogram (400 pound) payload in a 556 kilometer (300

nautical mile) orbit. No appropriated funds are required for fiscal year 1983 since the only NASA activity utilizing this vehicle system will be launching of a San Marco Cooperative Mission in 1983. Fiscal year 1982 funds are estimated to be sufficient to support the NASA effort in this cooperative program. However, this vehicle will be used to support DOD launches at least through 1985 on a reimbursable basis.

The Centaur launch vehicle project provides for the procurement and launch of the Atlas booster stage and the Centaur upper stage. The Centaur is a high performance upper stage, which is the most powerful used by NASA for automated missions. It is being used with the Atlas booster for high energy missions to synchronous orbits. The Atlas Centaur vehicle is 40 meters (131 feet) in length and has a diameter of 3.1 meters (10 feet). The first Atlas Centaur launch occurred in 1962. In the ensuing 19 years, there have been 58 launches. No appropriated funds are required for fiscal year 1983 since no NASA spacecraft are planned to be launched with this vehicle system. However, this vehicle will be used for Intelsat launches at least through 1984, for which NASA will be reimbursed.

The Delta launch vehicle is the most widely used vehicle in NASA's expendable launch vehicle family. Since its first use in 1960, this vehicle has been utilized in 158 launches and has experienced a success record of over 92 percent. It is presently operational with two and three stage configurations. The first stage is an elongated Thor booster with three, six, or nine strap-on solid motors for thrust augmentation. The second stage Delta, which provides a multiple restart capability, uses an inertial guidance system for guiding the first stage booster and the second stage Delta. With the use of a Payload Assist Module (PAM/SSUS-D) solid motor attached to the spacecraft, this vehicle is capable of placing a 1,100 kilogram payload (2,400 pounds) into a synchronous transfer orbit. This vehicle in its three-stage configuration is approximately 35 meters in length (115 feet) and has a diameter of 2.44 meters (8 feet). The fiscal year 1983 funding will be used to continue the Delta launch vehicle procurements initiated in prior years to support Landsat-D and Active Magnetospheric Particle Tracer Explorer NASA spacecraft requirements. Funds are also required for technical and engineering support to sustain vehicle test and checkout and launch operations, and to support maintenance of launch facilities and ground equipment.

#### PHYSICS AND ASTRONOMY PROGRAM, \$491,700,000

#### Summary of funding levels, fiscal year 1983

Space telescope development .....	\$137,500,000
International Solar Polar Mission development .....	21,000,000
Gamma Ray Observatory development .....	34,500,000
Shuttle/Spacelab payload development and mission management ..	81,400,000
Explorer development .....	39,300,000
Mission operations and data analysis .....	93,600,000
Research and analysis .....	45,200,000
Suborbital programs .....	59,200,000
Total .....	491,700,000

Project and mission:	Launch schedule	Year
Space Telescope (ST)	-----	1985
International Solar Polar Mission (ISPM) (ESA spacecraft only)	-----	1988
Gamma Ray Observatory	-----	1988
Spacelab:		
Spacelab-1	-----	1983
Spacelab-2	-----	1984
Space Shuttle orbital flight test payloads: OSS-3	-----	1985
Explorers:		
San Marco-D/low orbit	-----	1982
Infrared astronomy satellite	-----	1982
Cosmic ray isotope experiment	-----	1982
Active magnetospheric particle tracer explorer	-----	1984
Cosmic background explorer	-----	1987
Extreme ultraviolet explorer	-----	1988
Suborbital programs:		
Sounding rockets—About 50 launches per year.		
Balloon flights—About 20 launches per year.		
Airborne—About 65 flights per year of Kuiper Airborne Observatory.		

Note: Shuttle/Spacelab payloads in support of space science objectives will build to a flight rate of approximately 2.5 equivalent Spacelab missions per year by 1985.

#### Committee comment

NASA requested \$471,700,000 for Physics and Astronomy programs in fiscal year 1983. The Committee is concerned about basic support for university research and for support for data reduction from existing and recent successful spacecraft, such as HEAO and OAO. In addition, the Committee is concerned with the slow down in new starts in the Explorer program caused by erosion in budgets and the slow progress in the future programs and basic technology areas which support new spacecraft starts. The Committee increased the total for Physics and Astronomy by \$20 million in fiscal year 1983 to be allocated among the following areas: \$5 million for Explorer development, \$8 million for Mission Operations and Data Analysis, \$6 million for Research and Analysis, and \$1 million for the Suborbital program.

The Committee approved the reprogramming for the Solar Maximum Repair/Retrieval Mission.

#### PLANETARY EXPLORATION, \$194,800,000

##### Summary of funding levels, fiscal year 1983

Galileo development	-----	\$92,000,000
Mission operations and data analysis	-----	41,500,000
Research and analysis	-----	60,500,000
<b>Total</b>	-----	<b>194,000,000</b>

#### Committee comment

During the past decade the planetary missions have kept our national space efforts visible, providing the world with a reminder of our scientific and technological capabilities and strength. The basic research involved with understanding the nature of our solar system and the formation and interaction of the planets are key elements to understanding the interaction between the Earth and the Sun. Understanding this interaction is vital to our understanding of weather and climatic changes. The technology base that has been developed to perform planetary missions has both direct and indirect impact on national security. Finally the Soviets, Japanese and Europeans all have begun solar system exploration programs in recognition of the value of these achievements to their overall space activity.

The NASA request for planetary exploration is \$154,600,000. The Committee is particularly concerned about the funding levels for Mission Operations and Data Analysis and Research and Analysis included in planetary exploration. These activities support the operations of the spacecraft and the analysis of the information obtained from these missions. The fiscal year 1983 budget request would have terminated a number of currently operating spacecraft, still capable of transmitting valuable data. This action would reduce severely the complimentary laboratory and theoretical efforts to analyze the data. In 2 years the funding levels for mission operations and data analysis and research and analysis have been reduced by over 50 percent.

The Committee strongly believes that the research being conducted as a result of our past investments in planetary space craft is vital to our on-going solar system exploration program. Particularly in light of the fact that now new flight programs have been started since 1978, it is critical that a strong basic research base is maintained. Consequently, the Committee augmented the mission operations program budget by \$15 million and the research and analysis budget by \$25 million to maintain a constant level of effort in these areas.

The additional funds support continued operations of the Pioneer 6-9 spacecraft, Pioneer 10 and 11, Pioneer Venus, the Lunar Curatorial Facility and the Infrared Telescope Facility.

The Committee understands that efforts are underway to examine the future of the planetary program, and encourages this activity. At the same time the Committee expects NASA to prevent a more severe erosion of this valuable scientific and technological resource.

#### LIFE SCIENCES PROGRAM, \$55,700,000

##### Summary of funding levels, fiscal year 1983

Life sciences flights experiments	-----	\$24,000,000
Research and analysis	-----	31,700,000
<b>Total</b>	-----	<b>\$55,700,000</b>

### Committee comment

The Committee continues to believe that the Life Sciences program is of extreme importance in supporting this Nation's progress in utilizing the space environment. The activities in this area contribute to the development of both technology to support man-in-space and an understanding of the health effects of zero-gravity. The successful first flights of the Space Shuttle provide for an optimistic future of the manned program. The Committee is pleased to see a sizable increase in the Life Sciences budget after several years at nearly constant levels and expect to see the activity continue at a sufficient funding level to support NASA's long term goals in space.

#### SPACE APPLICATIONS, \$336,300,000

##### Summary of funding levels, fiscal year 1983

Resource observations.....	\$132,200,000
Environmental observations.....	128,900,000
Applications systems.....	11,700,000
Technology transfer.....	
Materials processing in space.....	23,600,000
Communications and information systems.....	39,900,000
<b>Total .....</b>	<b>336,300,000</b>

### Committee comment

The NASA request for Space Applications was \$316,300,000. This represents a reduction from the fiscal year 1982 request of \$372,900,000 and the current fiscal year operating plan which is \$325,800,000. Since fiscal year 1980, the Space Applications program has been reduced by 29 percent. At a time when this area of the NASA budget has been severely reduced, the French have announced their plan to proceed with an operational remote sensing system, the Japanese and Europeans have committed to advanced satellite communications programs, using the 30/20 ghz frequency band and the Germans and other nations are pursuing materials processing activities. It should be increasingly apparent to this country that other nations are not going to stand by and wait for U.S. initiatives in space. They clearly see economic and other paybacks from their research and development investment in these areas and intend to reap the economic and technological benefits that will accrue.

**Resource observations.**—The Committee approved the request for resources observations of \$132,200,000. The Committee does want to emphasize the importance of these programs for near-term utilization of space technology and feels strongly that the technology capability must be maintained in order to advance quickly the state of space-based land remote sensing technology. With the launch of Landsat D this year, it is hoped that NASA will continue to sustain its development of advanced sensor technology and will release the thematic mapper data at the earliest possible time to allow users to more rapidly adapt to and utilize the new data sources.

**Environmental observations.**—The NASA request for environmental observations \$128,900,000. The Committee supporter these programs at the requested level.

**Technology transfer.**—The Technology Transfer program was funded at a \$5 million level for fiscal year 1982. No funds were requested for fiscal year 1983 in accordance with the decision that these efforts should be done by the private sector. Although the Committee did not add money for this activity, it is expected that NASA will make every effort to insure a mechanism is being provided for transferring remote sensing technology to State and local governments. This is particularly important in light of the planned launch of Landsat-D this year.

**Materials processing in space.**—NASA requested \$23,600,000 for fiscal year 1983 for materials processing in space. The Committee

recognizes that the potential benefits of materials processing in space are large as are the risks. The Committee is encouraged by the Joint Venture Agreements and Technical Exchange Agreement that NASA has entered into this year and supports these types of arrangements. In order to exploit fully the potential of materials processing in space, the Committee believes that a strong research base within NASA is essential and expects NASA to sustain a level of effort that will encourage private sector involvement.

The Committee approved the budget for materials processing as requested.

**Communications and Information Systems.**—NASA requested \$19,900,000 for communications and information systems.

Since 1978, there has been concern over the challenge to the pre-eminence of the United States in the area of satellite communications.

In fiscal year 1980 and 1981, NASA began to look at a series of proof of concept models of components and subsystems that would permit satellite communications operations in the 30/20 Ghz frequency band to relieve orbital and frequency congestion. The proof of concept models will be delivered during fiscal years 1982 and 1983 and will undergo limited end-to-end testing to evaluate their system level performance. However, a decision was made not to pursue efforts leading toward large proof-of-concept hardware demonstrations of new technologies. The premise behind this decision was that industry would do the R & D if it really needed it.

This premise is not supported by any evidence. To the contrary, in general, industry cannot aggregate sufficient funds for research and development of experimental spacecraft. The cost is too great for any individual firm, and industry leaders have testified on numerous occasions that the "high risk, long lead time" research will not be undertaken by them. When NASA provides this seed money for generic, proof-of-concept research, industry can then make operational the technology. NASA's original plan would have put an experimental spacecraft needed for testing research results in orbit in 1986. The current situation is that a launch would be postponed or cancelled.

The restoration of funds by the Committee would enable NASA to go forward with a flight program. However, the Committee requests NASA together with the industry to examine a rescoping of the mission to reduce the total mission cost and still obtain the necessary technology verification.

The Committee has provided an additional \$20 million for this effort and therefore approves a funding level of \$39,900,000 for communications and information systems activities.

## TECHNOLOGY UTILIZATION, \$9,000,000

*Summary of funding levels, fiscal year 1983*

Technology dissemination.....	\$3,200,000
Technology applications.....	5,800,000
Program evaluation and support.....	
Civil systems.....	
<b>Total .....</b>	<b>9,000,000</b>

*Committee comment*

The NASA technology utilization program is recognized as a model Federal program dedicated to the transfer of NASA technology and know-how to the private sector for social and economic benefits. Results of NASA studies indicate that the demonstrated economic benefits are six times the cost of the technology utilization program.

The Committee strongly supports the technology utilization program and approved a funding of \$9 million. The Committee remains concerned about an apparent disregard of congressional intent in the proposed funding request of \$1 million for this program. It is therefore expected that NASA will continue this program at an adequate budget level to ensure the continued development and implementation of a technology utilization function that actively applies to the full range of the agency's institutional expertise to non-aerospace technology problems of the industrial and public sectors.

## AERONAUTICAL RESEARCH AND TECHNOLOGY PROGRAM, \$296,000,000

*Summary of funding levels, fiscal year 1983*

Research and technology base.....	\$182,000,000
Systems technology programs.....	114,000,000
<b>Total .....</b>	<b>296,000,000</b>

*Committee comment*

Until the present decade, U.S. sales of large transport aircraft to non-U.S. airlines accounted for about 90 percent of the total of such sales. But in 1981 Airbus Industrie alone accounted for 42 percent of such sales, Boeing 51 percent, McDonnell Douglas 2 percent, Lockheed 2 percent, and all others 3 percent. In fact, Lockheed was forced last year to a decision to withdraw from the civil transport market. Future implications are underscored by further analysis of those sales results. About 85 percent of Boeing's sales in 1981 were to old customers, largely for reorders of existing models and for orders of new models, with only about 15 percent consisting of sales to new customers. About 65 percent of Airbus sales were to new customers, thereby establishing a base for dominating the future reorder business which has traditionally accounted for as much as 70 percent of the total sales of any manufacturer's aircraft.

The magnitude of the implications on future sales can be seen in data provided to the Subcommittee on Science, Technology, and Space in its hearing on April 1, 1982 by Dr. Stephen Piper, Coordinator, Aerospace Trade Policy, Office of the United States Trade Representative "Nearly 4,000 older 2-3-engine jet aircraft now in service, most of which are of U.S. manufacture are expected to be replaced by new generation transports." That replacement market, accelerating from the later 80's into the 90's will have a sales value of \$100 to \$125 billion in 1980 dollars. Including market growth through the decade of the 90's, another \$100 to \$150 billion of transport aircraft sales can be expected. The competition for that market will be largely shaped by marketing performance in the interim, by affected countries export financing policies and by the technological attributes of the competing aircraft, featuring particularly fuel efficiency, lower noise level, increased reliability and production cost.

The trend in general and commuter aviation world trade is of equal concerns to the Committee. During 1981 this segment of the U.S. aircraft industry encountered its first year ever of a negative trade balance. In testimony previously cited, the U.S. Trade Representative's witness listed 22 types of commuter aircraft in production or development of which only three involve U.S. manufacturers. A previous study by the Aerospace Corp. indicated a 20 year 1980-2000

world market exceeding 5,000 new aircraft, offering between 15 and 60 seats for this segment of the airline industry.

The Committee carefully evaluated the expectation of the administration that the aviation industry would itself provide the funding required to carry on the commercially oriented systems technology programs deleted from its fiscal year 1983 budget proposal. In testimony before the Subcommittee on Science, Technology, and Space at its hearing on February 23, the Administrator of NASA acknowledged that no indication to that effect was available from industry. That situation was reaffirmed by NASA during another subcommittee hearing on April 1. A professional assessment of the ability of the industry to assume that technology development burden was provided by an outside independent witness in his testimony before the subcommittee at the same hearing on April 1. This witness was Wolfgang H. Demisch, a specialist in the aerospace industry and vice president of Morgan Stanley and Co., Inc. He pointed out even after technology readiness has been demonstrated by successful completion of an array of systems technology programs, an airframe company must risk about \$2 billion to bring a new aircraft to market. "Given this high inherent market uncertainty," he added, "management would be suicidal to accept technical unknowns as well." On the question of whether industry could fulfill this systems technology development role which NASA proposed to discontinue, he stated:

NASA is best positioned to address the technical uncertainties inherent in aerospace, the "will it work" part. Its infrastructure is the best in the business, and its personnel have the best overview of the technical options available to solve problems most efficiently. NASA can interact freely with both industry and the academic world. It receives problems and data both from the military and the commercial arenas, and can cross fertilize between the disciplines in ways impossible to industry, where airframes, propulsion, and subsystems are generally split among several companies, which are mutually competitive, rather than positioned to share their insights or problems. Indeed, antitrust restrictions would forbid such sharing.

He concluded,

For a truly trivial savings, we risk vandalizing an efficient and productive mechanism for bringing the best skills of the nation to bear on the most pressing problems of one of our most successful industries . . . And yet, once destroyed it will not be easily restored.

In the judgment of the Committee, there is too much of the national interest at risk to tamper with an established institutional arrangement which has provided the technology development for a \$65 billion industry providing over 1.25 million jobs and contributing \$13 billion net to the Nation's trade balance.

The Committee views these developments and potential impacts as a clear signal to strengthen the previously cited objective (b) of NASA's aeronautical research and technology program, "to maintain the strong competitive position of the United States in the international marketplace." Lack of commitment to that objective is distressingly clear in the proposed budget request's elimination in fiscal year 1983 of seven systems technology programs retaining only those two which are oriented toward military requirements. Accordingly, the Committee action restores, by reprogramming within the agency total funding request, \$64 million specifically toward continuation of six of those seven systems technology programs.

The Committee intent is that \$64 million be allocated to the systems technology programs as follows: Aeronautical Systems Studies (\$2 million), Turbine Engine Hot Section (\$2.5 million), Broad Property Fuels (\$3 million), Helicopter Transmission (\$1.5 million), Critical Aircraft Resources (\$2.2 million), General and Commuter Aviation (\$3 million), Composite Primary Aircraft Structure (\$6 million), Energy Efficient Transport (\$1.1 million), Terminal Configured Vehicle (\$4.6 million), Laminar Flow Control (\$3 million), Energy Efficient Engine (\$7.5 million), and Advanced Turboprop (\$27.6 million).

