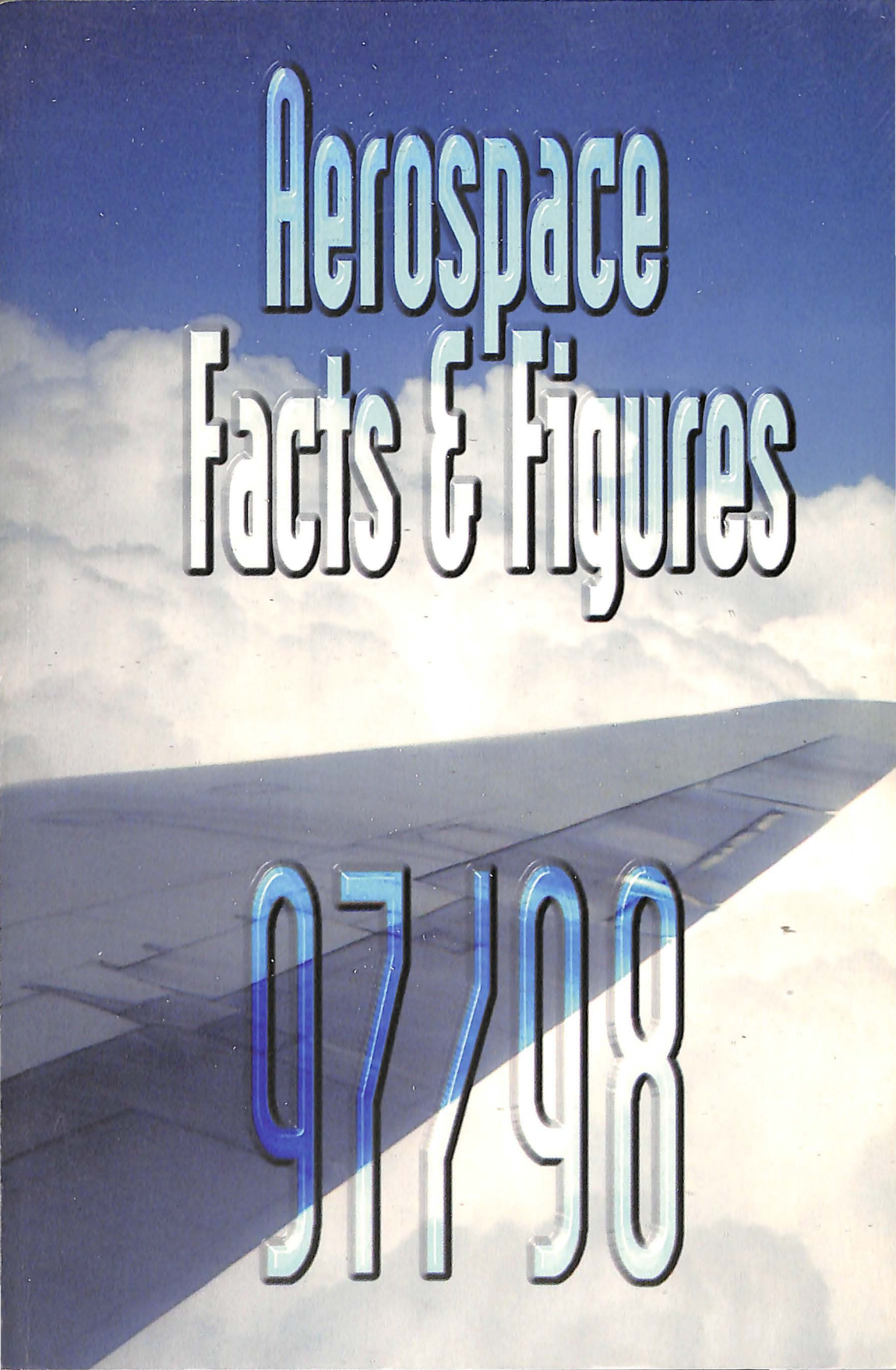
Aerospace Facts & Figures

97/98



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FOREWORD

For the U.S. aerospace industry, 1996 was the "Year of the Upturn" as industry sales rose following four years of decline.

It was a welcome milestone. Unfortunately, it was only a partial victory because the business resurgence applied only to contract work from non-U.S. government sources. Sales to the Department of Defense (DoD) declined for the ninth consecutive year. This, however, was more than offset by an impressive 18% gain in sales to non-U.S. government customers (principally airlines, other aircraft operators, commercial operators of space systems, and foreign governments).

Overall industry sales increased by 5.7% to $113 billion. The industry also recorded increases in profits, exports and trade balance, new orders and backlog, and for the first time since 1989, employment.

Of special note was the dramatic surge—almost 16%—in new orders for aerospace systems. Those orders boosted the industry's year-end backlog to $220 billion, an encouraging signal of increasing activity in near-future years. More than 60% of the backlog was non-military in nature.

The industry's performance in international trade also merits special note. After three years of decline due to a generally depressed global market, aerospace exports rebounded to more than $40 billion, up 22% over the previous year's level. The aerospace trade balance grew by 23% to $26.6 billion.

Forecasting future prospects requires separating government business from non-government activity curves because the two are headed in totally divergent directions.

Defense workload dominates government business, making the outlook dim. In constant dollar terms, the industry's 1996 sales to the DoD were less than half the volume of the peak year 1987 and they will continue to decline for the rest of this century. Similarly, outlays for government-sponsored civil space activities are expected to remain flat,

which means reduced sales when inflation is factored into the equation.