#### SPACE RESEARCH AND TECHNOLOGY PROGRAM, \$133,000,000

##### Summary of funding levels, fiscal year 1983

Research and technology base.....	\$125,600,000
Systems technology programs.....	4,400,000
Standards and practices.....	3,000,000
Total .....	133,000,000

##### Committee Comment

The Committee recognizes that a strong space research and technology base is vital to maintain our Nation's leadership in space and to pursue an aggressive space program. With increasing competition from foreign nations in areas of advanced satellite communications, remote sensing technologies, materials processing, and scientific research, adequate levels for this space systems technology base become even more critical in providing options for both the commercial and Government sectors to meet this competition. Consequently, the Committee has provided \$133 million for the purposes of strengthening the research and technology base, an increase of \$10 million above the budget request.

The Committee is concerned about the fragmentation of the advanced nuclear power systems program, and in particular the lack of a designated lead Government agency. Therefore, the Committee urges NASA to initiate discussions with the Department of Energy and the Department of Defense to determine which agency should have primary program responsibility in order to insure coherent progress in the program.

#### ENERGY TECHNOLOGY PROGRAM, \$0

The deletion of funds in fiscal year 1982 and fiscal year 1983 reflects the decision to phase out the NASA directly funded energy technology identification program.

##### Summary of funding levels, fiscal year 1983

Energy technology.....	\$0
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#### TRACKING AND DATA ACQUISITION PROGRAM, \$508,908,000

##### Summary of funding levels, fiscal year 1983

Operations .....	\$338,200,000
Systems implementation.....	98,000,000
Advanced systems.....	13,400,000
Tracking and data relay satellite system.....	61,300,000
Total .....	508,908,000

*Committee comment*

The Committee approved the budget of \$508.9 million for Tracking and Data Acquisition as requested.

*Construction of facilities—Summary*

1. Construction of data analysis facility, Hugh L. Dryden Flight Research Facility .....	\$4,500,000
2. Rehabilitation and modification of utility systems, Goddard Space Flight Center .....	2,840,000
3. Modifications to the 4-by-7 meter low speed tunnel, Langley Research Center .....	7,200,000
4. Modifications to upgrade the transonic dynamics tunnel; Langley Research Center .....	9,000,000
5. Modifications of rocket engine test facility for altitude testing, Lewis Research Center .....	995,000
6. Modification to 450 psi air system in engine research building, Lewis Research Center .....	2,920,000
7. Rehabilitation of airfield, Wallops Flight Center .....	2,150,000
8. Space Shuttle facilities at various locations as follows:	
A. Modifications to solid rocket booster refurbishment and subassembly facilities John F. Kennedy Space Center .....	1,700,000
B. Modification of manufacturing and final assembly facilities for external tanks, Michoud Assembly Facility .....	17,845,000
C. Minor Shuttle-unique projects, various locations .....	
9. Space Shuttle payload facility: Rehabilitation and modification for payload ground support operations, John F. Kennedy Space Center .....	1,740,000
10. Repair of facilities at various locations, not in excess of \$500,000 per project .....	15,000,000
11. Rehabilitation and modification of facilities at various locations, not in excess of \$500,000 per project .....	20,000,000
12. Minor construction of new facilities and additions to existing facilities at various locations, not in excess of \$250,000 per project .....	4,000,000
13. Facility planning and design not otherwise provided for .....	8,250,000
<b>Total .....</b>	<b>100,000,000</b>

The Construction of Facilities (CoF) appropriation is for contractual services for repair, rehabilitation and modification of existing facilities; the construction of new facilities; the acquisition of related facility equipment; the design of facilities projects and advance planning related to future facilities needs.

The funds requested for 1983 provide for: the continuation of prior year's endeavors in meeting the facilities requirements for the Space Shuttle; Space Shuttle Payload support operations; modification of aeronautical research and development facilities; repair, rehabilitation, and modification of other facilities to maintain, upgrade and improve the usefulness of the NASA physical plant; minor construction of new facilities; and facility planning and design activities.

The projects and amounts in the budget estimate reflect Space Shuttle payload requirements that are time sensitive to meet specific milestones. Other program requirements for 1983 include the construction of a data analysis facility at the Ames' Dryden Flight Research Facility; rehabilitation and modification of utility systems at the Goddard Space Flight Center and rehabilitation of the Airfield at Goddard's Wallops Flight Center; modifications to the transonic dynamics tunnel and modifications to the 4- by 7-meter low speed tunnel at the Langley Research Center; and, modifications of the 450 PSI air system and modification of rocket engine test facility for altitude testing at the Lewis Research Center.

The fiscal year 1983 program continues to meet the objectives of preserving and enhancing the capabilities and usefulness of existing facilities and to ensure safe, economical, and efficient use of the NASA physical plant. This request continues the necessary rehabilitation and modification program as in prior years and continues a repair program. The purpose of the repair program is to restore facilities to a condition substantially equivalent to their originally designed capability. The minor construction program continues to provide a means to accomplish smaller facility projects which accommodate changes in technical and institutional requirements. This program also includes projects which continue NASA efforts to reduce the consumption of energy.

Funds requested for facility planning and design cover advance planning and design requirements for potential future projects, master planning, facilities studies, engineering reports and studies and the preparation of facility project design drawings and bid specifications.

*Committee comment*

The Committee is concerned that since 1980 the Construction of Facilities budget has decreased by more than 50 percent in constant dollars. Additionally the percentage of the NASA budget which is for Construction of Facilities has decreased from 3.3 percent to 1.6 percent. This represents a potentially serious deterioration of the NASA physical plant which is critical to its leadership in space and aeronautics research and development. The Committee approved a budget of \$110 million which includes an additional \$10 million for high priority projects which have been previously deferred.

The Research and Program Management appropriation funds the performance and management of research, technology and test activities at NASA installations, and the planning, management and support of contractor research and development tasks necessary to meet the Nation's objectives in aeronautical and space research. Objectives

*Research and program management—summary, fiscal year 1983*

Personnel and related costs .....	\$829,900,000
Travel .....	24,100,000
Operation of installation .....	324,900,000
A. Facilities services .....	(179,881,000)
B. Technical services .....	(55,526,000)
C. Management and operations .....	(89,493,000)
<b>Total .....</b>	<b>1,178,000,000</b>

of the efforts funded by the Research and Program Management appropriation are to (1) provide the technical and management capability of the civil service staff needed to conduct the full range of programs for which NASA is responsible, (2) maintain facilities and laboratories in a state of operational capability and manage their use in support of research and development programs, and (3) provide effective and efficient technical and administrative support for the research and development programs. More than 21,200 civil service personnel at eight installations and Headquarters are funded by the Research and Program Management appropriation. This civil service workforce is NASA's most important resource and is vital to future space and aeronautics research activities. Seventy percent of the Research and Program Management appropriation is needed to provide for salaries and related costs of this civil service workforce. About 2 percent is for travel, which is vital to successfully manage the Agency's in-house and contracted programs. The remaining amount

of the Research and Program Management appropriation provides for the research, test and operational facility support, and for related goods and services necessary to successfully operate the NASA installations and to efficiently and effectively accomplish NASA's approved missions.

*Committee comment*

The Committee approved the \$1,178.9 million budget request for research and program management for fiscal year 1983.

**ESTIMATED COSTS**

In accordance with paragraph 11(a) of rule XXVI of the Standing Rules of the Senate and section 403 of the Congressional Budget Act of 1974, the Committee provides the following cost estimate, prepared by the Congressional Budget Office:

U.S. CONGRESS,  
CONGRESSIONAL BUDGET OFFICE,  
Washington, D.C., May 26, 1982.

Hon. BOB PACKWOOD,  
Chairman, Committee on Commerce, Science and Transportation, U.S. Senate, Washington, D.C.

DEAR MR. CHAIRMAN: Pursuant to Section 403 of the Congressional Budget Act of 1974, the Congressional Budget Office has prepared the attached cost estimate for the National Aeronautics and Space Administration Authorization Act, 1983.

Should the Committee so desire, we would be pleased to provide further details on this estimate.

Sincerely,

ALICE M. RIVLIN,  
Director.

**CONGRESSIONAL BUDGET OFFICE—COST ESTIMATE**

MAY 26, 1982.

1. Bill number: Not yet assigned.
2. Bill title: National Aeronautics and Space Administration Authorization Act, 1983.
3. Bill status: As ordered reported by the Senate Committee on Commerce, Science and Transportation, May 11, 1982.
4. Bill purpose: The bill authorizes the appropriation to the National Aeronautics and Space Administration (NASA) of \$6.613 million for fiscal year 1983: \$5,324 million for research and development, \$110 million for construction of facilities, and \$1,179 million for research and program management. The authorization for research and development includes \$1,808 million for the space shuttle, \$1,448 million for space flight operations, \$492 million for physics and astronomy, \$336 million for space applications, \$296 million for aeronautical research, and \$509 million for tracking and data acquisition. The bill also authorizes such additional amounts as may be necessary for increases in salary, pay, retirement, or other employee benefits.

The amounts authorized equal the President's request for NASA in fiscal year 1983, but include \$10 million less for research and development and \$10 million more for construction of facilities. The \$6,613 million authorization exceeds the fiscal year 1982 appropriations to date by \$673 million.

In addition, section 5 of the bill requires the Secretary of Defense to transfer to NASA such sums as may be necessary to pay the costs of placing Defense Department payloads into orbit via the Space Shuttle. In calculating the amount of the transfer, the NASA Administration is to include both direct and indirect costs to NASA of all launch and flight services provided for Defense Department payloads, along with a credit for the fair value of all launch operations performed or scheduled to be performed by the Department of Defense for the benefit of NASA. This section applies to any Defense payloads placed into orbit on or after October 1, 1983.

5. Cost estimate:

(By fiscal year, in millions of dollars)

	1983	1984	1985	1986	1987
<b>Estimated authorization level:</b>					
NASA—Civilian space program (function 250)	6,317				
NASA—Aeronautics (function 400)	296				
NASA—Allowance for pay increase (function 920)	55				
<b>Total</b>	<b>6,668</b>				
<b>Estimated outlays:</b>					
NASA—Civilian space program (function 250)	4,630	1,454	221	12	
NASA—Aeronautics (function 400)	276	13	7		
NASA—Allowance for pay increase (function 920)	52	3			
<b>Total</b>	<b>4,958</b>	<b>1,470</b>	<b>228</b>	<b>12</b>	

6. Basis of estimate: The estimate assumes that the full amounts authorized will be appropriated prior to the beginning of fiscal year 1983. The increase in salaries and benefits was estimated at 6.74 percent of the personnel compensation provided by the authorization. CBO estimates that an additional \$55 million will be necessary for this increase. Estimated annual outlays are based on historical spending patterns of the major NASA programs.

According to information from NASA and the Department of Defense, the specific payloads to be placed in orbit in the next five fiscal years and the pricing policy to be used in assigning costs have not yet been established. Consequently, CBO has no basis for estimating the amount of funds to be transferred between the two organizations. NASA and the Defense Department are expected to finalize their new pricing policy before the beginning of fiscal year 1983.

7. Estimate comparison: None.

8. Previous CBO estimate: On May 5, 1982, the Congressional Budget Office prepared a cost estimate for H.R. 5890, a similar bill ordered reported by the House Committee on Science and Technology, April 28, 1982. The House Committee bill specifically authorized \$6,647 million for 1983 NASA activities, compared to the \$6,613 million authorized in this bill.

9. Estimate prepared by: Steve Martin.

10. Estimate approved by:

JAMES L. BLUM,  
Assistant Director for Budget Analysis.

## REGULATORY IMPACT STATEMENT

In accordance with paragraph 11 (b) of rule XXVI of the Standing Rules of the Senate, the Committee provides the following evaluation of the regulatory impact of the legislation, as reported.

This bill authorizes the appropriation of funds for the conduct of space and aeronautical research and development activities to carry out the policy and purpose of the National Aeronautics and Space Act of 1958. These activities are conducted in NASA laboratories by NASA personnel and through contracts with industry, universities and research institutions for research and development and for supporting scientific and technical services. The Committee has concluded the nature of these activities is such that there is no regulatory impact on individuals and businesses and, no effect on Federal paperwork or individual privacy.

## SECTION-BY-SECTION ANALYSIS

*Section 1*

Subsections (a), (b), and (c) would authorize to be appropriated to the National Aeronautics and Space Administration funds, in the total amount of \$8,612,900,000, as follows: (a) for "Research and development," a total of 11 program line items aggregating the sum of \$5,324,000,000; (b) for "Construction of facilities," a total of \$110,000,000; and (c) for "Research and program management," \$1,178,900,000. Subsection (c) would also authorize to be appropriated such additional or supplemental amounts as may be necessary for increases in salary, pay, retirement, or other employee benefits authorized by law.

Subsection (d) would authorize the use of appropriations for "Research and development" without regard to the provisions of subsection (g) for: (1) items of a capital nature (other than the acquisition of land) required at locations other than NASA installations for the performance of research and development contracts; and (2) grants to nonprofit institutions of higher education, or to nonprofit organizations whose primary purpose is the conduct of scientific research, for purchase or construction of additional research facilities. Title to such facilities shall be vested in the United States unless the Administrator determines that the national program of aeronautical and space activities will best be served by vesting title in any such grantee institution or organization. Moreover, each such grant shall be made under such conditions as the Administrator shall find necessary to insure that the United States will receive benefit therefrom adequate to justify the making of that grant.

In either case, no funds may be used for the construction of a facility in accordance with this subsection, the estimated cost of which, including collateral equipment, exceeds \$250,000, unless the Administrator notifies the Speaker of the House, the President of the Senate and the specified committees of the Congress of the nature, location, and estimated cost of such facility.

Subsection (e) would provide that, when so specified and to the extent provided in an appropriation act, (1) any amount appropriated for "Research and development" or for "Construction of facilities" may remain available without fiscal year limitation, and (2) contracts for maintenance and operation of facilities, and support services may be entered into under the "Research and program management" appropriation for periods not in excess of 12 months beginning at any time during the fiscal year.

Subsection (f) would authorize the use of not to exceed \$25,000 of the "Research and program management" appropriation for scientific consultations or extraordinary expenses, including representation and official entertainment expenses, upon the authority of the Administrator, whose determination shall be final and conclusive.

Subsection (g) would provide that of the funds appropriated for "Research and development" and "Research and program management," not in excess of \$75,000 per project (including collateral equipment) may be used for construction of new facilities and additions to existing facilities, and for repair, rehabilitation, or modification of facilities.

*Section 2*

Section 2 would authorize upward variations of the sums authorized for the "Construction of facilities" line items (other than facility planning and design) of 10 percent at the discretion of the Administrator or his designee, or 25 percent following a report by the Administrator or his designee to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate on the circumstances of such action, for the purpose of meeting unusual cost variations. However, the total cost of all work authorized under these line items may not exceed the total sum authorized for "Construction of facilities" under section 1 (b), paragraphs (1) through (13).

*Section 3*

Section 3 would provide that not more than one-half of 1 percent of the funds appropriated for "Research and development" may be transferred to the "Construction of facilities" appropriation and, when so transferred, together with \$10 million of the funds appropriated for "Construction of facilities," shall be available for the construction of facilities and land acquisition at any location if the Administrator determines (1) that such action is necessary because of changes in the aeronautical and space program or new scientific or engineering developments, and (2) that deferral of such action until the next authorization act is enacted would be inconsistent with the interest of the Nation in aeronautical and space activities. However, no such funds may be obligated until 30 days have passed after the Administrator or his designee has transmitted to the Speaker of the House, the President of the Senate and the specified committees of Congress a written report containing a description of the project, its cost, and the reason why such project is necessary in the national interest, or each such committee before the expiration of such 30-day period has notified the Administrator that no objection to the proposed action will be made.

*Section 4*

Section 4 would provide that, notwithstanding any other provision of this Act—

(1) no amount appropriated pursuant to this Act may be used for any program deleted by the Congress from requests as originally made to either the House Committee on Science and Technology or the Senate Committee on Commerce, Science, and Transportation,

(2) no amount appropriated pursuant to this act may be used for any program in excess of the amount actually authorized for that particular program by sections 1(a) and 1(c), and

(3) no amount appropriated pursuant to this act may be used for any program which has not been requested of either such committee, unless (A) a period of 30 days has passed after the receipt by the Speaker of the House, the President of the Senate and each such committee of notice given by the Administrator or his designee containing a full and complete statement of the action proposed to be taken and the facts and circumstances relied upon in support of such proposed action, or (B) each such committee before the expiration of such period has transmitted to the Administrator written notice to the effect that such committee has no objection to the proposed action.

In calculating the 30 days period referred to in the preceding sentence, any days on which either House is not in session because of an adjournment sine die or an adjustment of more than 3 days to a day certain shall be excluded, but in no extent shall the total period extend beyond 30 days.

#### Section 5

Subsection (a) would direct the Secretary of Defense, notwithstanding any other provision of law or any interagency agreement to transfer to the NASA Administrator such sums as might be necessary to pay full costs of placing Department of Defense payloads into orbit by means of the Space Shuttle.

Subsection (b) states that any transfer of funds pursuant to this section shall cover both direct and indirect costs of all launch services and flight services associated with placing the payload in orbit including, but not limited to, materials and services, launch operations, and flight operations. In the event of a multi-purpose mission involving both defense and non-defense activities, the total cost of the mission shall be allocated on an equitable basis. In calculating costs under this section, the Administrator may include a credit for the fair value of Space Shuttle launch operations performed (or scheduled to be performed in the succeeding 12 months) by the Department of Defense for the benefit of the National Aeronautics and Space Administration.

Subsection (c) applies section 5 to any Department of Defense payloads placed into orbit by means of the Space Shuttle on or after October 1, 1983.

#### Section 6

Section 6 would express the sense of the Congress that it is in the national interest that consideration be given to geographical distribution of Federal research funds whenever feasible and that the National Aeronautics and Space Administration should explore ways and means of distributing its research and development funds whenever feasible.

#### Section 7

Section 7 states that this Act may be cited as the "National Aeronautics and Space Administration Authorization Act, 1983".

#### Section 8

Requires the Director of the Federal Emergency Management Administration to continue the operation of the U.S. Fire Administration. The Director of FEMA is required to reserve not less than \$20 million of funds appropriated to operate FEMA to conduct the operations of the U.S. Fire Administration, including the United States Fire Academy, and any other functions and responsibilities that are vested in the Director under the Federal Fire Prevention and Control Act of 1974. This section is not intended to increase the total authorization for the operations of FEMA; rather, it is intended to require that at least \$20 million of the funds appropriated to carry on all of the activities of FEMA be set aside for the operation of the U.S. Fire Administration.

#### ROLLCALL VOTES IN COMMITTEE

In accordance with paragraph 7(c) of rule XXVI of the Standing Rules of the Senate, the Committee provides the following record votes during its consideration of S. 2604:

Senator Heflin offered an amendment to delete \$150 million for the Centaur high energy upper stage and substitute continued procurement of the inertial upper stage.

On the following rollcall vote there were 10 nays to 6 yeas and the Heflin amendment was defeated.

YEAS (6)	NAYS (10)
Kassebaum <sup>1</sup>	Packwood
Gorton	Goldwater <sup>1</sup>
Long	Schmitt
Ford	Danforth
Exon <sup>1</sup>	Pressler
Heflin	Stevens <sup>1</sup>
	Kasten
	Cannon
	Inouye
	Riegle <sup>1</sup>

<sup>1</sup> By proxy.

Without objection, the Committee ordered favorably reported an original bill to authorize \$6,612,900,000 for fiscal year 1983 for the National Aeronautics and Space Administration without amendments.

#### CHANGES IN EXISTING LAW

In compliance with paragraph 12 of rule XXVI of the Standing Rules of the Senate, changes in existing law made by the bill, as reported, are shown as follows (existing law proposed to be omitted is enclosed in black brackets, new material is printed in *italics*, existing law in which no change is proposed is shown in roman):

The bill as reported would make no changes in existing law.

### ADDITIONAL VIEWS OF MR. HEFLIN

I commend Senator Schmitt, the Chairman of the Subcommittee on Science, Technology, and Space, Senator Riegle, the Ranking Minority Member, and the Subcommittee staff for their diligent work in drafting the 1983 NASA Authorization Bill. I concur with most of the recommendations made in the bill. However, I disagree with the Committee's decision to add \$150 million to the bill for the Centaur upper stage development, which an Air Force study concludes will ultimately cost over \$1 billion.

I am opposed to this action for several reasons. First, NASA made a request that the Congress support the use of the Inertial Upper Stage (IUS) in conjunction with the Space Shuttle for a 1985 Galileo launch and a 1986 International Solar Polar Mission (ISPM) launch. The IUS is completing development and will be available for both Galileo and ISPM. It meets all requirements for these two missions. However, if the Centaur is used on Galileo, NASA has testified that the launch date will be postponed at least to 1987. NASA in Congressional testimony stated, "The important thing is that we do nothing else that will cause a loss of other projects. Why jeopardize Galileo! The launch is set to go in 1985 on the Inertial Upper Stage. It is a certain plan that can be executed. One other certain thing is that if we switch to Centaur (for the Galileo mission) we will have to slide the launch to 1987. We will have to keep the people at the Jet Propulsion Laboratory on board doing other things. I do not know what we would do with them. If we switch to Centaur, I am very much afraid we will lose the Galileo Mission." I, too, am afraid we will lose Galileo if we switch to the Centaur.

From another perspective, the IUS achieves a significant scientific return for the Galileo mission. Quoting again from NASA's 1982 Congressional testimony, "The use of the IUS for the Galileo mission will attain 100 percent of the science from the Galileo probe, which is the most important part of the mission. The Galileo orbiter would have some reduction in taking photographs of the satellites of Jupiter. But, there would be no more than a 10-percent loss of science by using the IUS on the Galileo mission." Administrator Beggs has stated, "After discussions with the Space Science Board, everyone agrees that the Galileo mission will be a good one on IUS."

The IUS is ready and available. It has been built to interface with the Space Shuttle and the Titan. With its reliability, safety in the cargo bay of the shuttle, and the experience from 10 earlier flights, the highly important and costly Galileo spacecraft and probe will be assured of a successful mission. The use of Centaur on the Galileo mission would be its first flight in that configuration. I question the wisdom of such a decision. With the addition of \$150 million for the Centaur in the fiscal year 1983 NASA bill, all we have gained is a slide of two years or more in launch date. NASA testified during fiscal

year 1982 authorization hearings that the Centaur would be considered for use only on the Galileo and ISPM missions. Following that, another stage will have to be developed to meet future requirements.

In his discussion of the status of the IUS vs. Centaur before Congress, Administrator Beggs testified, "NASA was requested (by the Congress) to do a study with the DOD requirements until the early 1990's and there was no need for Centaur now. NASA had two requirements for Centaur. They were the Galileo mission and the International Solar Polar Mission. The IUS is over its major expenditure now. The IUS delivery cost (for the first eight development units) will be about \$50-\$60 million per copy. The Centaur stage would cost less per flight. But, the front end cost to develop Centaur made us decide to stay with IUS." Mr. Beggs also said, "Through DOD reviews, we are confident that the country can produce an IUS that can handle our (NASA) missions." I agree with Mr. Beggs' statement.

Concerning DOD's near term upper stage requirements, Mr. Peter Aldridge, Undersecretary of the Air Force, is on record before the Congress as saying, "The IUS as currently designed, will meet all DOD payloads out through 1987." He has also stated, "The Centaur does not envelop DOD requirements."

Another concern that I have is that the United States continue to meet our international agreements. NASA and the European Space Agency are presently planning to fly the International Solar Polar Mission on IUS in 1986. I feel that the mission should go forward as planned.

Following 1987, a new High-Energy Upper Stage (HIEUS) will be required to carry heavier spacecraft to high orbits above the earth. This new High-Energy Upper Stage will be able to dock with a space station, go to a higher orbit and return to the Shuttle to be refueled, and be fully reusable. It will also have an on-orbit assembly capability, and a marked increase in payload lifting capability (15,000-16,000 pounds) to geosynchronous orbit. With these characteristics in mind, the Centaur falls short of meeting any and all of these criteria for a High-Energy Stage. Furthermore, the High-Energy Upper Stage should be a competitive procurement, unlike the Centaur, which is a sole source procurement to one company. Competition is the life blood of this nation, and through it the best upper stage will be obtained for maximum utilization.

In summary, the IUS development is virtually completed. It is on schedule for a September 1982 launch on Titan and a January 1983 launch of the NASA Tracking and Data Relay Satellite (TDRSS) on the Space Shuttle. The IUS meets all DOD and NASA upper stage requirements through 1987. The Inertial Upper Stage is a part of our space transportation system, and the United States should make maximum utilization of this national resource.

HOWELL HEFLIN.

MAKING APPROPRIATIONS FOR THE NATIONAL  
AERONAUTICS AND SPACE ADMINISTRATION

SEPTEMBER 29, 1982.—Ordered to be printed

Mr. FUQUA, from the committee of conference,  
submitted the following

CONFERENCE REPORT

[To accompany H.R. 5890]

The committee of conference on the disagreeing votes of the two Houses on the amendment of the Senate to the bill (H.R. 5890) to authorize appropriations to the National Aeronautics and Space Administration for research and development, construction of facilities, and research and program management, and for other purposes, having met, after full and free conference, have agreed to recommend and do recommend to their respective Houses as follows:

That the House recede from its disagreement to the amendment of the Senate and agree to the same with an amendment as follows:

In lieu of the matter proposed to be inserted by the Senate amendment insert the following:

TITLE I

SEC. 101. There is hereby authorized to be appropriated to the National Aeronautics and Space Administration to become available October 1, 1982:

(a) For "Research and development", for the following programs:

- (1) Space Shuttle, \$1,798,000,000;
- (2) Space flight operations, \$1,699,000,000;
- (3) Expendable launch vehicles, \$42,800,000;
- (4) Physics and astronomy, \$473,700,000;
- (5) Planetary exploration, \$177,600,000;
- (6) Life sciences, \$55,700,000;
- (7) Space applications, \$336,300,000;
- (8) Technology utilization, \$9,000,000;

- (9) Aeronautical research and technology, \$280,000,000;
  - (10) Space research and technology, \$123,000,000; and
  - (11) Tracking and data acquisition, \$503,900,000;
- (b) For "Construction of facilities", including land acquisition, as follows:

- (1) Construction of data analysis facility, Hugh L. Dryden Flight Research Facility, \$4,500,000;
- (2) Rehabilitation and modification of utility systems, Goddard Space Flight Center, \$2,840,000;
- (3) Modifications to the 4- by 7-meter low speed tunnel, Langley Research Center, \$7,200,000;
- (4) Modifications to upgrade the transonic dynamics tunnel, Langley Research Center, \$9,000,000;
- (5) Modification of rocket engine test facility for altitude testing, Lewis Research Center, \$995,000;
- (6) Modification to 450 PSI air system in engine research building, Lewis Research Center, \$2,920,000;
- (7) Rehabilitation of airfield, Wallops Flight Center, \$2,150,000;

(8) Space Shuttle facilities at various locations as follows:

(A) Modifications to solid rocket booster refurbishment and subassembly facilities, John F. Kennedy Space Center, \$1,700,000;

(B) Modification of manufacturing and final assembly facilities for external tanks, Michoud Assembly Facility, \$17,845,000;

(C) Minor Shuttle-unique projects, various locations, \$1,860,000;

(9) Space Shuttle payload facility: Rehabilitation and modification for payload ground support operations, John F. Kennedy Space Center, \$1,740,000;

(10) Repair of facilities at various locations, not in excess of \$500,000 per project, \$15,000,000;

(11) Rehabilitation and modification of facilities at various locations, not in excess of \$500,000 per project, \$20,000,000;

(12) Minor construction of new facilities and additions to existing facilities at various locations, not in excess of \$250,000 per project, \$4,000,000; and

(13) Facility planning and design not otherwise provided for, \$8,250,000.

(c) For "Research and program management", \$1,168,900,000, and such additional or supplemental amounts as may be necessary for increases in salary, pay, retirement, or other employee benefits authorized by law.

(d) Notwithstanding the provisions of subsection (g), appropriations hereby authorized for "Research and development" may be used (1) for any items of a capital nature (other than acquisition of land) which may be required at locations other than installations of the Administration for the performance of research and development contracts, and (2) for grants to nonprofit institutions of higher education, or to nonprofit organizations whose primary purpose is the conduct of scientific research, for purchase or construction of additional research facilities; and title to such facilities shall be vested in the United States unless the Administrator determines

that the national program of aeronautical and space activities will best be served by vesting title in any such grantee institution or organization. Each such grant shall be made under such conditions as the Administrator shall determine to be required to insure that the United States will receive therefrom benefit adequate to justify the making of that grant. None of the funds appropriated for "Research and development" pursuant to this Act may be used in accordance with this subsection for the construction of any major facility, the estimated cost of which, including collateral equipment, exceeds \$250,000, unless the Administrator or his designee has notified the Speaker of the House of Representatives and the President of the Senate and the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate of the nature, location, and estimated cost of such facility.

(e) When so specified and to the extent provided in an appropriation Act, (1) any amount appropriated for "Research and development" or for "Construction of facilities" may remain available without fiscal year limitation, and (2) maintenance and operation of facilities, and support services contracts may be entered into under the "Research and program management" appropriation for periods not in excess of twelve months beginning at any time during the fiscal year.

(f) Appropriations made pursuant to subsection (c) may be used, but not to exceed \$25,000, for scientific consultations or extraordinary expenses upon the approval or authority of the Administrator and his determination shall be final and conclusive upon the accounting officers of the Government.

(g) Of the funds appropriated pursuant to subsections (a) and (c), not in excess of \$75,000 for each project, including collateral equipment, may be used for construction of new facilities and additions to existing facilities, and for repair, rehabilitation, or modification of facilities: Provided, That, of the funds appropriated pursuant to subsection (a), not in excess of \$250,000 for each project, including collateral equipment, may be used for any of the foregoing for unforeseen programmatic needs.

SEC. 102. Authorization is hereby granted whereby any of the amounts prescribed in paragraphs (1) through (12) inclusive, of section 101(b)—

(1) in the discretion of the Administrator or his designee, may be varied upward 10 percent, or

(2) following a report by the Administrator or his designee to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate on the circumstances of such action, may be varied upward 25 percent,

to meet unusual cost variations, but the total cost of all work authorized under such paragraph shall not exceed the total of the amounts specified in such paragraphs.

SEC. 103. Not to exceed one-half of 1 percent of the funds appropriated pursuant to section 101(a) hereof may be transferred to and merged with the "Construction of facilities" appropriation, and, when so transferred, together with \$10,000,000 of the funds appro-

priated pursuant to section 101(b) hereof (other than funds appropriated pursuant to paragraph (13) of such section) shall be available for expenditure to construct, expand, or modify laboratories and other installations at any location (including locations specified in section 101(b)), if (1) the Administrator determines such action to be necessary because of changes in the national program of aeronautical and space activities or new scientific or engineering developments, and (2) he determines that deferral of such action until the enactment of the next authorization Act would be inconsistent with the interest of the Nation in aeronautical and space activities. The funds so made available may be expended to acquire, construct, convert, rehabilitate, or install permanent or temporary public works, including land acquisition, site preparation, appurtenances, utilities, and equipment. No portion of such sums may be obligated for expenditure or expended to construct, expand, or modify laboratories and other installations unless (A) a period of thirty days has passed after the Administrator or his designee has transmitted to the Speaker of the House of Representatives and to the President of the Senate and to the Committee on Science and Technology of the House of Representatives and to the Committee on Commerce, Science, and Transportation of the Senate a written report containing a full and complete statement concerning (i) the nature of such construction, expansion, or modification, (ii) the cost thereof including the cost of any real estate action pertaining thereto, and (iii) the reason why such construction, expansion, or modification is necessary in the national interest, or (B) each such committee before the expiration of such period has transmitted to the Administrator written notice to the effect that such committee has no objection to the proposed action. In calculating the 30 days period referred to in the preceding sentence, any days on which either House is not in session because of an adjournment sine die or an adjournment of more than 5 days to a day certain shall be excluded, but in no event shall the total period extend beyond 45 days.

SEC. 104. Notwithstanding any other provision of this Act—

(1) no amount appropriated pursuant to this Act may be used for any program deleted by the Congress from requests as originally made to either the House Committee on Science and Technology or the Senate Committee on Commerce, Science, and Transportation,

(2) no amount appropriated pursuant to this Act may be used for any program in excess of the amount actually authorized for that particular program by sections 101(a) and 101(c), and

(3) no amount appropriated pursuant to this Act may be used for any program which has not been presented to or requested of either such committee,

unless (A) a period of thirty days has passed after the receipt by the Speaker of the House of Representatives and the President of the Senate and each such committee of notice given by the Administrator or his designee containing a full and complete statement of the action proposed to be taken and the facts and circumstances relied upon in support of such proposed action, or (B) each such committee before the expiration of such period has transmitted to the Administrator written notice to the effect that such committee has no objection to the proposed action. In calculating the 30 day period referred

to in the preceding sentence, any days on which either House is not in session because of an adjournment sine die or an adjournment of more than 5 days to a day certain shall be excluded, but in no event shall the total period extend beyond 45 days.

SEC. 105. It is the sense of the Congress that it is in the national interest that consideration be given to geographical distribution of Federal research funds whenever feasible, and that the National Aeronautics and Space Administration should explore ways and means of distributing its research and development funds whenever feasible.

SEC. 106. (a) Notwithstanding any other provision of law, or any interagency agreement, the Administrator of the National Aeronautics and Space Administration shall charge such prices as necessary to recover the fair value of placing Department of Defense payloads into orbit by means of the Space Shuttle.

(b) This section shall apply to any Department of Defense payloads placed into orbit by means of the Space Shuttle on or after October 1, 1983.

SEC. 107. (a) The Director of the Federal Emergency Management Agency shall ensure that all obligations and responsibilities imposed by the Federal Fire Prevention and Control Act of 1974 are performed during fiscal year 1983, including activities of the United States Fire Administration and the United States Fire Academy.

(b) The Director shall reserve such funds as are appropriated to carry out the functions of the Federal Emergency Management Agency as designated in Reorganization Plan Numbered 3 of 1978 to conduct the operations of the United States Fire Administration, the United States Fire Academy, and such other functions and responsibilities as are vested in the Director pursuant to the Federal Fire Prevention and Control Act of 1974.

SEC. 108. This Act may be cited as the "National Aeronautics and Space Administration Authorization Act, 1983".

## TITLE II

SEC. 201. (a) The Secretary of Commerce is hereby authorized to plan and provide for the management and operation of a civil land remote sensing satellite system, including the LANDSAT D and D' satellites and associated ground system equipment transferred from the National Aeronautics and Space Administration; to provide for user fees; and to plan for the transfer of the ownership and operation of civil operational land remote sensing satellite systems by the private sector when in the national interest. The provisions of this subsection expire September 30, 1984.