It is impossible to predict the eventual level of defense/space government business beyond the turn of the century when the task of maintaining a balanced budget could prove as difficult as achieving it. If the nation continues to support a potent, modernized defense force and a progressive program of civil space research, as AIA believes it will, production stability at moderate levels of activity can be achieved in government workloads in the first decade of the new century.

The outlook is brighter with regard to non-government business where the principal component is civil transport aircraft. The consensus $1 trillion market for jetliners over the next 20 years appears to be a valid projection with U.S. manufacturers maintaining their two-thirds share of the market.

AIA projects a sharply ascending jetliner sales curve that will reach all-time record levels before the century is out and could eventually reach annual levels as high as double the dollar-volume average for the past 20 years.

In summary, the aerospace industry is just beyond the halfway point in what will probably be a 20-year transition period from a manufacturing activity dominated by U.S. government business to one driven primarily by commercial business.

The transition has already caused great changes in the industry across a wide spectrum of operations. Many of the changes have benefitted the industry's technological capability, the quality of its products, and its overall competitiveness. We have every reason to believe that our companies will continue to manage the remaining years of the transition effectively and that the U.S. aerospace industry will retain its status as the leader of the aerospace manufacturing world.

Don Fuqua
President
Aerospace Industries Association

Long awaited, U.S. aerospace industry sales turned upward in 1996. After five straight years of declining sales (in inflation-adjusted constant dollars), the industry recorded a modest but welcome 4.6% gain. This was accomplished despite continued declining sales to U.S. government agencies, the industry's main source of business for many years. A decline of three percent in government sales was more than offset by an 18% increase in sales to "other customers," a category that includes airlines, private and corporate aircraft operators, commercial operators of space systems, and foreign governments.

Here are the highlights of the industry's 1996 performance:

Sales. Overall industry sales amounted to $113 billion compared with $107 billion in 1995. Virtually all of the gain was in the "other customers" category where sales totaled $43 billion, up $6.6 billion. Sales to DoD fell for the ninth consecutive year, down to $39 billion from $41 billion in 1995. NASA and other U.S. government agencies had total sales of $12.4 billion, up $1 billion. However, total U.S. government sales dropped from $53 billion in 1995 to $51 billion in 1996.

Industry's largest product group is the aircraft sector. Sales of aircraft, engines, and parts (civil and military combined) totaled $60 billion compared with $55 billion in 1995. The 1996 figure was compounded of $33 billion for military aircraft and $27 billion for civil aircraft.

Sales of space systems (civil and military) recorded a second straight increase, to $29 billion from $27.4 billion in 1995. Sales of "related products and services" (including non-aerospace activities) also increased, from $17.8 billion in 1995 to $18.8 billion in 1996. Missile system sales was the only product category to show a decline, dipping to $4.9 billion.

For 1996 aerospace industry sales amounted to 1.5% of the Gross Domestic Product and 3.0% of total sales by all

U.S. manufacturing industries, same percentages as in 1995.

Earnings. Net income after taxes was $7.2 billion, a substantial gain over the previous year's $4.6 billion. As a percentage of sales, the industry's profit amounted to 5.6%, compared with 3.8% in 1995 and with the 1996 average for all U.S. manufacturing industries of 6.0%. As a percentage of assets, aerospace earnings amounted to 5.1%; as a percentage of equity, 17.1%.

The aerospace balance sheet showed net working capital of $16 billion, down from $18.8 billion in 1995. Stockholders equity dipped from $42 billion in 1995 to $40 billion in 1996; total assets increased from $132 billion to $136 billion.

Orders and Backlog. Net new orders for aerospace systems totaled $126 billion, up from $109 billion in 1995, an increase of almost 16%; it was the third straight year of increases in orders. The gains were nearly across the board for aerospace products; only "other military aerospace" and non-aerospace products showed declines.

The industry's backlog at year-end 1996 was $220 billion, up from $203 billion in the previous year. More than 60% of the backlog ($134 billion) was in orders for non-military products. The backlog for military systems was $86 billion, up from $82 billion; the increase was the first after four years of decline.

Civil Aircraft Production. Data compiled by the Aerospace Industries Association (AIA) shows that U.S. manufacturers shipped 1,677 civil aircraft in 1996 with a total value of $20.9 billion. That represents a gain of 52 units and $2.6 billion over 1995 levels.

Civil transport production—269 aircraft valued at $17.6 billion—accounted for 84% of the total in dollar value terms; the figures compare with 256 aircraft worth $15.3 billion delivered in 1995.

Production of civil helicopters—in moderate decline throughout the 1990s—remained at approximately the previous year's sales level with shipments of 278 units (down 14) valued at $193 million (down $1 million).

General aviation sales increased in numbers to 1,130 (up 53 units) and dollar value to $3.1 billion (up $285 million). It marked the highest sales level ever for general aviation before adjustment for inflation.

Military Aircraft Production. Estimates by the Census Bureau show a dollar value of $24.4 billion for sales of complete

military aircraft and parts, including engines, in 1996. The figure compares with $22.9 billion in 1995.

The industry produced 555 military aircraft, 316 of them exported either through Foreign Military Sales arrangements or through direct company-to-foreign-customer sales; 239 were delivered to U.S. military agencies. The comparable figures for 1995 were 811 total, 457 exports, and 354 for the U.S. military services.

For Fiscal Year (FY) 1997, the major aircraft types procured were the Air Force C-17 Globemaster III transport, the Navy F/A-18E/F fighter, the Navy/Marine Corps V-22 Osprey tiltrotor aircraft, the Army AH-64 Apache helicopter, the Air Force E-8C JSTARS surveillance aircraft, the Navy/Marine Corps AV-8B Harrier V/STOL fighter, and the Army UH-60 Black Hawk helicopter.