(b)(1) As part of his planning for the transfer of the ownership and operation of civil operational land remote sensing satellite systems to the private sector the Secretary shall—

(A) Conduct a study to define the current, projected, and potential needs of the government for land remote sensing data.

(B) Determine and describe the equipment, software, and data inventory that could be transferred to the private sector.

(C) Compare various feasible financial and organizational approaches for such a transfer. Criteria for the comparison should include considerations such as: maintenance of data continuity; main-

tenance of United States leadership; national security; international obligations; potential for market growth; marketing ability; sunk and projected cost to the government; independence of subsidy or financial guarantee from the government; potential of financial return to the government; and price of data to users. The following institutional alternatives should be compared: (i) wholly private ownership and operation of the system by an entity competitively selected; (ii) phased-in government/private ownership and operation; (iii) a legislatively-chartered privately owned corporation; and (iv) continued ownership and operation by the Federal government.

The Secretary shall complete these studies and report on them to the Congress by February 1, 1983.

(2) In addition to the studies and comparisons called for in section 201(b)(1) the Secretary shall fund at least two parallel studies outside the government independently to assess the alternatives called for in section 201(b)(1)(C). These studies should be submitted to the Congress by April 1, 1983.

(c) There is authorized to be appropriated \$14,955,000 for the fiscal year 1983, for the purpose of carrying out the provisions of this title.

(d) No moneys authorized by this title shall be used to transfer to the private sector the ownership or management of any civil land remote sensing space satellite system and associated ground system equipment unless (A) a period of thirty days has passed after the receipt by the Speaker of the House of Representatives, the President of the Senate, the House Committee on Science and Technology, and the Senate Committee on Commerce, Science and Transportation, of a message from the Secretary of Commerce or his designee containing a full and complete plan for the action proposed to be taken together with the reasons therefor and expected funding impacts, or (B) each such committee before the expiration of such period has transmitted to the Secretary written notice to the effect that such committee has no objection to the proposed action.

And the Senate agree to the same.

Committee on Science and Technology: For consideration of the entire House bill, H.R. 5890 and Senate amendment thereto:

DON FUQUA,  
RONNIE G. FLIPPO,  
DAN GLICKMAN,  
BILL NELSON,  
GEORGE E. BROWN, Jr.,  
LARRY WINN, Jr.,  
BARRY M. GOLDWATER, Jr.,  
HAROLD HOLLENBECK,

Select Committee on Intelligence: Solely for consideration of section 5 of Senate amendment to H.R. 5890:

EDWARD P. BOLAND,  
ALBERT GORE, Jr.,  
J. K. ROBINSON,  
Managers on the Part of the House.

## JOINT EXPLANATORY STATEMENT OF THE COMMITTEE OF CONFERENCE

The managers on the part of the House and the Senate at the conference on the disagreeing votes of the two Houses on the amendment of the Senate to the bill H.R. 5890 to authorize appropriations to the National Aeronautics and Space Administration for fiscal year 1983 for Research and Development, Construction of Facilities, and Research and Program Management, and for other purposes, submit the following joint statement to the House and the Senate in explanation of the disposition of the differences agreed upon by managers and recommended in the accompanying conference report.

The NASA request for fiscal year 1983 totaled \$6,612,900,000. The House authorized \$6,647,000 and the Senate amendment authorized \$6,612,900,000. The committee of conference agrees to a total authorization for fiscal year 1983 of \$6,772,900,000 as follows:

### SUMMARY OF ADJUSTMENTS TO H.R. 5890—NASA FISCAL 1983 AUTHORIZATION

	Budget request	House action	Senate action	Committee of conference
Research and development:				
Space Shuttle.....	\$1,718,000,000	\$1,706,500,000	\$1,808,000,000	\$1,798,000,000
Space flight operations.....	1,707,000,000	1,699,000,000	1,448,000,000	1,699,000,000
Expendable launch vehicles.....	42,800,000	42,800,000	42,800,000	42,800,000
Physics and astronomy.....	471,700,000	463,500,000	491,700,000	473,700,000
Planetary exploration.....	154,600,000	177,600,000	194,600,000	177,600,000
Life sciences.....	55,700,000	55,700,000	55,700,000	55,700,000
Space applications.....	316,300,000	330,300,000	336,300,000	336,300,000
Technology utilization.....	4,000,000	9,000,000	9,000,000	9,000,000
Aeronautical research and technology.....	232,000,000	267,100,000	296,000,000	280,000,000
Space research and technology.....	123,000,000	128,000,000	133,000,000	128,000,000
Tracking and data acquisition.....	508,900,000	498,900,000	508,900,000	503,900,000
Total.....	5,334,000,000	5,378,400,000	5,324,000,000	5,504,000,000
Construction of facilities.....	100,000,000	100,000,000	110,000,000	100,000,000
Research and program management.....	1,178,900,000	1,168,900,000	1,178,900,000	1,168,900,000
Grand total.....	6,612,900,000	6,647,300,000	6,612,900,000	6,772,900,000

The Conferees are concerned about the continuing downward trend (in real dollars) of the NASA budget. A strong civilian science and technology base to which NASA is a major contributor is essential to sustaining a strong economy and a credible national defense. Federal expenditures on our national space program are an investment in our future and lead to increased productivity, increased employment and contribute greatly to a positive balance of trade.

As a result of budget constraints that have been placed on NASA over the past few years, additional reductions in this and future

fiscal years threaten even further the ability of the agency to fulfill the mandate of the National Aeronautics and Space Act of 1958. The conferees strongly believe that a balanced civilian space program as set out in the National Aeronautics and Space Act of 1958 is even more relevant today and direct NASA to do everything possible to maintain an effective balanced space program.

The points in disagreement and the conference resolution of them are as follows:

1. NASA requested \$1,718,000,000 for the Space Shuttle program.

The House authorized \$1,706,500,000, a reduction of \$11.5 million including the deletion of the \$6.5 million for Space Shuttle/Solar Maximum Mission Spacecraft Retrieval and Repair Demonstration and a reduction of \$5 million in Performance Augmentation activities.

The Senate authorized \$1,808,000,000, an increase of \$90 million to begin production of the fifth Shuttle orbiter vehicle.

The Conference substitute authorizes \$1,798,000,000, for the Space Shuttle program including \$55 million for Performance Augmentation activities and \$85 million for the fifth Shuttle orbiter vehicle.

2. NASA requested \$1,707,000,000 for the Space Flight Operations program.

The House authorized \$1,699,000,000, a reduction of \$8 million from the NASA request. This reduction is the net result from a decrease of \$5 million in development, test, and mission support/engineering and test base (DTMS/ETB), a decrease of \$8 million from deleting funds for the Space Shuttle/Solar Maximum Mission Spacecraft Retrieval and Repair Demonstration activities and an increase of \$5 million for Advanced Shuttle Upper Stage studies.

The Senate authorized \$1,448,000,000, a reduction of \$259 million from the NASA request. This reduction was the net result from a decrease of \$409 million in Space Transportation Systems Operations activities and an increase of \$150 million for Shuttle/Centaur related development activities.

The Committee of Conference authorizes \$1,699,000,000 for the Space Flight Operations program including \$77.4 million for Development, Test, and Mission Support/Engineering and Technical Base activities; \$5 million for Advance Shuttle Upper Stage studies; and \$1,286.1 million for Space Transportation Systems Operations activities. The amount for Space Transportation Systems Operations activities reflects a \$128 million reduction in authorization of appropriation for Shuttle operations costs related to the launch of defense and national security payloads.

3. NASA requested \$471,700,000 for the Physics and Astronomy program.

The House authorized \$463,500,000, a net reduction of \$8.2 million in Mission Operations and Data Analysis as follows: a decrease of \$9 million from deletion of the Space Shuttle/Solar Maximum Mission Spacecraft Retrieval and Repair Demonstration and an increase of \$1 million for HEAO and OAO data analysis activities.

The Senate authorized \$491,700,000, an increase of \$20 million for the following: \$5 million for Explorer development, \$8 million for Mission Operations and Data Analysis, \$6 million for Research and Analysis, and \$1 million for the Suborbital Program.

The Conference substitute authorizes \$473,700,000 for Physics and Astronomy activities including a \$1 million increase for the High Energy Astronomical Observatory and Orbiting Astronomical Observatory data analysis activities and a \$1 million increase for the Suborbital program.

4. NASA requested \$154,600,000 for the Planetary Exploration program.

The House authorized \$177,600,000, an increase of \$23 million including \$12 million for Mission Operations and Data Analysis for Pioneer Venus, Pioneer 6-9, Pioneer 10 and 11 and Viking mission operations and \$11 million for Research and Analysis including funds for the Infrared Telescope Facility and Lunar Curatorial Facility.

The Senate authorized \$194,600,000, an increase of \$40 million including \$15 million for Mission Operations and Data Analysis and \$25 million for Research and Analysis.

The Committee of Conference adopts the House position.

5. NASA requested \$316,300,000 for the Space Applications program.

The House authorized \$330,300,000, an increase of \$14 million for activities in Technology Transfer (\$4 million), Materials Processing in Space (\$5 million) and Communications and Information Systems (\$5 million).

The Senate authorized \$336,300,000, an increase of \$20 million for a flight demonstration of advanced communications satellite technology.

The Committee of Conference authorizes \$336,300,000 for Space Applications activities including \$28,600,000 for Materials Processing in Space and \$34,900,000 for Advanced Communications Technology activities. The Conferees recognize that NASA is currently re-scoping their Advanced Communications Technology program and strongly support this program. The Conferees request that NASA submit to the House and Senate authorizing Committees a detailed program plan including major milestones, cost projections and any necessary adjustments to the fiscal year 1983 operating plan by January 15, 1983.

6. NASA requested \$232,000,000 for the Aeronautical Research and Technology program.

The House authorized \$267,100,000 for aeronautical research and technology, an increase of \$35.1 million over the Agency request. In its Report No. 96-502 accompanying H.R. 5890, the House provided that \$6 million of the \$35.1 million would be allocated for general augmentation of the research and technology base, and \$29.1 million to systems technology programs with emphasis on transport aircraft systems, and advanced propulsion systems.

The Senate authorized \$296,000,000 for aeronautical research and technology, specifying \$182,000,000 of that amount for the research and technology base, and \$114,000,000 for systems technology development. In so doing, the Senate added \$64 million above the Agency request of specifically for enhancement of certain systems technology programs outlined in Report No. 97-449 accompanying the Senate authorization bill, S. 2604.

The Committee on Conference noted with concern that the Agency's request provided \$50 million for two systems technology pro-

grams having a clear focus on military requirements with no funding for systems technology programs targeted toward civil aviation requirements. The severe economic distress of the U.S. aviation industry including the general and transport aircraft manufacturing industries, and the commercial airline industry is attributable to several major factors. Among these are the recent worldwide decline in the demand for expanded aviation services, the high cost of capital for such growth that is required, and the emergence of foreign competition featuring advanced technology in transports, rotorcraft, and general aviation products backed by foreign government-supported low cost financing.

The Committee of Conference recognizes part of NASA's role in aeronautical research and technology as helping "maintain the strong competitive position of the United States in the international marketplace." The Agency's aeronautical systems technology programs are focused on this role and should now be strengthened, not eliminated. In this connection, the Committee takes note of a similar judgment expressed in the National Research Council Report of July 1982 on "Aeronautics Research and Technology—A Review of Proposed Reductions in the FY 1983 NASA Program." Accordingly, the Committee of Conference has provided \$280,000,000 for Aeronautical Research and Technology including \$182,000,000 for the research and technology base and \$98,000,000 for the systems technology programs.

The Committee expects these additional funds in the amount of \$48 million to be allocated to enhance the Agency's systems technology programs with emphasis on:

	<i>Millions</i>
(1) acceleration of advanced turboprop, including long lead items required for flight test .....	\$15
(2) composite primary aircraft structures .....	6
(3) general and commuter aviation including small engine component technology .....	3
(4) broad property fuels .....	3
(5) energy efficient engine .....	7
(6) energy efficient transport .....	3
(7) terminal configured vehicle .....	5

The remaining \$6.0 million is to be applied to those high priority projects that NASA considers most feasible. The Committee wishes to stress its firm commitment to flight testing of the prop fan concept, thereby positioning the U.S. aviation industry in a leadership position with respect to this coming technology.

7. NASA requested \$123,000,000 for the Space Research and Technology program.

The House authorized \$128,000,000, an increase of \$5 million for advanced propulsion research and technology activities.

The Senate authorized \$133,000,000, an increase of \$10 million for Research and Technology base activities.

The Committee of Conference adopts the House position.

8. NASA requested \$508,900,000 for the Tracking and Data Acquisition program.

The House authorized \$498,900,000, a reduction of \$10 million by adjusting the TDRSS payment schedule and reducing management support efforts.

The Senate authorized the NASA budget request \$508,900,000.

The Committee of Conference recommends a total authorization of \$503,960,000 for Tracking and Data Acquisition activities in fiscal year 1983.

9. NASA requested \$100,000,000 for construction of facilities.

The House authorized the NASA budget request.

The Senate authorized \$110,000,000, an increase of \$10,000,000 over the NASA request for high priority projects which have been previously deferred.

The Committee of Conference adopted the House position.

10. NASA requested \$1,178,900,000 for Research and Program Management activities.

The House authorized \$1,168,900,000, a reduction of \$10 million.

The Senate authorized the NASA request.

The Committee of Conference adopts the House position.

11. Senate Modifications to Section 3 and Section 4 Reprogramming Provisions.

House bill:—No provision.

The Senate modified the reprogramming provisions of Section 3 and Section 4 to provide that when either House is not in session because of an adjournment sine die or an adjournment of more than 3 days the thirty day notification period would be extended by the period of adjournment not to exceed a total notification period of 60 days.

The Conferees adopted the Senate provision but provided that the thirty day notification would be extended when either House is in adjournment sine die or an adjournment of more than 5 days not to exceed a total notification period of 45 days.

12. Section 5 of Senate Amendment.

House bill:—No comparable provisions.

The Senate amendment included a new section 5 which would require the Department of Defense to pay NASA full costs for placing its payloads into orbit using the Space Shuttle.

The Committee of Conference adopts a substitute provision as follows: Sec. 106(a) Notwithstanding any other provision of law, or any interagency agreement, the Administrator of the National Aeronautics and Space Administration shall charge such prices as necessary to recover the fair value of placing Department of Defense payloads into orbit by means of the Space Shuttle. b) This section shall apply to any Department of Defense payloads placed into orbit by means of the Space Shuttle on or after October 1, 1983. The Conferees note that fair value is a matter of negotiation between a seller and a willing buyer.

13. Section 8 of Senate Amendment (FEMA authorization).

House bill:—No comparable provision.

The Senate amendment included a new section 8 which would require the Director of the Federal Emergency Management Administration to perform the obligations and responsibilities imposed by the Federal Fire Prevention and Control Act of 1974 including activities of the United States Fire Administration and the United States Fire Academy. The Senate language further provided that the Director shall reserve \$20 million of funds appropriated to carry out these activities.

The Conferees adopted the Senate language but provided that the Director would reserve such funds as are appropriated for func-

tions of FEMA pursuant to the Federal Fire Prevention and Control Act of 1974, including activities of the United States Fire Administration and the United States Fire Academy.

14. Title II of House bill (NOAA Landsat authorization).

The House included a new Title II to provide authority for the Secretary of Commerce to operate a civil land remote sensing system, provide for user fees, and plan for the transfer of future civil land remote sensing satellite systems to the private sector, when in the national interest. Any plan for transfer to the private sector would be subject to approval by both the House and Senate authorizing committees. The House authorized \$14,955,000 for fiscal year 1983.

The Senate. No comparable language.

The Committee on Conference adopts Title II with three modifications as follows: provides that the authority to plan and provide for the management and operation of the civil land remote sensing satellite system would expire September 30, 1984; includes thirty day notification provision in lieu of legislative veto provision; and requires various studies and analyses be submitted to the Congress.

Committee on Science and Technology: For consideration of the entire House bill, H.R. 5890 and Senate amendment thereto:

DON FUQUA,  
RONNIE G. FLIPPO,  
DAN GLICKMAN,  
BILL NELSON,  
GEORGE E. BROWN, Jr.,  
LARRY WINN, Jr.,  
BARRY M. GOLDWATER, Jr.  
HAROLD HOLLENBECK,

Select Committee on Intelligence: Solely for consideration of section 5 of Senate amendment to H.R. 5890:

EDWARD P. BOLAND,  
ALBERT GORE, Jr.,  
J. K. ROBINSON,

*Managers on the Part of the House.*

Committee on Commerce, Science, and Transportation: For consideration of the entire House bill, H.R. 5890 and Senate amendment thereto:

BOB PACKWOOD,  
HARRISON J. SCHMITT,  
BARRY GOLDWATER,  
HOWARD W. CANNON,  
DON RIEGLE,

Committee on Armed Services: Solely for consideration of section 5 of Senate amendment to H.R. 5890:

JOHN TOWER,

Committee on Commerce, Science, and Transportation: Solely for consideration of section 5 of Senate amendment to H.R. 5890:

WENDELL H. FORD,

*Managers on the Part of the Senate.*

Public Law 97-324  
97th Congress

An Act

To authorize appropriations to the National Aeronautics and Space Administration for research and development, construction of facilities, and research and program management, and for other purposes.

Oct. 15, 1982  
[H.R. 5890]

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

National Aeronautics and Space Administration Authorization Act, 1983.

TITLE I

Sec. 101. There is hereby authorized to be appropriated to the National Aeronautics and Space Administration to become available October 1, 1982:

Research and program management.

Research and development.

(a) For "Research and development", for the following programs:

- (1) Space Shuttle, \$1,798,000,000;
- (2) Space flight operations, \$1,699,000,000;
- (3) Expendable launch vehicles, \$42,800,000;
- (4) Physics and astronomy, \$473,700,000;
- (5) Planetary exploration, \$177,600,000;
- (6) Life sciences, \$55,700,000;
- (7) Space applications, \$336,300,000;
- (8) Technology utilization, \$9,000,000;
- (9) Aeronautical research and technology, \$280,000,000;
- (10) Space research and technology, \$128,000,000; and
- (11) Tracking and data acquisition, \$503,900,000.

Facilities construction.

(b) For "Construction of facilities", including land acquisition, as follows:

- (1) Construction of data analysis facility, Hugh L. Dryden Flight Research Facility, \$4,500,000;
- (2) Rehabilitation and modification of utility systems, Goddard Space Flight Center, \$2,840,000;
- (3) Modifications to the 4- by 7-meter low speed tunnel, Langley Research Center, \$7,200,000;
- (4) Modifications to upgrade the transonic dynamics tunnel, Langley Research Center, \$9,000,000;
- (5) Modification of rocket engine test facility for altitude testing, Lewis Research Center, \$995,000;
- (6) Modification to 450 PSI air system in engine research building, Lewis Research Center, \$2,920,000;
- (7) Rehabilitation of airfield, Wallops Flight Center, \$2,150,000;
- (8) Space Shuttle facilities at various locations as follows:
  - (A) Modifications to solid rocket booster refurbishment and subassembly facilities, John F. Kennedy Space Center, \$1,700,000;
  - (B) Modification of manufacturing and final assembly facilities for external tanks, Michoud Assembly Facility, \$17,845,000;
  - (C) Minor Shuttle-unique projects, various locations, \$1,860,000;

Scientific consultations or extraordinary expenses.

(9) Space Shuttle payload facility: Rehabilitation and modification for payload ground support operations, John F. Kennedy Space Center, \$1,740,000;

(10) Repair of facilities at various locations, not in excess of \$500,000 per project, \$15,000,000;

(11) Rehabilitation and modification of facilities at various locations, not in excess of \$500,000 per project, \$20,000,000;

(12) Minor construction of new facilities and additions to existing facilities at various locations, not in excess of \$250,000 per project, \$4,000,000; and

(13) Facility planning and design not otherwise provided for, \$8,250,000.

(c) For "Research and program management", \$1,168,900,000, and such additional or supplemental amounts as may be necessary for increases in salary, pay, retirement, or other employee benefits authorized by law.

(d) Notwithstanding the provisions of subsection (g), appropriations hereby authorized for "Research and development" may be used (1) for any items of a capital nature (other than acquisition of land) which may be required at locations other than installations of the Administration for the performance of research and development contracts, and (2) for grants to nonprofit institutions of higher education, or to nonprofit organizations whose primary purpose is the conduct of scientific research, for purchase or construction of additional research facilities; and title to such facilities shall be vested in the United States unless the Administrator determines that the national program of aeronautical and space activities will best be served by vesting title in any such grantee institution or organization. Each such grant shall be made under such conditions as the Administrator shall determine to be required to insure that the United States will receive therefrom benefit adequate to justify the making of that grant. None of the funds appropriated for "Research and development" pursuant to this Act may be used in accordance with this subsection for the construction of any major facility, the estimated cost of which, including collateral equipment, exceeds \$250,000, unless the Administrator or his designee has notified the Speaker of the House of Representatives and the President of the Senate and the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate of the nature, location, and estimated cost of such facility.

(e) When so specified and to the extent provided in an appropriation Act, (1) any amount appropriated for "Research and development" or for "Construction of facilities" may remain available without fiscal year limitation, and (2) maintenance and operation of facilities, and support services contracts may be entered into under the "Research and program management" appropriation for periods not in excess of twelve months beginning at any time during the fiscal year.

(f) Appropriations made pursuant to subsection (c) may be used, but not to exceed \$25,000, for scientific consultations or extraordinary expenses upon the approval or authority of the Administrator and his determination shall be final and conclusive upon the accounting officers of the Government.

(g) Of the funds appropriated pursuant to subsections (a) and (c), not in excess of \$75,000 for each project, including collateral equipment, may be used for construction of new facilities and additions to

existing facilities, and for repair, rehabilitation, or modification of facilities: *Provided*, That, of the funds appropriated pursuant to subsection (a), not in excess of \$250,000 for each project, including collateral equipment, may be used for any of the foregoing for unforeseen programmatic needs.

Sec. 102. Authorization is hereby granted whereby any of the amounts prescribed in paragraphs (1) through (12), inclusive, of section 101(b)—

(1) in the discretion of the Administrator or his designee, may be varied upward 10 percent, or

(2) following a report by the Administrator or his designee to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate on the circumstances of such action, may be varied upward 25 percent,

to meet unusual cost variations, but the total cost of all work authorized under such paragraphs shall not exceed the total of the amounts specified in such paragraphs.

Sec. 103. Not to exceed one-half of 1 percent of the funds appropriated pursuant to section 101(a) hereof may be transferred to and merged with the "Construction of facilities" appropriation, and, when so transferred, together with \$10,000,000 of the funds appropriated pursuant to section 101(b) hereof (other than funds appropriated pursuant to paragraph (13) of such section) shall be available for expenditure to construct, expand, or modify laboratories and other installations at any location (including locations specified in section 101(b)), if (1) the Administrator determines such action to be necessary because of changes in the national program of aeronautical and space activities or new scientific or engineering developments, and (2) he determines that deferral of such action until the enactment of the next authorization Act would be inconsistent with the interest of the Nation in aeronautical and space activities. The funds so made available may be expended to acquire, construct, convert, rehabilitate, or install permanent or temporary public works, including land acquisition, site preparation, appurtenances, utilities, and equipment. No portion of such sums may be obligated for expenditure or expended to construct, expand, or modify laboratories and other installations unless (A) a period of thirty days has passed after the Administrator or his designee has transmitted to the Speaker of the House of Representatives and to the President of the Senate and to the Committee on Science and Technology of the House of Representatives and to the Committee on Commerce, Science, and Transportation of the Senate a written report containing a full and complete statement concerning (i) the nature of such construction, expansion, or modification, (ii) the cost thereof including the cost of any real estate action pertaining thereto, and (iii) the reason why such construction, expansion, or modification is necessary in the national interest, or (B) each such committee before the expiration of such period has transmitted to the Administrator written notice to the effect that such committee has no objection to the proposed action. In calculating the thirty-day period referred to in the preceding sentence, any days on which either House is not in session because of an adjournment sine die or an adjournment of more than 5 days to a day certain shall be excluded, but in no event shall the total period extend beyond 45 days.

Report to congressional committees.

Transfer of funds.

Report to congressional committees.

Sec. 104. Notwithstanding any other provision of this Act—

(1) no amount appropriated pursuant to this Act may be used for any program deleted by the Congress from requests as originally made to either the House Committee on Science and Technology or the Senate Committee on Commerce, Science, and Transportation,

(2) no amount appropriated pursuant to this Act may be used for any program in excess of the amount actually authorized for that particular program by sections 101(a) and 101(c), and

(3) no amount appropriated pursuant to this Act may be used for any program which has not been presented to or requested of either such committee,

unless (A) a period of thirty days has passed after the receipt by the Speaker of the House of Representatives and the President of the Senate and each such committee of notice given by the Administrator or his designee containing a full and complete statement of the action proposed to be taken and the facts and circumstances relied upon in support of such proposed action, or (B) each such committee before the expiration of such period has transmitted to the Administrator written notice to the effect that such committee has no objection to the proposed action. In calculating the thirty-day period referred to in the preceding sentence, any days on which either House is not in session because of an adjournment sine die or an adjournment of more than five days to a day certain shall be excluded, but in no event shall the total period extend beyond forty-five days.

Sec. 105. It is the sense of the Congress that it is in the national interest that consideration be given to geographical distribution of Federal research funds whenever feasible, and that the National Aeronautics and Space Administration should explore ways and means of distributing its research and development funds whenever feasible.

Sec. 106. (a) Notwithstanding any other provision of law, or any interagency agreement, the Administrator of the National Aeronautics and Space Administration shall charge such prices as necessary to recover the fair value of placing Department of Defense payloads into orbit by means of the Space Shuttle.

(b) This section shall apply to any Department of Defense payloads placed into orbit by means of the Space Shuttle on or after October 1, 1983.

Sec. 107. (a) The Director of the Federal Emergency Management Agency shall ensure that all obligations and responsibilities imposed by the Federal Fire Prevention and Control Act of 1974 are performed during fiscal year 1983, including activities of the United States Fire Administration and the United States Fire Academy.

(b) The Director shall reserve such funds as are appropriated to carry out the functions of the Federal Emergency Management Agency as designated in Reorganization Plan Numbered 3 of 1978 to conduct the operations of the United States Fire Administration, the United States Fire Academy, and such other functions and responsibilities as are vested in the Director pursuant to the Federal Fire Prevention and Control Act of 1974.

Sec. 108. This Act may be cited as the "National Aeronautics and Space Administration Authorization Act, 1983".

Notification to congressional committees.

Federal research funds, geographical distribution. 42 USC 2459 note.

42 USC 2464.

42 USC 2464 note.

15 USC 2201 note.

5 USC app.

Short title.

TITLE II

SEC. 201. (a) The Secretary of Commerce is hereby authorized to plan and provide for the management and operation of a civil land remote sensing satellite system, including the LANDSAT D and D' satellites and associated ground system equipment transferred from the National Aeronautics and Space Administration; to provide for user fees; and to plan for the transfer of the ownership and operation of civil operational land remote sensing satellite systems by the private sector when in the national interest. The provisions of this subsection expire September 30, 1984.

Civil land remote sensing satellite systems 15 USC 1517 note.

Expiration.

(b)(1) As part of his planning for the transfer of the ownership and operation of civil operational land remote sensing satellite systems to the private sector the Secretary shall—

Study.

(A) Conduct a study to define the current, projected, and potential needs of the government for land remote sensing data.

(B) Determine and describe the equipment, software, and data inventory that could be transferred to the private sector.

(C) Compare various feasible financial and organizational approaches for such a transfer. Criteria for the comparison should include considerations such as: maintenance of data continuity; maintenance of United States leadership; national security; international obligations; potential for market growth; marketing ability; sunk and projected cost to the Government; independence of subsidy or financial guarantee from the Government; potential of financial return to the Government; and price of data to users. The following institutional alternatives should be compared: (i) wholly private ownership and operation of the system by an entity competitively selected; (ii) phased-in Government/private ownership and operation; (iii) a legislatively chartered privately owned corporation; and (iv) continued ownership and operation by the Federal Government.

The Secretary shall complete these studies and report on them to the Congress by February 1, 1983.

Report to Congress.

(2) In addition to the studies and comparisons called for in section 201(b)(1) the Secretary shall fund at least two parallel studies outside the government independently to assess the alternatives called for in section 201(b)(1)(C). These studies should be submitted to the Congress by April 1, 1983.

Parallel studies. Submittal to Congress.

(c) There is authorized to be appropriated \$14,955,000 for the fiscal year 1983, for the purpose of carrying out the provisions of this title.

(d) No moneys authorized by this title shall be used to transfer to the private sector the ownership or management of any civil land remote sensing space satellite system and associated ground system equipment unless (A) a period of thirty days has passed after the receipt by the Speaker of the House of Representatives, the President of the Senate, the House Committee on Science and Technol-

ogy, and the Senate Committee on Commerce, Science, and Transportation, of a message from the Secretary of Commerce or his designee containing a full and complete plan for the action proposed to be taken together with the reasons therefor and expected funding impacts, or (B) each such committee before the expiration of such period has transmitted to the Secretary written notice to the effect that such committee has no objection to the proposed action.

Approved October 15, 1982.

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT-INDEPENDENT AGENCIES APPROPRIATION BILL, 1983

AUGUST 10, 1982.—Committed to the Committee of the Whole House on the State of the Union and ordered to be printed

Mr. BOLAND, from the Committee on Appropriations, submitted the following

REPORT

together with

ADDITIONAL AND SUPPLEMENTAL VIEWS

[To accompany H.R. 6956]

The Committee on Appropriations submits the following report in explanation of the accompanying bill making appropriations for the Department of Housing and Urban Development, and for sundry independent agencies, boards, commissions, corporations, and offices for the fiscal year ending September 30, 1983, and for other purposes.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

RESEARCH AND DEVELOPMENT

1982 appropriation.....	\$4,738,000,000
Estimate, 1983.....	5,334,000,000
Recommended in bill.....	5,542,800,000
Increase above estimate.....	+208,800,000

The research and development account of the National Aeronautics and Space Administration includes the program elements that provide for development of the operational capability of the space shuttle and related systems. This account also includes various programs involving the application of space capabilities in remote sensing of land resources, ocean and atmospheric conditions; material processing; and communications. In the area of space science it includes projects designed to explore the solar system and expand man's knowledge of the universe. Also included under this heading are development programs involving aeronautics technology which support the civilian and military capability of the United States in the area of airframe and engine manufacturing.

The budget submitted in February of 1982 included a total of \$5,334,000,000 for the research and development activities of NASA. This represents an increase of approximately 12 percent above the current estimate for fiscal year 1982.

However, it is instructive that almost 90 percent of this increase is devoted to the space shuttle and space transportation system. Other programs of critical need to the national interest, such as aeronautical research and communications technology, were severely reduced or eliminated.

Also, in the recently enacted 1982 Urgent Supplemental Appropriations Bill, the Congress established the need for development of the Centaur upper stage. Although the Centaur will more than double the geosynchronous payload capability of the space transportation system, additional resources are required in both fiscal years 1982 and 1983 to support this activity.

In response to these needs, the Committee is recommending the following increases for the program areas described below:

- + \$140,000,000 for Centaur upper stage development.
- + \$22,000,000 for advanced communications test satellite (30/20 gigahertz) and related development.
- + \$32,000,000 for aeronautics, to be applied at the Agency's discretion.

- + \$23,000,000 for planetary mission operations and data analysis and research and analysis. Within this increase, the Committee strongly urges NASA to continue funding passive radio astronomical research as part of the planetary science research program.

- + \$5,000,000 for technology transfer and/or technology utilization.
- + \$1,800,000 for operation of the infra-red telescope facility at Mauna Kea, Hawaii.

Offsetting these increases, the Committee has recommended the following reductions:

- \$10,000,000 from the tracking and data acquisition program, to be applied at the Agency's discretion.

- \$5,000,000 from the performance augmentation (filament wound casing) activity.

The Committee has also included bill language "capping" the 1983 amounts for the following programs at these levels:

1. Space shuttle—\$1,779,000,000.
2. Space flight operations—\$1,815,000,000.
3. Space transportation systems/upper stage—\$115,000,000.
4. Space transportation systems operations/upper stage—\$88,000,000.
5. Space telescope—\$137,500,000.
6. Gamma Ray Observatory—\$34,500,000.
7. Galileo—\$92,600,000.
8. Space station—\$4,000,000 (limitation applies to funds carried under advanced programs).
9. Performance augmentation—\$55,000,000.

Finally, the Committee has included language requiring that NASA seek the Appropriations Committees' approval for a new start on the shuttle fifth orbiter. While the Committee believes that the development of the fifth orbiter is potentially a positive step, it is aware that funds to institute such activity may be transferred or reimbursed to NASA from the Department of Defense. The Committee believes that a new start costing upwards of \$1,500,000,000 should not be made without review in the appropriations process.

#### CONSTRUCTION OF FACILITIES

1982 appropriation.....	\$98,700,000
Estimate, 1983.....	100,000,000
Recommended in bill.....	\$5,000,000
Decrease below estimate.....	-5,000,000

The Committee recommends \$95,000,000 for the construction of facilities in 1983. This is a decrease of \$5,000,000 below the budget request. The Committee directs that the reduction be applied at the Agency's discretion from the requests for repair of facilities at various projects; rehabilitation and modification of facilities at various locations; minor construction; and facility planning and design.

#### RESEARCH AND PROGRAM MANAGEMENT

1982 appropriation.....	\$1,108,800,000
Estimate, 1983.....	1,178,900,000
Recommended in bill.....	1,168,900,000
Decrease below estimate.....	-10,000,000

The Committee recommends \$1,168,900,000 for research and program management in 1983. This is a decrease of \$10,000,000 below the budget estimate. The reduction should be applied on a priority basis to contractual and consultant services, travel and public affairs. It is not the intention of the Committee that this reduction be applied to personnel compensation. However, if the lapse rate for 1983, which for NASA has historically been higher than anticipated in the budget, is understated, then a part of the reduction should be applied to personnel compensation.

Finally, the Committee has included language limiting the number of SES positions to 505. This is a reduction of 15 positions from the current level of 520. The Committee notes that over the past three fiscal years NASA has incurred a six percent decline in total personnel. However, there has been no corresponding decline in the number of SES positions. In view of that, the Committee feels that a decrease of approximately three percent in SES positions is warranted.

## TITLE IV

### GENERAL PROVISIONS

The Committee recommends that the general provisions applicable to the Department and agencies carried in the current fiscal year be continued in fiscal year 1983.