Foreign Trade. After three years of decline caused largely by an airline recession and a generally depressed global market, the aerospace export sales curve turned upward in 1996. Exports amounted to $40 billion, some 22% above the 1995 level of $33 billion.

The aerospace trade balance also increased despite rising imports. Total imports came to $13.7 billion compared with $11.5 billion in 1995. Nonetheless, the high export volume sent the aerospace trade balance up $5 billion (23%) to $26.6 billion.

As usual, civil exports accounted for most of the 1996 volume—more than 70%. The civil export total of $29.5 billion compares with $25.1 billion in the previous year. The largest component of the export volume was civil transport aircraft which, at $13.6 billion, accounted for 46% of the civil export total; jetliner export sales were up $3 billion over the previous year.

Space Programs. Sales of space systems, as reported by AIA, came to $29.1 billion, up from $27.4 billion in 1995. AIA figures include civil and military space systems and parts plus U.S. government space activities, including contracts for Research, Development, Test, and Evaluation (RDT&E).

The Census Bureau uses a reporting system that excludes launch vehicle propulsion systems, spacecraft orbital adjustment engines/motors, and RDT&E. The Bureau reported a slight dip in sales of space systems to $11.2 billion, down from $11.3 billion. The 1996 sales figure included $6.4 billion in non-military workload (commercial plus government-sponsored civil space) and $4.8 billion in military work.

Missile Programs. According to AIA statistics, missile sector sales fell to their lowest level since the early 1950s—dropping to $4.9 billion compared with $6.4 billion in 1995. Census data confirm the decline. The Bureau listed 1996 missile systems and parts sales (excluding propulsion units) at $3.8 billion, down from $4.7 billion in the previous year.

DoD outlays for missile procurement have steadily declined in the 1990s from a FY 1990 peak of $14.9 billion to a FY 1997 level of $5.8 billion. The trend was to continue into FY 1998 with planned outlays of $4.9 billion. The largest outlays go for RDT&E programs (for example, ballistic missile defense programs) rather than procurement of production-type systems. Major production programs of 1996/97 included the USAF/Navy AMRAAM air-to-air missile, the Navy Tomahawk cruise missile, the Navy Trident II Fleet Ballistic Missile, the Army Hellfire helicopter-launched antiarmor missile, and the Ballistic Missile Defense Organization's Patriot PAC-3 air defense system.

Research and Development. In 1996 total U.S. funding for research and development (R&D) amounted to $193 billion, up from $183 billion in the previous year, according to the National Science Foundation (NSF). Almost two-thirds of the total (63%) was funded by U.S. industry ($121 billion), which also performed the great bulk of the R&D work (more than 73%). For 1997 NSF estimated total R&D funding at $206 billion, indicating that industry would again be the principal funding source (65%) and performer (75%).

In 1995 (the latest year for NSF data categorized by industry), aerospace R&D funding amounted to $17 billion (19% above 1994's level). The aerospace investment in R&D (federal and company funds) amounted to 12.9% of net sales, down from 13.8% in 1994. Company funding as a percentage of net sales was 4.2%; the average for all U.S. manufacturing industries was 2.9%.

Employment. The downward slide in aerospace industry employment ended in 1996 with a slight upturn. On an annual average basis, aerospace employment was 798,000, up from 796,000. The upturn came after six years of decline during which the industry cut almost 40% of its work force. The 1996 employment figure represented 4.3% of the total employment in all U.S. manufacturing industries. The aerospace work force also represented 7.4% of total employment by U.S. companies producing durable goods.

STANDARD INDUSTRIAL CLASSIFICATIONS APPLICABLE TO THE AEROSPACE INDUSTRY

3721 **AIRCRAFT**
- 37211 Military aircraft
- 37215 Civilian aircraft
- 37217 Modification, conversion, and overhaul of previously accepted aircraft
- 37218 Aeronautical services on complete aircraft, nec

3724 **AIRCRAFT ENGINES AND ENGINE PARTS**
- 37241 Aircraft engines for military aircraft
- 37242 Aircraft engines for civilian aircraft
- 37243 Aeronautical services on aircraft engines
- 37244 Aircraft engine parts and accessories

3728 **AIRCRAFT PARTS AND AUXILIARY EQUIPMENT, NEC**
- 37281 Aircraft parts and auxiliary equipment, nec
- 37282 Aircraft propellers and helicopter rotors
- 37283 Research and development on aircraft parts

3761 **GUIDED MISSILES AND SPACE VEHICLES**
- 37611 Complete guided missiles (excluding propulsion systems)
- 37612 Complete space vehicles (excluding propulsion systems)
- 37613 Research and development on complete guided missiles
- 37614 Research and development on complete space vehicles
- 37615 All other services on complete guided missiles and space vehicles

3663 **RADIO AND TELEVISION COMMUNICATIONS EQUIPMENT**
- 36631 Communication systems and equipment, except broadcast

3764 **SPACE PROPULSION UNITS AND PARTS**
- 37645 Complete missile or space vehicle engines and/or propulsion units
- 37646 Research and development on complete missile or space vehicle engines and/or propulsion units
- 37647 Services on complete guided missile or space vehicle engines and/or propulsion units, nec
- 37648 Missile and space vehicle engine and/or propulsion unit parts and accessories

3769 **SPACE VEHICLE EQUIPMENT, NEC**
- 37692 Missile and space vehicle components, parts and subassemblies, nec
- 37694 Research and development on missile and space vehicle parts and components, nec

3669 **COMMUNICATIONS EQUIPMENT, NEC**
- 36691 Alarm systems
- 36692 Traffic control equipment
- 36693 Intercommunication equipment

3812 **SEARCH, DETECTION, NAVIGATION, GUIDANCE, AERONAUTICAL AND NAUTICAL SYSTEMS, INSTRUMENTS, AND EQUIPMENT**
- 38121 Aeronautical, nautical, and navigational instruments, not sending or receiving radio signals
- 38122 Search, detection, navigation, and guidance systems and equipment

3829 **MEASURING AND CONTROLLING DEVICES, NEC**
- 38291 Aircraft engine instruments, except flight

Source: Office of Management and Budget, "Standard Industrial Classification Manual, 1987."
NOTE: The Standard Industrial Classification (SIC) is a system developed by the U.S. Government to define the industrial composition of the economy, facilitating comparability of statistics. It is revised periodically to reflect the changing industrial composition of the economy.
NEC: Not elsewhere classified.