#### LIMITATIONS AND LEGISLATIVE PROVISIONS

The following limitations and legislative provisions not heretofore carried in connection with any appropriation bill are recommended:

On page 20, in connection with the National Aeronautics and Space Administration, Research and Development:

*(8) \$4,000,000 for a Space Station, (9) \$55,000,000 for Performance Augmentation,*

On page 20, in connection with the National Aeronautics and Space Administration, Research and Development:

*That none of the funds in this or any other Act shall be used for the development of a fifth space shuttle orbiter without the approval of the Committees on Appropriations*

On page 22, in connection with the National Aeronautics and Space Administration, Research and Program Management:

*That none of the funds in this paragraph may be used to pay for any senior executive service positions in excess of 505*

#### PERMANENT OBLIGATIONAL AUTHORITY—FEDERAL FUNDS AND TRUST FUNDS

Substantial sums of new budget (obligational) authority are made available by permanent legislation for the continuation of certain government activities that are not subject to the annual appropriation process. Details of these activities for the agencies covered in this bill are reflected in appropriate tables appearing at the end of this report. The most significant are the life insurance programs of the Veterans Administration. The budget estimates that such permanent authorities will aggregate \$1,685,789,000 in fiscal year 1983.

### TRANSFER OF FUNDS

Pursuant to Clause 1(b), Rule X of the House of Representatives, the following statement is made describing the transfers of funds provided in the accompanying bill.

The Committee recommends that not to exceed \$267,723,000 be transferred from the various funds of the Federal Housing Administration to Salaries and Expenses of the Department of Housing and Urban Development. This will allow funds for activities of the Federal Housing Administration to be carried in a consolidated account covering all operating expenses of the Department.

The Committee recommends that \$260,000,000 be transferred from the Veterans Administration's Compensation and Pensions account to the Construction, Major Projects account. This will allow excess funds to be used for the critically needed replacement of the Minneapolis medical center.

### INFLATIONARY IMPACT STATEMENT

Clause 2(1)(4) of Rule XI of the House of Representatives requires that each committee report on a bill or resolution shall contain a statement whether enactment of such bill or resolution may have an inflationary impact on prices and costs in the operation of the national economy.

Critics of government spending suggest that practically any spending by government is inflationary. If that were true, then the funds proposed in this bill would be inflationary. However, all Federal spending is not inherently inflationary. It should be analyzed in the context of the economic situation in which it occurs, the financial condition of the government at the time, and the sectors of the economy which the spending may affect.

The amount proposed for appropriation totals \$46,992,239,000. This is \$349,031,000 above the President's request. Included in the total recommended are funds for veterans benefits, community development grants, environmental programs and general revenue sharing. Other funds will support advanced technology and science that directly and indirectly increase productivity.

It is the considered opinion of the Committee that enactment of this bill will not have an inflationary impact on prices and costs in the operation of the national economy.

Further information on the purpose of the spending proposed in this bill can be obtained in other parts of the report. Also, a large amount of detailed statistical and financial information can be obtained in the hearings conducted in developing this bill.

### CHANGES IN THE APPLICATION OF EXISTING LAW

The Committee submits the following statements in compliance with Clause 3, Rule XXI of the House of Representatives, describing the effects of provisions proposed in the accompanying bill which may be considered, under certain circumstances, to change the application of existing law, either directly or indirectly.

1. The Committee, in a number of instances, has found it necessary to recommend funding for ongoing activities and programs where authorizations have not been enacted to date. This includes some or all of the programs under the Department of Housing and Urban Development, the Council on Environmental Quality, the Environmental Protection Agency, the Federal Emergency Management Agency, the National Aeronautics and Space Administration, the National Science Foundation, and the Neighborhood Reinvestment Corporation.

2. In many cases, the Committee has recommended appropriations which are less than the maximum amounts authorized for the various programs funded in the bill. Whether these actions constitute a change in the application of existing law is subject to interpretation, but the Committee felt this should be mentioned.

3. The bill provides that several appropriations shall remain available for more than one year for which the basic authorizing legislation does not presently authorize such extended availability. Most of these items have been carried in previous appropriation acts. The Committee deems such language desirable in order to provide for the effective use of the funds.

4. The Committee has included limitations for official reception and representation expenses for selected agencies in the bill.

5. The bill contains administrative provisions under Veterans Administration. Some of these provisions could possibly be construed as changing the application of existing law.

6. Sections 401 through 415 of title IV of the bill are general provisions which place limitations on the use of funds in the bill and which might, under some circumstances, be construed as changing the application of existing law.

7. The bill includes, in certain instances, limitations on the obligation of funds for particular functions or programs. These limitations include restrictions on the obligation of funds for administrative expenses, the use of consultants, and programmatic areas within the overall jurisdiction of a particular agency.

8. The appropriation language on page 3, in connection with the housing for the elderly or handicapped fund, provides borrowing authority for the Secretary.

9. The provision on page 3, in connection with housing for the elderly or handicapped, provides that the receipts and disbursements of the fund shall be included in the totals of the Budget of the United States Government.

10. The language on page 4, in connection with troubled projects operating subsidy, permitting the use of excess rental charges and, under certain circumstances, assistance payments to an owner of a multifamily housing project assisted but not insured under the National Housing Act, could be construed as changing the application of existing law.

11. The appropriation language on page 5, in connection with the Federal Housing Administration Fund, limits additional commitments to guarantee loans.

12. The appropriation language on page 6, in connection with non-profit sponsor assistance, limiting direct loans could be construed as changing the application of existing law.

13. The appropriation language on page 7, in connection with guarantees of mortgage-backed securities, limits additional commitments to issue guarantees.

14. The appropriation language on page 7, in connection with community development grants, limiting expenses for planning and management development and administration activities could be construed as changing the application of existing law.

15. The language on page 8, in connection with community development grants, limiting the amount of the Secretary's discretionary fund could be construed as changing the application of existing law. Language has also been included limiting commitments to guarantee loans.

16. The language on page 8, in connection with urban development action grants, earmarking funds for large cities could be construed as changing existing law.

17. The appropriation language on page 8, in connection with the Rehabilitation Loan Fund, provides that the revolving fund shall consist of collections, unexpended balances of prior appropriations, and other amounts and could be construed as changing the application of existing law.

18. The language on page 9, in connection with the New Communities Fund, providing for the redemption of debentures could be construed as changing the application of existing law.

19. The provision on page 11, in connection with salaries and expenses, could affect departmental reorganizations.

20. The provision on page 13, in connection with salaries and expenses of the Environmental Protection Agency, limits the use of funds for purposes of resource conservation and recovery panels.

21. The provision on page 14, in connection with abatement, control and compliance, limits the availability of funds for purposes of the Resource Conservation and Recovery Act, as amended.

22. The provision on page 15, in connection with the Hazardous Substance Response Trust Fund, limits administrative expenses and could be construed as changing existing law.

23. The language on page 15, in connection with the Environmental Protection Agency administrative provision, bars the use of the pesticide toxaphene.

24. The provision on page 16, in connection with the Office of Science and Technology Policy, prohibits nonreimbursable detailees after March 31, 1983.

25. The language on page 18, in connection with the National Flood Insurance Fund, limits certain Fund expenses without prior approval and could be construed as changing the application of existing law.

26. The language on pages 19 and 20, in connection with research and development, limits funds for certain projects without the approval of the Committees on Appropriations.

27. The provision on page 22, in connection with research and program management, limits the number of senior executive service employees.

28. The provisions on page 22, in connection with the National Credit Union Administration, Central Liquidity Facility, limiting borrowing authority and administrative expenses could be construed as changing the application of existing law.

29. The provisions on page 23, in connection with research and related activities, provide for the use of receipts from other research facilities, and could require proportional reductions in legislative earmarkings.

30. The provision on pages 23 and 24, in connection with science education activities, could require proportional reductions in legislative earmarkings.

31. The provision on page 25, in connection with the Selective Service System, permits the President to exempt the Agency from appropriation restrictions of the Budget and Accounting Act of 1921.

32. The provision on page 26, in connection with readjustment benefits, eliminates correspondence training benefits.

33. The appropriation language for general operating expenses on page 28 provides for reimbursement to the Department of Defense for the cost of overseas employee mail. This language has been carried previously, and permits free mailing privileges for VA personnel stationed in the Philippines.

34. The appropriation language for construction, minor projects, on page 30 provides that unobligated balances of previous appropriations may be used for any project with an estimated cost of less than \$2,000,000.

35. The appropriation language on pages 31 and 32, in connection with the direct loan revolving fund, limits loans and could, under certain circumstances, be construed as changing the application of existing law.

36. The provision on page 33, in connection with corporations, requires release in an appropriation act of loans and mortgage purchase authority not otherwise required by law.

37. The appropriation language on page 34, in connection with the limitation on administrative and nonadministrative expenses, Federal Home Loan Bank Board, provides for examination of Federal and state chartered institutions and for the training of state savings and loan examiners.

#### COMPARISONS WITH BUDGET RESOLUTION

In accordance with section 308(a)(1)(A) of the Congressional Budget Act of 1974 (Public Law 93-344), the following provides comparisons between the new budget authority targets set forth in the first concurrent resolution on the fiscal year budget, as allocated by the Committee on Appropriations under section 302 of the Act, and the budget authority contained in the accompanying bill:

Subcommittee target.....	\$54,608,000,000
Committee bill.....	46,995,739,000

Difference (over target (+) under target (-))..... -9,607,261,000

#### FIVE-YEAR PROJECTION OF OUTLAYS

In accordance with section 308(a)(1)(B) of the Congressional Budget Act of 1974 (Public Law 93-344), the following table contains

**SUPPLEMENTAL VIEWS OF THE HONORABLE  
BOB TRAXLER**

I believe this Committee is to be commended for its efforts to restore significant portions of the budget reductions proposed by the President for the Environmental Protection Agency in his fiscal 1983 budget request. As a result of these restorations, the total EPA budget will reflect a truer picture of the enormous task facing the Agency.

However, it would be my preference if even more restorations could have been made. While it appears as if the budget level provided in this bill exceeds the fiscal 1982 appropriation for EPA, the fact of the matter is that even with the restorations made in certain EPA activities, most notably research and development, salaries and expenses, and abatement control and compliance, the appropriation provided for these functions is still below the fiscal 1982 amount, even without accounting for the impact of inflation. The HUD-Independent Agencies Subcommittee has been a long-time supporter of adequate funding for the Environmental Protection Agency. Given the budget proposals the President has submitted for this agency, it is even more crucial that the Subcommittee maintain its vigilance in efforts to protect our environment for the future.

It is amazing to me that the President in good conscience could cut EPA by 20% last year, and propose to cut another 12% this year while we, as a nation, face a critical need to safeguard our environment.

EPA's mandate is growing and the problems it faces are becoming more complex. I am very disturbed by the fact that EPA will not have sufficient resources to carry out its mission, and it is for this reason that I feel these supplemental views are necessary.

These cuts will have a serious impact on states' efforts to maintain their air, water, and toxic control programs. Historically, federal funds have provided 45% of state air quality program budgets, 46% of water quality budgets, and 69% of hazardous waste program budgets. With the Administration's proposal of a 20% cut in grants to the states, only six states would be able to make up the reduction in federal support for their air quality programs, and only 11 states could make up the reduction in hazardous waste grants.

The Administration's answer to this problem is to suggest that states increase permit and license fees in order to replace the lost federal dollars. Anyone who has been following the business climate in our nation can instantly realize that this is not a very feasible recommendation, and one which would almost certainly result in a reduction in total government support for environmental programs.

I am especially disturbed by the budget cuts made in research and development programs, and in salaries and expenses. In just two years, the Reagan Administration has reduced the research budget by 60%. Even after restoring \$12,500,000 to the research and development account, this bill still reduces the program by \$33,111,000 below fiscal

1982 levels, and after restoring nearly \$7,000,000 to the salaries and expense account, this function will still be \$10,143,000 below the level provided in fiscal 1982.

There is no question that Americans are greatly concerned about the quality of our environment. We are learning new things every year about our environment. It is only through a strong national effort in research and development that we today have a better understanding of our environment and our responsibility to care for its future preservation.

We have this knowledge because of the efforts made by previous Administrations to properly intensify our research and development efforts. The Reagan Administration's budget, however, sends a message which seems to suggest that we, as a nation, no longer care about our environment, or that we know all that we need to know. Nothing could be further from the truth.

This Administration has committed itself to ignoring the environmental challenges we face, while attempting to convince the American people that their environmental non-policy is in our nation's best interest.

A healthy environment is essential, both now and for the future. Further, I fear that if we allow the Administration to lead us away from a strong national environmental policy under the guise of fiscal caution, the future costs associated with a deteriorating environment will be staggering, both in terms of clean-up and in terms of the health problems caused by the absence of a responsible environmental program.

To cut salaries and expenses looks good to those who say that government is bad in and of itself, but it is a crippling blow to efforts to enforce the environmental laws that have been adopted over the course of the last decade. It is also a way to delay efforts to comply with clean air and water mandates. Many businesses need certification from EPA before going ahead with construction projects. Certification cannot be speedily provided by an over-worked EPA staff trying to keep pace with the massive need for timely agency review of all projects requiring certification. Adequate salaries and expense funding is essential if EPA is to respond quickly, but, again, I fear that this budget does not pay proper attention to this problem even though the efforts at restoration deserve to be commended.

Finally, it is essential that our budgets reflect our national priorities. I do not believe this Administration's budget reflects the American public's concern for a healthy environment. Congress has the responsibility to guarantee the health of Americans by not jeopardizing or crippling the agency which safeguards the quality of our environment.

Budget constraints do not allow us to do what needs to be done. But it is time that Congress boldly states that the present Administration's environmental policy is wrong, and that it needs to be modified in order to preserve a healthy environment for future generations.

This bill is a good place to start.

BOB TRAXLER.

**ADDITIONAL VIEWS OF THE HONORABLE C. W. "BILL"  
YOUNG AND THE HONORABLE LINDY (MRS. HALE)  
BOGGS**

For the FY 1983 program for civil defense, the President has requested funding in the amount of \$252.3 million. His proposal constitutes the first year of a seven-year plan to enhance a broad spectrum of emergency preparedness and response resources at all levels of government to better protect the American people from all forms of emergencies ranging from floods, hurricanes and fires to national emergencies, including an enemy attack.

The House last week voiced its strong support for the President's program by a majority Floor vote on funding authorizations for defense programs; it rejected an amendment to reduce the President's civil defense funding requested by \$107 million. Despite this support, the Appropriations Committee has voted to fund a 1983 civil defense program at just over one-half the amount requested by the President and approved by the full House on H.R. 6030. This cutback is not in the country's best interests and will have the effect of "gutting" a program of essential services to the American people.

There is a critical need to reduce Federal spending and control the effects of \$100+ billion deficit spending which are causing economic havoc for all Americans. At the same time, however, it is imperative, both from a public safety and cost saving viewpoint, that programs which protect the health, safety and property of citizens in virtually every community in our nation from the losses caused by major natural disasters and technological emergencies be continued and improved.

The civil defense proposals recommended by the President and approved by the House continue to keep costs to a minimum and, at the same time, allow for real improvements in the existing emergency services resources in every community in America. Of particular importance, virtually all of the activities undertaken for civil defense are very supportive of State and local capabilities to respond to disasters and emergencies occurring on a day-to-day basis.

We are particularly mindful of the recent catastrophe when the Air Florida aircraft crashed on the 14th Street bridge in Washington. Nothing could be said or done to prevent the terrible deaths suffered by the 74 victims of that incredible accident. It was one of America's worst moments in our peacetime history. However, as bad as that accident was, the response of Federal, District of Columbia and Virginia emergency relief authorities was excellent in terms of the management of the full recovery operations. This was possible to a large extent through emergency management officials and the support of the Federal Emergency Management Agency which coordinated Federal resources in support of State and local emergency response agencies.

In the recent crash in New Orleans, civil defense people were first on the scene to coordinate and manage emergency operations. The com-

munications and directions systems and equipment of the local civil defense offices were utilized throughout the emergency control and recovery operations at the disaster site.

These are not situations unique to the New Orleans or Washington crashes; but are the cases over and over again as disasters and emergencies strike communities across America. When Hurricanes David and Frederic struck Florida and Hurricane Allen struck Texas, civil defense people were there managing the crisis operations to save lives and protect property. The same is true as tornadoes struck Illinois and Texas, as fires struck California and Massachusetts and as floods struck Indiana, Connecticut, and Louisiana—civil defense officials are on the scene managing efforts to save lives and to protect the public property.

Finally, we want to make a point about the nuclear attack aspects of our civil defense program. Clearly, efforts to avoid nuclear war must be our nation's highest commitment. The Congress and the President must take all reasonable steps possible to assure this holocaust never occurs.

Nonetheless, we believe that as long as there are nuclear weapons controlled by the USSR we must acknowledge the possibility that weapons could be used in an attack against our nation or that an accident could occur. One aspect of the evacuation issue for which we must plan is for millions of people who will spontaneously leave cities because of the perceived threat to their lives, regardless of any action or advice from authorities. In these circumstances, we cannot, in good conscience, support efforts to strip programs that will assure that prudent readiness actions are taken now which could save millions of lives, reduce destruction of property and protect our society and institutions.

Congress and the President have agreed on the critical features of a national civil defense program in important legislation passed in 1980 and 1981. President Reagan has offered a program to meet these needs: the question is, will Congress now follow through. The Civil Defense Act was just amended to authorize an enhanced program for both attack and peacetime emergency readiness and response. The President's proposal, accepted by the House on H.R. 6030, simply calls for the resources to make these policies a reality.

We realize that today's civil defense program which has been funded at a "token" level for over a decade, is not as effective as it might otherwise be. Our concern, however, is that this current situation is being used as a basis for concluding that any civil defense program is useless. To the contrary, we believe our citizens want a useful and efficient program at a reasonable cost level that can be used in natural and man-made disasters which strike all too frequently.

**BILL YOUNG.  
LINDY BOGGS.**

## Calendar No. 804

97TH CONGRESS }  
2d Session }

SENATE {

REPORT  
No. 97-549

## DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT—INDEPENDENT AGENCIES APPROPRIATION BILL, 1983

SEPTEMBER 16 (legislative day, SEPTEMBER 8), 1982.—Ordered to be printed

Mr. GARN, from the Committee on Appropriations,  
submitted the following

## REPORT

[To accompany H.R. 6956]

The Committee on Appropriations to which was referred the bill (H.R. 6956) making appropriations for the Department of Housing and Urban Development, and for sundry independent agencies, boards, commissions, corporations, and offices for the fiscal year ending September 30, 1983, and for other purposes, reports the same to the Senate with various amendments and presents herewith an explanation of the contents of the bill.

## NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

## RESEARCH AND DEVELOPMENT

1982 appropriation.....	\$4,738,000,000
1983 budget estimate.....	5,334,000,000
House allowance.....	5,542,800,000
Committee recommendation.....	5,117,800,000

The Committee recommends an appropriation of \$5,117,800,000 in fiscal year 1983 for the research and development activities of the National Aeronautics and Space Administration. This amount is \$216,200,000 less than the budget estimate and \$425,000,000 less than the House allowance.

## PROGRAM DESCRIPTION

The objectives of the National Aeronautics and Space Administration program of research and development are to extend our knowledge of the Earth, its space environment, and the universe; to expand the practical applications of space technology; to develop, operate, and improve manned and unmanned space vehicles; to provide technology for improving the performance of aeronautical vehicles while minimizing their environmental effects and energy consumption; and to assure continued development of the aeronautics and space technology necessary to accomplish national goals. The research and development program at NASA consists of the following activities:

*Space transportation systems.*—This activity provides all of the transportation and associated capabilities required to conduct space operations. The major focus of NASA's space transportation program is the Space Shuttle—the first reusable space vehicle and the principal element of a versatile space transportation system designed to provide domestic and international users with round trip access to space for the 1980's and beyond. The Shuttle consists of a reusable delta-wing orbiter vehicle with three main engines, an expendable propellant tank, and reusable twin solid rocket boosters. It provides unique capabilities for placement and retrieval of satellites, in-orbit servicing of satellites, and delivery to Earth orbit of payloads and propulsive stages of higher altitude and planetary missions. The operational era of the Space Shuttle will be initiated in fiscal year 1983. Operational activities in fiscal year 1983 will support five flights and procurement, assembly and checkout of the solid rocket boosters, external tanks, and other hardware for flights in subsequent years. Production activities in fiscal year 1983 will feature the final preparations for the delivery of the third flight Orbiter and the operational modifications to the first orbiter vehicle. The development of a lighter-weight solid rocket booster will be pursued to provide additional performance for west coast launches of the Space Shuttle. The appropriation will also provide expendable launch vehicles and services to augment the Space Shuttle.

*Space science.*—This program utilizes space systems, supported by airborne and ground-based observations, to conduct scientific investigations of the Earth and its space environment, the Sun, the planets, and interplanetary and interstellar space, and the other stars of our galaxy and universe. Results from these investigations contribute to our understanding of the universe, including the key questions of life, matter, and energy. In fiscal year 1983 work will continue on the development of the space telescope project, the Gamma Ray Observatory, the Galileo project, the International Solar Polar Mission experiments, preparation for the joint NASA/DOD solar maximum mission repair, spacelab payloads, several explorer projects, and various research efforts.

*Space and terrestrial applications programs.*—These programs are designed to identify, develop, demonstrate, and transfer space technology, systems, and other capabilities which can be effectively used for practical benefits. Space applications research and development covers the areas of resource observations, environmental observations, materials processing in space, communications and information systems, which are designed to accelerate and expand the availability and use of technology developed in all NASA programs into the private and public sectors of the economy. Among the major space and terrestrial applications activities planned for fiscal year 1983 are: operation of the Landsat-D Earth resources satellite, which was launched in July 1982; continued development of the Earth radiation budget experiment satellite system in cooperation with other Federal agencies; in-house development of the halogen occultation experiment; and development of the upper atmospheric research satellite experiments and mission definition, Shuttle/spacelab payload development, and continued work in the areas of materials processing, communications research and development, and the utilization of NASA-generated technology by both the public and private sectors.

*Aeronautics and space technology.*—The objective of the aeronautics program is the advancement of aeronautical technology to insure safer, more economical, efficient and environmentally acceptable air transportation systems which are responsive to current and projected national needs. The program is designed to help maintain our long-term competitive position in the international aviation marketplace and to support the military in maintaining the superiority of the Nation's military aircraft. In fiscal year 1983, the budget request accords priority to advanced national security objectives. The objective of the space research and technology program is to provide the technology base necessary to support current and future space activities, to formulate technology options for the future, and to advance technology required to further reduce the costs of space activities.

*Tracking and data acquisition.*—This program provides for continuation of tracking and data acquisition for Earth orbital spacecraft, planetary missions, sounding rockets, and research aircraft. This support is provided by a worldwide network of NASA ground stations interconnected by a communications system which provides the capability for instantaneous transmission of data and critical commands between spacecraft and the flight control centers. Facilities are also provided to process into meaningful form the scientific, applications, and engineering data which are collected from flight projects. A major aspect of the tracking and data acquisition program is the tracking and data relay satellite system (TDRSS) which will support essentially all Earth orbital spacecraft missions and improve NASA's Earth orbital tracking and data acquisition capabilities. NASA will acquire this capability through an arrangement under which the contractor will establish the system and provide NASA with TDRSS services beginning in fiscal year 1983. In the interim, the Agency's spacecraft tracking and data network will support Earth orbital scientific and applications spacecraft and all

Shuttle orbital flight tests as well as international missions and missions of other U.S. agencies. The deep space network tracking system will continue to support a number of planetary missions in 1983.

#### COMMITTEE RECOMMENDATION

The Committee recommends \$5,117,800,000 for NASA's R. & D. activities. This recommendation is based on the Agency's fiscal year 1983 budget justification with the following changes: \$233,000,000 for Centaur F upper stage development, procurement, and integration and upper stages for the tracking data relay satellite system (+\$100,000,000 above the request); \$280,000,000 for aeronautical research and technology (+\$48,000,000 above the request to be used at the discretion of the Agency)—in determining the use of this add-on, the Committee suggests that NASA carefully review the findings of the recent report (July 1982) on aeronautics by the National Research Council; \$9,000,000 for technology utilization (+\$5,000,000 above the request); \$664,300,000 for physics, astronomy, and planetary exploration (+\$38,000,000 above the request, of which not less than \$5,000,000 shall be for physics and astronomy)—these additional funds should be used to support existing planetary missions, research, and data analysis; \$39,900,000 for space applications communications and information systems (+\$20,000,000 above the request)—the additional funds are to be applied to the 30/20 gigahertz test and evaluation program; \$1,800,000 for the operation of the infra-red telescope facility at Mauna Kea, Hawaii (+\$1,800,000 above the request)—in the future, the Committee expects this facility to compete for funding in the National Science Foundation's budget; \$1,005,100,000 for space transportation systems operation (−\$409,000,000 below the request)—this reduction is consistent with the assumption in the Senate authorization bill (H.R. 5890)—this bill assumes that the reimbursement for launch services on Shuttle flights will be increased by DOD in this amount; and −\$20,000,000 as a general reduction to be applied at the discretion of the Agency to programs other than those augmented above. Within the amounts available for R. & D., the Committee has no objection to NASA requesting a re-programming to maintain the Centaur G option.

The House included bill language establishing limitations on programs that cannot be exceeded without the approval of the committees. The Committee has deleted these "caps" and substituted binding levels for upper stage development and aeronautics. The Committee also established a maximum level for the Space Shuttle (other than space flight operations) at \$1,769,000,000.

The Committee notes that with the enactment of the Small Business Innovation Development Act of 1982 (Public Law 97-219) Federal agencies having an extramural R. & D. budget exceeding \$100,000,000 in fiscal year 1983, shall expend no less than 0.2 percent of this budget on a small business innovation program. The Committee endorses the need for channeling Federal funds into small R. & D. firms. In order to provide a transition to this new policy, the Committee has included language requiring NASA to make \$1,570,000 available for the purposes

of the Small Business Innovation Development Act. This funding level is based on an estimate of the total dollar value of new R. & D. contract funds.

The Committee understands that NASA now has underway a major planning activity to define a future space station program, for consideration by the administration and Congress as a major new initiative in space. The Committee approves of such a planning activity, but expects NASA to keep the Committee on Appropriations fully informed of the direction and scope of this planning activity.

Finally, the Committee has retained House language requiring that NASA seek approval of the committees for a new procurement on the fifth Shuttle orbiter. While the Committee believes that the development of the fifth orbiter may be desirable, a new procurement of this magnitude should not be made without the careful review of the Appropriations Committees.

CONSTRUCTION OF FACILITIES

1982 appropriation .....	\$98,700,000
1983 budget estimate .....	100,000,000
House allowance .....	95,000,000
Committee recommendation .....	100,000,000

The Committee recommends an appropriation of \$100,000,000 for facilities activities in fiscal year 1983. This amount is the same as the budget estimate and \$5,000,000 more than the House allowance.

PROGRAM DESCRIPTION

The construction of facilities account provides for contractual services for repair, rehabilitation, and modification of existing facilities; the construction of new facilities; and acquisition of related facility equipment; the design of facilities projects; and, advance planning related to future facilities needs.

COMMITTEE RECOMMENDATION

The Committee recommends \$100,000,000 for this account. The Committee notes that NASA's request to OMB was for \$164,800,000 and the replacement value of the Agency's physical plant is estimated at \$20,000,000,000. The Committee does not believe the reduction proposed by the House would be cost effective in the long run and has therefore restored the reduction.

RESEARCH AND PROGRAM MANAGEMENT

1982 appropriation .....	\$1,183,300,000
1983 budget estimate .....	1,178,900,000
House allowance .....	1,168,900,000
Committee recommendation .....	1,177,000,000

The Committee recommends an appropriation of \$1,177,000,000 in fiscal year 1983 for research and program management. This amount is \$1,900,000 less than the budget estimate and \$8,100,000 more than the House allowance.

PROGRAM DESCRIPTION

The research and program management appropriation supports the performance and management of research, technology, and test activities at NASA installations, and the planning, management, and support of contractor research and development tasks necessary to meet the Nation's objectives in aeronautical and space research. Specifically, this appropriation provides the technical and management capability of the civil service staff needed to conduct the full range of programs for which NASA is responsible; maintains facilities and laboratories in a state of operational capability and manages their use in support of research and development programs; and provides technical and administrative support for the research and development programs at NASA.

COMMITTEE RECOMMENDATION

The Committee recommends \$1,177,000,000 for research and program management. The Committee expects that the \$1,900,000 decrease from the request level will be absorbed in the area of management, operations, and headquarters travel. The \$7,129,000 increase in the management and operations subcategory was to cover, among other things, anticipated increases in contract rates and the replacement of a small administrative aircraft. The Committee believes that savings can be achieved in these areas.

The Committee notes that the total NASA travel budget has increased 40 percent since fiscal year 1981 and that the headquarters 1982 travel budget is now projected to be 9 percent greater than the estimate contained in the original fiscal year 1982 budget. The Agency should apply a portion of the decrease to headquarters travel, especially travel of non-NASA employees to Space Shuttle launches.

The Committee has deleted a House provision limiting the number of SES positions to 505. This would be a reduction of 15 positions from the current level of 520. The Committee does not believe that such congressional limitations are an effective way of controlling costs.

#### TITLE IV—GENERAL PROVISIONS

The Committee concurs with all of the general provisions that were included in the fiscal year 1982 HUD-Independent Agencies Appropriations Act (Public Law 97-101) and were included by the House in this bill (sections 401-415). The Committee has, however, struck two new provisions added on the House floor. These provisions are as follows:

SEC. 416. No funds appropriated by this act may be obligated or expended to issue, promulgate, implement, administer, or enforce any standard or rule under sections 108 and 109 of the Clean Air Act, 42 U.S.C. 7408 and 7409, which changes the national ambient air quality standards for carbon monoxide to permit multiple days of allowable exceedances on an annual basis as described in 47 Federal Register 26407.

SEC. 417. None of the funds appropriated by this act may be obligated or expended to promulgate, issue, prescribe, implement, administer, make, or enforce any finding, rule, order, or sanction under the Clean Air Act on any State or political subdivision thereof for failure to adopt, implement, conduct, or enforce a vehicle emission control inspection and maintenance program. Nothing in this section shall be construed to preclude the use of funds for the purpose of providing technical assistance under the Clean Air Act to any State or political subdivision thereof or to terminate in accordance with such act any sanction imposed under such act for such a failure.

The Committee took this action in light of the fact that neither of these provisions were in the version of the House bill used as the basis of the subcommittee and full Committee markups. The deletion of these provisions will permit full consideration of these provisions when the bill is debated in the Senate.

#### COMPLIANCE WITH RULE XVI, PARAGRAPH 7

Rule XVI, paragraph 7 states:

"Every report on general appropriation bills filed by the Committee on Appropriations shall identify with particularity each recommended amendment which proposes an item of appropriation which is not made to carry out the provisions of an existing law, a treaty stipulation, or an act or resolution previously passed by the Senate during that session."

The provision concerning annual contributions for assisted housing, within the Department of Housing and Urban Development, would fall under this rule.

97TH CONGRESS }  
2d Session }

HOUSE OF REPRESENTATIVES

REPORT  
No. 97-891

MAKING APPROPRIATIONS FOR THE DEPARTMENT OF HOUSING AND  
URBAN DEVELOPMENT, AND FOR SUNDRY INDEPENDENT AGENCIES,  
BOARDS, COMMISSIONS, CORPORATIONS, AND OFFICES

SEPTEMBER 29, 1982.—Ordered to be printed

Mr. BOLAND, from the committee of conference,  
submitted the following

CONFERENCE REPORT

[To accompany H.R. 6956]

The committee of conference on the disagreeing votes of the two Houses on the amendments of the Senate to the bill (H.R. 6956) making appropriations for the Department of Housing and Urban Development, and for sundry independent agencies, boards, commissions, corporations, and offices for the fiscal year ending September 30, 1983, and for other purposes, having met, after full and free conference, have agreed to recommend and do recommend to their respective Houses as follows:

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Amendment No. 40: Establishes a limitation for Space Shuttle of \$1,769,000,000 as proposed by the Senate, instead of \$1,779,000,000 as proposed by the House.

Amendment No. 41: Restore language proposed by the House and stricken by the Senate and deletes language proposed by the Senate.

Amendment No. 42: Reported in technical disagreement. The managers on the part of the House will offer a motion to recede and concur in the amendment of the Senate with an amendment as follows:

*\$1,796,000,000: Provided, That the amount available for obligation or expenditure shall be reduced to the extent subsequent authorizations provide for transfers*

The managers on the part of the Senate will move to concur in the amendment of the House to the amendment of the Senate.

Amendment No. 43: Restores language proposed by the House and stricken by the Senate establishing limitations on various programs.

Amendment No. 44: Appropriates \$5,542,800,000 for research and development as proposed by the House, instead of \$5,117,800,000 as proposed by the Senate.

The above amount includes the following changes from the budget:

+ \$140,000,000 for Centaur upper stage development (including \$13,000,000 from kick-stage termination);

+ \$20,000,000 for advanced communications test satellite (30/20 gigahertz);

+ \$48,000,000 for aeronautics (including \$3,000,000 from kick-stage termination);

+ \$30,000,000 for planetary mission operations and data analysis and research and analysis (including no less than \$5,000,000 for physics and astronomy);

+ \$5,000,000 for technology transfer and/or technology utilization;

+ \$1,800,000 for operation of the infra-red telescope facility at Mauna Kea, Hawaii; and

— \$20,000,000 as a general reduction.

Amendment No. 45: Reported in technical disagreement. The managers on the part of the House will offer a motion to recede and concur in the amendment of the Senate with an amendment as follows:

*That \$280,000,000 shall be made available for aeronautical research and technology, that \$192,000,000 shall be made available for design, development, procurement, and other related requirements of liquid hydrogen-liquid oxygen upper stages (Centaur): Provided further,*

The managers on the part of the Senate will move to concur in the amendment of the House to the amendment of the Senate.

Amendment No. 46: Appropriates \$97,500,000 for construction of facilities, instead of \$95,000,000 as proposed by the House and \$100,000,000 as proposed by the Senate.

Amendment No. 47: Appropriates \$1,168,900,000 for research and program management as proposed by the House, instead of \$1,177,000,000 as proposed by the Senate.

Amendment No. 48: Deletes language proposed by the House and stricken by the Senate limiting the number of senior executive service positions.

## TITLE IV—GENERAL PROVISIONS

Amendment No. 64: Deletes language proposed by the House and stricken by the Senate limiting the use of funds to issue revisions to the national ambient air quality standard for carbon monoxide to permit multiple days of allowable exceedances on an annual basis.

The committee of conference emphasizes its concern over weakening the carbon monoxide standard through manipulation of the number of allowable exceedances or any other means. The Agency is directed to consider all available medical and scientific information and to allow for an adequate margin of safety for public health in any revision to the carbon monoxide standard.

Amendment No. 65: Deletes language proposed by the House and stricken by the Senate limiting the use of funds to require any State to implement a vehicle emission control inspection and maintenance program or to impose sanctions on any State for failure to do so.

Amendment No. 66: Reported in technical disagreement. The managers on the part of the House will offer a motion to recede and concur in the amendment of the Senate prohibiting the use of unallotted construction contingency funds for completing construction of the physical fitness facility in the Hart Senate Office Building and prohibiting the use of any funds for operation of the physical fitness facility in the Dirksen Senate Office Building after enactment of this Act.