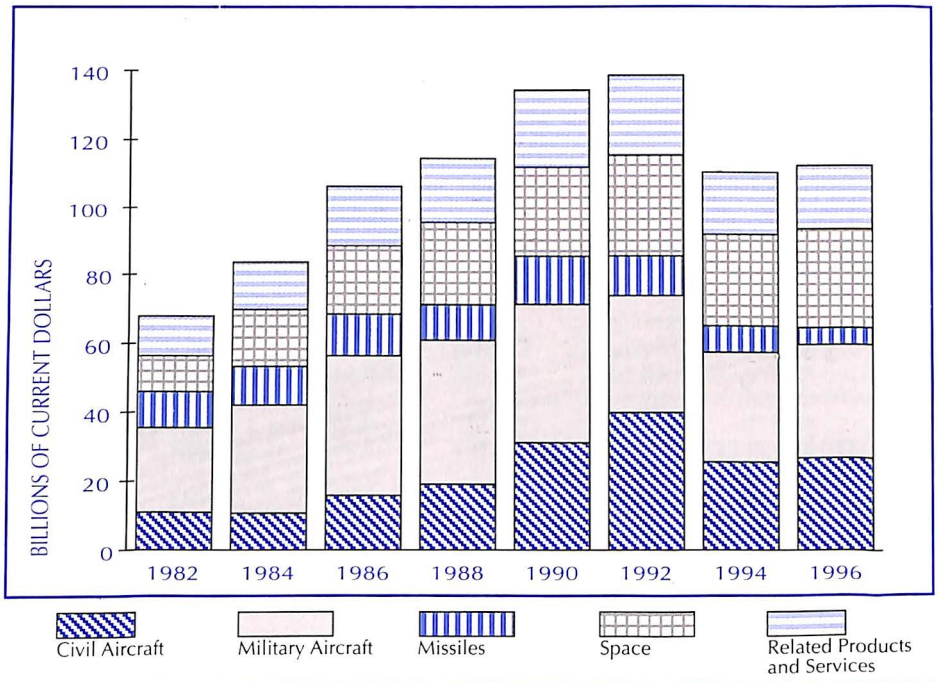
AEROSPACE INDUSTRY SALES BY CUSTOMER

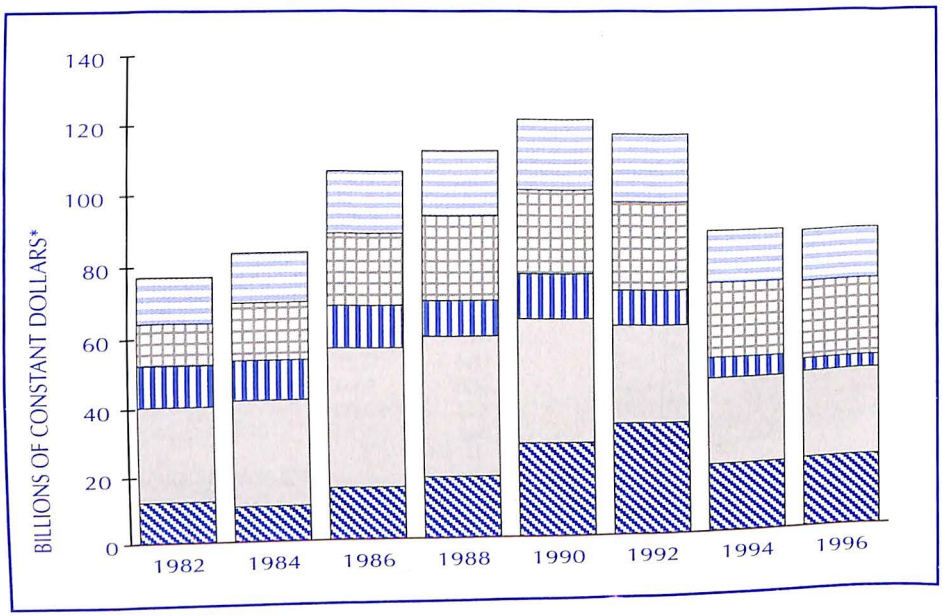
Calendar Years 1982–1996
(Millions of Dollars)

Year	TOTAL SALES	Aerospace Products and Services				Related Products and Services
		Total	U.S. Government		Other Customers	
			Dept. of Defense	NASA and Other Agencies		
CURRENT DOLLARS						
1982	$ 67,756	$ 56,366	$34,016	$ 4,899	$17,451	$11,390
1983	79,975	66,646	41,558	5,910	19,178	13,329
1984	83,486	69,572	45,969	6,063	17,540	13,914
1985	96,571	80,476	53,178	6,262	21,036	16,095
1986	106,183	88,486	59,161	6,236	23,089	17,697
1987	110,008	91,673	61,817	6,813	23,043	18,335
1988	114,562	95,468	61,327	7,899	26,242	19,094
1989	120,534	100,445	61,199	9,601	29,645	20,089
1990	134,375	111,979	60,502	11,097	40,379	22,396
1991	139,248	116,040	55,922	11,739	48,379	23,208
1992	138,591	115,493	52,202	12,408	50,882	23,099
1993	123,183	102,653	47,017	12,255	43,380	20,531
1994	110,558	92,132	43,795	11,932	36,405	18,426
1995[r]	106,582	88,818	41,401	11,413	36,004	17,764
1996	112,676	93,897	38,929	12,363	42,605	18,779
CONSTANT DOLLARS [a]						
1982	$ 77,083	$ 64,125	$38,699	$ 5,573	$19,853	$12,958
1983	86,741	72,284	45,074	6,410	20,800	14,457
1984	83,653	69,711	46,061	6,075	17,575	13,942
1985	97,843	81,536	53,878	6,344	21,313	16,307
1986	106,396	88,663	59,280	6,248	23,135	17,732
1987	110,008	91,673	61,817	6,813	23,043	18,335
1988	112,426	93,688	60,184	7,752	25,753	18,738
1989	113,604	94,670	57,680	9,049	27,941	18,934
1990	121,606	101,338	54,753	10,043	36,548	20,268
1991	121,508	101,257	48,798	10,243	42,216	20,251
1992	117,251	97,710	44,164	10,497	43,047	19,542
1993	101,636	84,697	38,793	10,111	35,792	16,940
1994	89,160	74,300	35,319	9,623	29,359	14,860
1995[r]	84,522	70,435	32,832	9,051	28,552	14,087
1996	88,373	73,645	30,533	9,696	33,416	14,729

Source: Aerospace Industries Association.
NOTE: See Glossary for explanation of "Aerospace Industry," "Aerospace Sales," "Other Customers," and "Related Products and Services."
a Based on AIA's aerospace composite price deflator, 1987=100.
r Revised.

Aerospace Sales by Product Group





Source: Aerospace Industries Association
* Based on AIA's aerospace composite price deflator (1987=100)

AEROSPACE INDUSTRY SALES BY PRODUCT GROUP

Calendar Years 1982–1996
(Millions of Dollars)

Year	TOTAL SALES	Aircraft			Missiles	Space	Related Products & Services
		Total	Civil	Military			
CURRENT DOLLARS							
1982	$ 67,756	$35,484	$10,982	$24,502	$10,368	$10,514	$11,390
1983	79,975	42,431	12,373	30,058	10,269	13,946	13,329
1984	83,486	41,905	10,690	31,215	11,335	16,332	13,914
1985	96,571	50,482	13,730	36,752	11,438	18,556	16,095
1986	106,183	56,405	15,718	40,687	11,964	20,117	17,697
1987	110,008	59,188	15,465	43,723	10,219	22,266	18,335
1988	114,562	60,886	19,019	41,867	10,270	24,312	19,094
1989	120,534	61,550	21,903	39,646	13,622	25,274	20,089
1990	134,375	71,353	31,262	40,091	14,180	26,446	22,396
1991	139,248	75,918	37,443	38,475	10,970	29,152	23,208
1992	138,591	73,905	39,897	34,008	11,757	29,831	23,099
1993	123,183	65,829	33,116	32,713	8,451	28,372	20,531
1994	110,558	57,648	25,596	32,052	7,563	26,921	18,426
1995 r	106,582	55,048	23,965	31,082	6,386	27,385	17,764
1996	112,676	59,908	26,869	33,039	4,866	29,122	18,779
CONSTANT DOLLARS[a]							
1982	$ 77,083	$40,369	$12,494	$27,875	$11,795	$11,961	$12,958
1983	86,741	46,021	13,420	32,601	11,138	15,126	14,457
1984	83,653	41,989	10,711	31,278	11,358	16,365	13,942
1985	97,843	51,147	13,911	37,236	11,589	18,800	16,307
1986	106,396	56,518	15,749	40,769	11,988	20,157	17,732
1987	110,008	59,188	15,465	43,723	10,219	22,266	18,335
1988	112,426	59,751	18,664	41,086	10,079	23,859	18,738
1989	113,604	58,011	20,644	37,367	12,839	23,821	18,934
1990	121,606	64,573	28,291	36,281	12,833	23,933	20,268
1991	121,508	66,246	32,673	33,573	9,572	25,438	20,251
1992	117,251	62,525	33,754	28,772	9,947	25,238	19,542
1993	101,636	54,314	27,323	26,991	6,973	23,409	16,940
1994	89,160	46,490	20,642	25,848	6,099	21,710	14,860
1995 r	84,522	43,654	19,005	24,649	5,064	21,717	14,087
1996	88,373	46,987	21,074	25,913	3,816	22,841	14,729

Source: Aerospace Industries Association.
NOTE: See Glossary for explanation of "Aerospace Industry," "Aerospace Sales," "Other Customers," and "Related Products and Services."
a Based on AIA's aerospace composite deflator, 1987=100.
r Revised.