Amendment No. 67: Deletes language proposed by the Senate expressing the sense of the Senate with respect to human rights violations in connection with the construction of the trans-Siberian pipeline.

The committee of conference directs the Secretary of State to investigate the extent to which forced labor will be employed and human rights violated in the construction of the trans-Siberian pipeline and to cooperate with other Western nations which also seek to investigate such violations, and report back to the Committees on Appropriations within thirty days with his preliminary findings and with a final report by January 1, 1983.

Amendment No. 68: Deleted language proposed by the Senate which amends the Tariff Schedules of the United States to provide duty-free treatment for imported steam.

## CONFERENCE TOTAL—WITH COMPARISONS

The total new budget (obligational) authority for the fiscal year 1983 recommended by the Committee of Conference, with comparisons to the fiscal year 1982 amount, the 1983 budget estimates, and the House and Senate bills for 1983 follow:

New budget (obligational) authority, fiscal year 1982.....	\$46,788,908,200
Budget estimates of new (obligational) authority, fiscal year 1983.....	46,643,208,000
House bill, fiscal year 1983.....	47,000,239,000
Senate bill, fiscal year 1983.....	46,534,317,200
Conference agreement, fiscal year 1983.....	46,895,408,200
Conference agreement compared with:	
New budget (obligational) authority, fiscal year 1982.....	+ 106,500,000
Budget estimates of new (obligational) authority, fiscal year 1983.....	+ 252,200,200
House bill, fiscal year 1983.....	- 104,830,800
Senate bill, fiscal year 1983.....	+ 361,091,000

EDWARD P. BOLAND,

BOB TRAXLER,

LOUIS STOKES

(except amendments 1  
and 61),

LINDY (Mrs. HALE) BOGGS,

MARTIN O. SABO,

JAMIE L. WHITTEN,

BILL GREEN,

LAWRENCE COUGHLIN,

C. W. BILL YOUNG,

SILVIO O. CONTE,

*Managers on the Part of the House.*

JAKE GARN,

PAUL LAXALT,

HARRISON SCHMITT,

ALFONSE D'AMATO,

MARK O. HATFIELD,

WALTER D. HUDDLESTON,

PATRICK LEAHY,

*Managers on the Part of the Senate.*

○

PUBLIC LAW 97-272—SEPT. 30, 1982

96 STAT. 1160

PUBLIC LAW 97-272—SEPT. 30, 1982

Public Law 97-272  
97th Congress

An Act

Sept. 30, 1982  
[H.R. 6956]

Making appropriations for the Department of Housing and Urban Development, and for sundry independent agencies, boards, commissions, corporations, and offices for the fiscal year ending September 30, 1983, and for other purposes.

Department of  
Housing and  
Urban  
Development-  
Independent  
Agencies  
Appropriation  
Act, 1983.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That the following sums are appropriated, out of any money in the Treasury not otherwise appropriated, for the Department of Housing and Urban Development, and for sundry independent agencies, boards, commissions, corporations, and offices for the fiscal year ending September 30, 1983, and for other purposes, namely:

TITLE I

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

RESEARCH AND DEVELOPMENT

For necessary expenses, not otherwise provided for, including research, development, operations, services, minor construction, maintenance, repair, rehabilitation and modification of real and personal property; tracking and data relay satellite services as authorized by law; purchase, hire, maintenance, and operation of other than administrative aircraft, necessary for the conduct and support of aeronautical and space research and development activities of the National Aeronautics and Space Administration; and including not to exceed (1) \$1,769,000,000 for Space Shuttle, (2) \$1,796,000,000: *Provided*, That the amount available for obligation or expenditure shall be reduced to the extent subsequent authorizations provide for transfers for Space Flight Operations, (3) \$115,000,000 for Space Transportation Systems—Upper Stages, (4) \$88,000,000 for Space Transportation Systems Operations—Upper Stages, (5) \$137,500,000 for the Space Telescope, (6) \$34,500,000 for the Gamma Ray Observatory, (7) \$92,600,000 for Project Galileo, (8) \$4,000,000 for a Space Station, (9) \$55,000,000 for Performance Augmentation, without the approval of the Committees on Appropriations, \$5,542,800,000, to remain available until September 30, 1984: *Provided*, That \$280,000,000 shall be made available for aeronautical research and technology, that \$192,000,000 shall be made available for design, development, procurement, and other related requirements of liquid hydrogen-liquid oxygen upper stages (Centaur): *Provided further*, That none of the funds in this or any other Act shall be used for the development of a fifth space shuttle orbiter without the approval of the Committees on Appropriations.

DEPARTMENT OF HOUSING AND URBAN  
DEVELOPMENT-INDEPENDENT AGENCIES  
APPROPRIATION ACT, 1983

## CONSTRUCTION OF FACILITIES

For construction, repair, rehabilitation and modification of facilities, minor construction of new facilities and additions to existing facilities, and for facility planning and design not otherwise provided, for the National Aeronautics and Space Administration, and for the acquisition or condemnation of real property, as authorized by law, \$97,500,000, to remain available until September 30, 1985: *Provided*, That, notwithstanding the limitation on the availability of funds appropriated under this head by this appropriation Act, when any activity has been initiated by the incurrence of obligations therefor, the amount available for such activity shall remain available until expended, except that this provision shall not apply to the amounts appropriated pursuant to the authorization for repair, rehabilitation and modification of facilities, minor construction of new facilities and additions to existing facilities, and facility planning and design.

## RESEARCH AND PROGRAM MANAGEMENT

For necessary expenses of research in government laboratories, management of programs and other activities of the National Aeronautics and Space Administration, not otherwise provided for, including uniforms or allowances therefor, as authorized by law (5 U.S.C. 5901-5902); awards; purchase (for replacement only, of two aircraft, for which partial payment may be made by exchange of at least one existing administrative aircraft and such other existing aircraft as may be considered appropriate), hire, maintenance and operation of administrative aircraft; purchase (not to exceed seventeen for replacement only) and hire of passenger motor vehicles; and maintenance and repair of real and personal property, and not in excess of \$75,000 per project for construction of new facilities and additions to existing facilities, repairs, and rehabilitation and modification of facilities; \$1,168,900,000: *Provided*, That contracts may be entered into under this appropriation for maintenance and operation of facilities, and for other services, to be provided during the next fiscal year: *Provided further*, That not to exceed \$25,000 of the foregoing amount shall be available for scientific consultations or extraordinary expense, to be expended upon the approval or authority of the Administrator and his determination shall be final and conclusive.

TITLE IV  
GENERAL PROVISIONS

## Travel expenses.

SEC. 401. Where appropriations in titles I and II of this Act are expendable for travel expenses and no specific limitation has been placed thereon, the expenditures for such travel expenses may not exceed the amounts set forth therefor in the budget estimates submitted for the appropriations: *Provided*, That this section shall not apply to travel performed by uncompensated officials of local boards and appeal boards of the Selective Service System; to travel performed directly in connection with care and treatment of medical beneficiaries of the Veterans Administration; to travel performed in connection with major disasters or emergencies declared or determined by the President under the provisions of the Disaster Relief Act of 1974; or to payments to interagency motor pools where separately set forth in the budget schedules.

42 USC 5121  
note.

SEC. 402. Appropriations and funds available for the administrative expenses of the Department of Housing and Urban Development and the Selective Service System shall be available in the current fiscal year for purchase of uniforms, or allowances therefor, as authorized by law (5 U.S.C. 5901-5902); hire of passenger motor vehicles; and services as authorized by 5 U.S.C. 3109.

Legal services.  
31 USC 841 note.  
*Ante*, p. 877.  
12 USC 1749a.

SEC. 403. Funds of the Department of Housing and Urban Development subject to the Government Corporation Control Act or section 402 of the Housing Act of 1950 shall be available, without regard to the limitations on administrative expenses, for legal services on a contract or fee basis, and for utilizing and making payment for services and facilities of Federal National Mortgage Association, Government National Mortgage Association, Federal Home Loan Mortgage Corporation, Federal Financing Bank, Federal Reserve banks or any member thereof, Federal home loan banks, and any insured bank within the meaning of the Federal Deposit Insurance Corporation Act, as amended (12 U.S.C. 1811-1831).

SEC. 404. No part of any appropriation contained in this Act shall remain available for obligation beyond the current fiscal year unless expressly so provided herein.

SEC. 405. No funds appropriated by this Act may be expended—  
(1) pursuant to a certification of an officer or employee of the United States unless—

(A) such certification is accompanied by, or is part of, a voucher or abstract which describes the payee or payees and the items or services for which such expenditure is being made, or

(B) the expenditure of funds pursuant to such certification, and without such a voucher or abstract, is specifically authorized by law; and

## PUBLIC LAW 97-272—SEPT. 30, 1982

(2) unless such expenditure is subject to audit by the General Accounting Office or is specifically exempt by law from such audit.

SEC. 406. None of the funds provided in this Act to any department or agency may be expended for the transportation of any officer or employee of such department or agency between his domicile and his place of employment, with the exception of the Secretary of the Department of Housing and Urban Development, who, under title 5, United States Code, section 101, is exempted from such limitations.

Prohibition of certain government transportation.

SEC. 407. None of the funds provided in this Act may be used for payment, through grants or contracts, to recipients that do not share in the cost of conducting research resulting from proposals not specifically solicited by the Government: *Provided*, That the extent of cost sharing by the recipient shall reflect the mutuality of interest of the grantee or contractor and the Government in the research.

Research projects.

SEC. 408. None of the funds provided in this Act may be used, directly or through grants, to pay or to provide reimbursement for payment of the salary of a consultant (whether retained by the Federal Government or a grantee) at more than the daily equivalent of the maximum rate paid for GS-18, unless specifically authorized by law.

SEC. 409. No part of any appropriation contained in this Act for personnel compensation and benefits shall be available for other object classifications set forth in the budget estimates submitted for the appropriations without the approval of the Committees on Appropriations.

SEC. 410. None of the funds in this Act shall be used to pay the expenses of, or otherwise compensate, non-Federal parties intervening in regulatory or adjudicatory proceedings. Nothing herein affects the authority of the Consumer Product Safety Commission pursuant to section 7 of the Consumer Product Safety Act (15 U.S.C. 2056 et seq.).

SEC. 411. Except as otherwise provided under existing law or under an existing Executive order issued pursuant to an existing law, the obligation or expenditure of any appropriation under this Act for contracts for any consulting service shall be limited to contracts which are (1) a matter of public record and available for public inspection, and (2) thereafter included in a publicly available list of all contracts entered into within twenty-four months prior to the date on which the list is made available to the public and of all contracts on which performance has not been completed by such date. The list required by the preceding sentence shall be updated quarterly and shall include a narrative description of the work to be performed under each such contract.

Consulting service contracts. Public record availability.

SEC. 412. Except as otherwise provided by law, no part of any appropriation contained in this Act shall be obligated or expended by any executive agency, as referred to in the Office of Federal Procurement Policy Act (41 U.S.C. 401 et seq.) for a contract for services unless such executive agency (1) has awarded and entered into such contract in full compliance with such Act and the regulations promulgated thereunder and (2) requires any report prepared pursuant to such contract, including plans, evaluations, studies, analyses and manuals, and any report prepared by the agency which is substantially derived from or substantially includes any report prepared pursuant to such contract, to contain information concerning (A) the contract pursuant to which the report was prepared and

(B) the contractor who prepared the report pursuant to such contract.

SEC. 413. No part of any appropriation contained in this Act shall be available to implement, administer, or enforce any regulation which has been disapproved pursuant to a resolution of disapproval duly adopted in accordance with the applicable law of the United States.

SEC. 414. Except as otherwise provided in section 406, none of the funds provided in this Act to any department or agency shall be obligated or expended to provide a personal cook, chauffeur, or other personal servants to any officer or employee of such department or agency.

SEC. 415. None of the funds provided in this Act to any department or agency shall be obligated or expended to procure passenger automobiles as defined in 15 U.S.C. 2001 with an EPA estimated miles per gallon average of less than 22 miles per gallon.

SEC. 416. (a)(1) Notwithstanding the directive of the Senate Office Building Commission of March 19, 1982, and notwithstanding any other provision of law, the Architect of the Capitol shall cease the obligation, commitment, or expenditure of any unallotted construction contingency funds (identified during the construction of the Hart Senate Office Building) for the purpose of completing the construction of the physical fitness facility in the Hart Senate Office Building.

(2) The Architect of the Capitol is authorized to obligate and expend from the construction contingency funds for the Hart Senate Office Building amounts which are prohibited to be obligated, committed, or expended by the first paragraph of this subsection for such other necessary expenses relating to the completion of the Hart Senate Office Building as the Architect of the Capitol deems necessary.

(b) No funds may be expended for the operation of the physical fitness facility in the Dirksen Senate Office Building after the date of enactment of this Act.

This Act may be cited as the "Department of Housing and Urban Development-Independent Agencies Appropriation Act, 1983".

Short title.

Approved September 30, 1982.

**SUPPLEMENTAL APPROPRIATIONS BILL, 1983**

MAY 18, 1983.—Committed to the Committee of the Whole House on the State of the Union and ordered to be printed

Mr. WHITTEN, from the Committee on Appropriations, submitted the following

**REPORT**

together with

**ADDITIONAL VIEWS**

[To accompany H.R. 3069]

The Committee on Appropriations submits the following report in explanation of the accompanying bill making supplemental appropriations for the fiscal year ending September 30, 1983, and for other purposes.

**INCREASED PAY COSTS**

The Committee considered estimates of \$222,451,000 in increased pay costs for agencies under the jurisdiction of the HUD-Independent Agencies Subcommittee. The Committee recommends supplemental appropriations of \$218,383,000. The specific amounts requested and recommended are included in the tabulations provided in the section of this report on Title II of the bill.

**COMPARATIVE STATEMENT OF NEW BUDGET (OBLIGATIONAL) AUTHORITY ESTIMATES AND AMOUNTS  
 RECOMMENDED IN THE BILL**

**TITLE II—INCREASED PAY COSTS**

H. Doc.	Department or activity	Supplemental estimate	Recommended in bill	Bill compared with estimates
98-50	NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	30,150,000	20,500,000	-1,650,000
	Research and program management.....	.....	.....	.....

SUPPLEMENTAL APPROPRIATIONS BILL, 1983

MAY 26, 1983.—Ordered to be printed  
Filed under authority of the order of the Senate of January 3, 1983

Mr. HATFIELD, from the Committee on Appropriations,  
submitted the following

REPORT

[To accompany H.R. 3069]

The Committee on Appropriations, to which was referred the bill (H.R. 3069) making supplemental appropriations for the fiscal year 1983, and for other purposes, reports the same to the Senate with various amendments and with the recommendation that the bill be passed.

INCREASED PAY COSTS

1983 supplemental estimate.....	\$222,451,000
House allowance.....	218,383,000
Committee recommendation.....	217,956,000

The Committee considered estimates of \$222,451,000 in increased pay costs for agencies under the jurisdiction of the HUD-Independent Agencies Subcommittee. The Committee recommends supplemental appropriations of \$217,956,000. This is \$427,000 less than the House allowance. The specific amounts requested and recommended are included in the tabulations provided in the section of this report on title II of the bill.

COMPARATIVE STATEMENT OF NEW BUDGET (OBLIGATIONAL) AUTHORITY ESTIMATES  
RECOMMENDED IN THE BILL  
TITLE II—INCREASED PAY COSTS

House Doc.	Item	Senate committee recommendation compared with (+ or -)			
		Budget estimates	House bill	Senate committee recommendation	House bill
(1)	(2)	(3)	(4)	(5)	(7)
[Amounts in dollars]					
	NATIONAL AERONAUTICS AND SPACE ADMINISTRATION				
98-56	Research and program management.....	30,150,000	28,500,000	28,500,000	-1,650,000

## PUBLIC LAW 98-63—JULY 30, 1983

Public Law 98-63  
98th Congress

## An Act

Making supplemental appropriations for the fiscal year ending September 30, 1983, and for other purposes.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That the following sums are appropriated, out of any money in the Treasury not otherwise appropriated, to supply supplemental appropriations for the fiscal year ending September 30, 1983, and for other purposes, namely:

TITLE II—INCREASED PAY COSTS FOR THE  
FISCAL YEAR 1983

For additional amounts for appropriations for the fiscal year 1983, for increased pay costs authorized by or pursuant to law as follows:

## NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

"Research and program management", \$28,500,000.

## TITLE IV

## GENERAL PROVISIONS

SEC. 401. No part of any appropriation contained in this Act shall remain available for obligation beyond the current fiscal year unless expressly so provided herein.

SEC. 402. Except where specifically increased or decreased elsewhere in this Act, the restrictions contained within appropriations, or provisions affecting appropriations or other funds, available during the fiscal year 1983, limiting the amount which may be expended for personal services, or for purposes involving personal services, or amounts which may be transferred between appropriations or authorizations available for or involving such services, are hereby increased to the extent necessary to meet increased pay costs authorized by or pursuant to law.

SEC. 403. Amounts certified pursuant to section 1311 of the Supplemental Appropriations Act, 1955, as having been obligated against appropriations heretofore made under the authority of the Foreign Assistance Act of 1961, as amended, for the same general purpose as any of the subparagraphs under "Agency for International Development" in prior appropriations Acts, are, if deobligated, hereby continued available for the same period as the respective appropriations in such subparagraphs for the same general purpose and for the same country as originally obligated or for relief, rehabilitation, and reconstruction activities in the Andean region: *Provided*, That the Appropriations Committees of both Houses of the Congress are notified fifteen days in advance of the deobligation or reobligation of such funds.