SALES OF MAJOR AEROSPACE COMPANIES AS REPORTED BY THE BUREAU OF THE CENSUS

Calendar Years 1982–1996
(Millions of Dollars)

Year	GRAND TOTAL	TOTAL		Aircraft, Engines, & Parts		Missiles, Space, & Rocket Propulsion	Other Aerospace		Non-Aerospace
		Military	Non-Mil.	Military	Non-Mil.		Military	Non-Mil.	
CURRENT DOLLARS									
1982	$ 75,487	$43,281	$32,206	$17,743	$14,143	$11,980	$ 9,408	$5,454	$16,759
1983	83,453	50,525	32,928	19,809	16,070	12,745	12,310	3,179	19,340
1984	88,941	57,047	31,894	23,268	14,017	13,624	12,245	3,257	22,530
1985	100,522	65,098	35,424	25,758	18,182	16,741	14,491	3,675	21,675
1986	105,577	68,303	37,274	27,043	20,714	17,535	16,287	3,520	20,478
1987	110,301	70,194	40,107	27,806	21,256	20,715	15,786	3,429	21,309
1988	113,548	69,448	44,100	25,068	25,674	21,514	16,382	2,946	21,964
1989	122,148	71,647	50,501	24,287	29,539	22,643	16,908	3,605	25,167
1990	136,646	73,616	63,030	27,667	38,622	22,040	15,773	4,342	28,202
1991	123,862	67,089	56,773	25,385	43,155	23,311	13,472	4,281	14,258
1992	118,736	61,410	57,326	23,509	44,160	21,349	12,153	3,377	14,188
1993	109,926	56,102	53,824	20,099	40,987	18,134	11,936	3,592	15,178
1994	104,296	58,012	46,284	23,652	30,901	18,406	11,981	4,417	14,939
1995 r	102,797	52,476	50,321	22,944	32,085	18,366	11,921	4,462	13,019
1996	105,707	51,979	53,728	24,352	36,436	17,065	12,561	4,623	10,670
CONSTANT DOLLARS [a]									
1982	$ 85,878	$49,239	$36,639	$20,185	$16,090	$13,629	$10,703	$6,205	$19,066
1983	90,513	54,799	35,714	21,485	17,430	13,823	13,351	3,448	20,976
1984	89,119	57,161	31,958	23,315	14,405	13,651	12,270	3,264	22,575
1985	101,846	65,955	35,891	26,097	18,421	16,961	14,682	3,723	21,960
1986	105,789	68,440	37,349	27,097	20,756	17,570	16,320	3,527	20,519
1987	110,301	70,194	40,107	27,806	21,256	20,715	15,786	3,429	21,309
1988	111,431	68,153	43,278	24,601	25,195	21,113	16,077	2,891	21,554
1989	115,125	67,528	47,598	22,891	27,840	21,341	15,936	3,398	23,720
1990	123,662	66,621	57,041	25,038	34,952	19,946	14,274	3,929	25,522
1991	108,082	58,542	49,540	22,151	37,657	20,341	11,756	3,736	12,442
1992	100,453	51,954	48,499	19,889	37,360	18,062	10,282	2,857	12,003
1993	90,698	46,289	44,409	16,583	33,818	14,962	9,848	2,964	12,523
1994	84,110	46,784	37,326	19,074	24,920	14,844	9,662	3,562	12,048
1995 r	81,520	41,615	39,906	18,195	25,444	14,565	9,454	3,538	10,324
1996	82,907	40,768	42,140	19,100	28,577	13,384	9,852	3,626	8,369

Source: Bureau of the Census, "Aerospace Industry (Orders, Sales, and Backlog)" Series MA37D (Annually).
a Based on AIA's aerospace composite price deflator, 1987=1
r Revised.

ORDERS AND BACKLOG OF MAJOR AEROSPACE COMPANIES AS REPORTED BY THE BUREAU OF THE CENSUS

Calendar Years 1982–1996
(Millions of Dollars)

Year	GRAND TOTAL	TOTAL		Aircraft, Engines, & Parts		Missiles, Space, & Rocket Propulsion	Other Aerospace		Non-Aerospace
		Military	Non-Mil.	Military	Non-Mil.		Military	Non-Mil.	
NET NEW ORDERS									
1982[a]	$ 89,168	$ 60,759	$ 28,409	$24,186	$ 9,589	$13,858	$13,570	$3,636	$20,058
1983	91,647	62,053	29,594	26,231	12,368	14,248	14,342	3,508	20,950
1984	104,863	69,654	35,209	29,894	17,208	16,485	13,673	3,838	23,765
1985	110,968	70,978	39,990	28,201	21,471	20,328	14,488	3,042	23,168
1986	110,836	70,132	40,704	24,124	23,833	20,445	16,836	3,510	22,088
1987	121,224	67,594	53,630	19,347	33,000	26,272	14,178	4,379	24,048
1988	147,128	69,209	77,919	24,242	57,906	20,240	18,423	3,044	23,273
1989	173,635	79,992	93,643	28,818	67,773	26,820	17,814	3,945	28,465
1990	145,965	56,405	89,560	17,735	64,651	20,207	12,945	3,556	26,871
1991	122,485	63,017	59,468	26,675	40,815	24,955	11,329	4,360	14,351
1992	100,306	57,383	42,923	19,631[r]	30,110	22,849	11,201	3,256	13,259
1993	79,770	49,541	30,229	19,518	16,090	14,919	11,121	4,629	13,493
1994	88,706	53,268	35,438	23,352	20,166	13,705	12,924	5,395	13,164
1995[r]	109,109	49,350	59,759	19,854	36,467	19,181	13,716	5,261	14,630
1996	126,309	57,690	68,619	28,048	47,818	20,317	12,629	5,305	12,192
BACKLOG AS OF DECEMBER 31									
1982[a]	$108,391	$ 72,229	$ 36,162	$33,309	$ 24,845	$13,125	$13,864	$1,790	$16,538
1983	116,585	83,757	32,828	38,824	21,548	14,962	18,483	3,690	19,078
1984	132,507	96,364	36,143	45,450	24,739	17,823	19,911	4,271	20,313
1985	142,953	102,244	40,709	47,893	28,298	21,410	19,908	3,638	21,806
1986	148,212	104,073	44,139	44,974	31,417	24,320	20,457	3,628	23,416
1987	158,650	99,474	59,176	36,514	43,501	30,544	18,937	4,604	24,550
1988	191,518	99,117	92,401	35,515	75,765	29,078	20,584	4,734	25,842
1989	252,401	114,070	138,331	44,026	115,124	33,771	24,186	7,652	27,642
1990	250,079	88,471	161,608	33,788	139,152	31,648	18,501	4,999	21,991
1991	245,241	89,517	155,724	39,149	134,527	32,657	17,213	4,907	16,788
1992	236,076	92,139	143,937	44,255	124,322	32,933	14,886	4,859	14,821
1993	211,814	91,751	120,063	46,177	96,228	29,511	16,668	7,958	15,272
1994	192,561	84,445	108,116	44,624	85,305	24,746	15,599	8,043	14,244
1995[r]	202,638	82,309	120,329	44,642	92,239	27,113	17,534	8,214	12,906
1996	219,616	85,552	134,064	48,318	104,220	28,104	18,293	8,404	12,277

Source: Bureau of the Census, "Aerospace Industry (Orders, Sales, and Backlog)" Series MA37D (Annually).
a 1982 Orders and Backlog Totals are final revisions for which product group detail is not available.
r Revised.

AEROSPACE SALES AND THE NATIONAL ECONOMY

Calendar Years 1982–1996
(Billions of Dollars)

Year	Gross Domestic Product	Industry Sales			Aerospace Sales As Percent of		
		Manufacturing[r]	Durable Goods[r]	Aerospace	GDP	Manufacturing	Durable Goods
CURRENT DOLLARS							
1982	$3,242.1	$1,960.2	$ 950.5	$ 67.8	2.1%	3.5%	7.1%
1983	3,514.5	2,070.6	1,025.8	80.0	2.3	3.9	7.8
1984	3,902.4	2,288.2	1,175.3	83.5	2.1	3.6	7.1
1985	4,180.7	2,334.5	1,215.3	96.6	2.3	4.1	7.9
1986	4,422.2	2,335.9	1,238.9	106.2	2.4	4.5	8.6
1987	4,692.3	2,475.9	1,297.5	110.0	2.3	4.4	8.5
1988	5,049.6	2,695.4	1,421.5	114.6	2.3	4.3	8.1
1989	5,438.7	2,840.4	1,477.9	120.5	2.2	4.2[r]	8.2[r]
1990	5,743.8	2,912.2	1,485.3	134.4	2.3	4.6[r]	9.0[r]
1991	5,916.7	2,878.2	1,452.0	139.2	2.4	4.8[r]	9.6[r]
1992	6,244.4	3,004.7	1,541.9	138.6	2.2	4.6[r]	9.0[r]
1993[r]	6,558.1	3,127.6	1,630.6	123.2	1.9	3.9	7.6
1994[r]	6,947.0	3,348.0	1,789.6	110.6	1.6	3.3	6.2
1995[r]	7,265.4	3,589.4	1,921.2	106.6	1.5	3.0	5.5
1996	7,636.0	3,735.2	2,006.0	112.7	1.5	3.0	5.6

CONSTANT DOLLARS[ar]					Real Annual Growth[b]			
					GDP[r]	Mfg.[r]	Durs.[r]	Aero.
1982	$4,618.4	$2,792.3	$1,354.1	$ 77.1	(2.0)%	(8.5)%	(10.9)%	(4.2)%
1983	4,801.2	2,828.6	1,401.3	86.7	4.0	1.3	3.5	12.5
1984	5,141.5	3,014.7	1,548.5	83.7	7.1	6.6	10.5	(3.6)
1985	5,319.0	2,970.0	1,546.2	97.8	3.5	(1.5)	(0.1)	17.0
1986	5,486.6	2,898.1	1,537.0	106.4	3.2	(2.4)	(0.6)	8.7
1987	5,646.6	2,979.4	1,561.4	110.0	2.9	2.8	1.6	3.4
1988	5,864.8	3,130.6	1,651.0	112.4	3.9	5.1	5.7	2.2
1989	6,063.2	3,166.5	1,647.6	113.6	3.4	1.1	(0.2)	1.0
1990	6,136.5	3,111.4	1,586.9	121.6	1.2	(1.7)	(3.7)	7.0
1991	6,080.9	2,958.0	1,492.3	121.5	(0.9)	(4.9)	(6.0)	(0.1)
1992	6,244.4	3,004.7	1,541.9	117.3	2.7	1.6	3.3	(3.5)
1993	6,391.9	3,048.4	1,589.3	101.6	2.4	1.5	3.1	(13.3)
1994	6,616.2	3,188.6	1,704.4	89.2	3.5	4.6	7.2	(12.3)
1995	6,752.2	3,335.9	1,785.5	84.5	2.1	4.6	4.8	(5.2)[r]
1996	6,941.8	3,395.6	1,823.6	88.4	2.8	1.8	2.1	4.6

Source: Council of Economic Advisors, "Economic Indicators" (Monthly); Bureau of Census; and Aerospace Industries Association.
a Aerospace industry constant dollar sales based on AIA's aerospace composite price deflator, 1987=100. Others based on GDP deflator, 1992=100.
b Parentheses indicate negative real annual growth.
r Revised.

GROSS DOMESTIC PRODUCT, FEDERAL BUDGET, AND DEFENSE BUDGET

Fiscal Years 1965–1998
(Billions of Dollars)

Year	Fiscal Year GDP[r]	Federal Budget Outlays		Defense Outlays[c] as percent of	
		Net Total[a]	National Defense[b]	GDP[r]	Federal Budget
1965	$ 668.8	$ 118.2	$ 50.6	7.4%	42.8%
1966	752.7	134.5	58.1	7.7	43.2
1967	811.9	157.5	71.4	8.8	45.4
1968	868.0	178.1	81.9	9.4	46.0
1969	948.1	183.6	82.5	8.7	44.9
1970	1,009.4	195.6	81.7	8.1	41.8
1971	1,077.4	210.2	78.9	7.3	37.5
1972	1,177.0	230.7	79.2	6.7	34.3
1973	1,306.8	245.7	76.7	5.9	31.2
1974	1,438.1	269.4	79.3	5.5	29.5
1975	1,554.5	332.3	86.5	5.6	26.0
1976	1,730.4	371.8	89.6	5.2	24.1
Tr.Qtr.	454.8	96.0	22.3	4.9	23.2
1977	1,971.4	409.2	97.2	4.9	23.8
1978	2,212.6	458.7	104.5	4.7	22.8
1979	2,495.9	504.0[r]	116.3	4.7	23.1
1980	2,718.9	590.9	134.0	4.9	22.7
1981	3,049.1	678.2	157.5	5.2	23.2
1982	3,211.3	745.8	185.3	5.8	24.8
1983	3,421.9	808.4	209.9	6.1	26.0
1984	3,812.0	851.9[r]	227.4	6.0	26.7
1985	4,102.1	946.5[r]	252.7[b]	6.2	26.7
1986	4,374.3	990.5[r]	273.4	6.2	27.6
1987	4,605.1	1,004.2[r]	282.0	6.1	28.1
1988	4,953.5	1,064.5[r]	290.4	5.9	27.3
1989	5,351.8	1,143.7[r]	303.6	5.7	26.5[r]
1990	5,684.5	1,253.2[r]	299.3	5.3	23.9
1991	5,858.8	1,324.4[r]	273.3[c]	4.7	20.6
1992	6,143.2	1,381.7[r]	298.4[c]	4.9	21.6
1993	6,470.8	1,409.4[r]	291.1[c]	4.5	20.7
1994	6,830.4	1,461.7[r]	281.6	4.1	19.3
1995	7,186.9	1,515.7[r]	272.1	3.8	17.9
1996	7,484.7	1,560.3	265.7	3.6	17.0
1997[E]	7,853.8	1,631.0	267.2	3.4	16.4
1998[E]	8,218.6	1,687.5	259.4	3.2	15.4

Source: Office of Management and Budget, "The Budget of the United States Government" (Annually).
a "Net Total" is government-wide total less intragovernmental transactions.
b "National Defense" includes the military budget of DoD and other defense-related activities. Beginning in 1985, the Federal Budget reflects establishment of a military retirement trust fund. Data for prior years adjusted for comparable treatment of military retired pay.
c 1991–1993 reflects transfers from the Defense Cooperation Account funded by foreign government and private cash contributions reducing total U.S.-funded military outlays.
E Estimate.
r Revised.
Tr.Qtr. See Glossary.

FEDERAL OUTLAYS
DEFENSE, NASA, AND AEROSPACE PRODUCTS & SERVICES

Fiscal Years 1972–1998
(Millions of Dollars)

Year	TOTAL National Defense	TOTAL NASA	Federal Outlays for Aerospace Products & Services			Aerospace as Percent of Total National Defense and NASA
			TOTAL	DoD[a]	NASA	
1972	$ 79,174	$ 3,423	$12,309	$ 8,936	$ 3,373	14.9%
1973	76,681	3,315	11,360	8,089	3,271	14.2
1974	79,347	3,256	11,168	7,987	3,181	13.5
1975	86,509	3,267	11,544	8,373	3,181	12.9
1976	89,619	3,669	12,364	8,816	3,548	13.3
Tr.Qtr.	22,269	951	2,855	1,959	926	12.3
1977	97,241	3,945	13,229	9,389	3,840	13.1
1978	104,495	3,983	13,926	10,067	3,859	12.8
1979	116,342	4,197	16,686	12,622	4,064	13.8
1980	133,995	4,852	20,269	15,558	4,711	14.6
1981	157,513	5,421	24,276	19,002	5,274	14.9
1982	185,309	6,035	29,501	23,575	5,926	15.4
1983	209,903	6,664	35,364	28,808	6,556	16.3
1984	227,413	7,048	39,663	32,723	6,940	16.9
1985	252,748	7,318	44,483	37,335	7,148	17.1
1986	273,375	7,404	49,773	42,558	7,215	17.7
1987	281,999	7,591	51,871	44,429	7,442	17.9
1988	290,361	9,092	48,848	39,922	8,926	16.3
1989	303,559	11,036	52,933	42,072	10,861	16.8
1990	299,331	12,429	53,194	40,992	12,202	17.1
1991[b]	273,292	13,878	53,630	40,089	13,541	18.7
1992[b]	298,350	13,961	50,569	37,085	13,484	16.2
1993[b]	291,086	14,305	45,496	31,763	13,733	14.9
1994	281,642	13,695	41,082	27,774	13,308	13.9
1995	272,066	13,378	36,696	23,638	13,058	12.9
1996	265,748	13,881	32,947	20,530	12,417	11.8
1997[E]	267,176	13,697	31,427	19,133	12,294	11.2
1998[E]	259,388	13,595	30,377	18,123	12,254	11.1

Source: Office of Management and Budget, "The Budget of the United States Government" (Annually); Department of Defense, "Status of Funds" (Annual Summaries); and NASA, "Pocket Statistics" (Annually).

NOTE: "National Defense" includes the military budget of the Department of Defense and other defense-related activities. "TOTAL NASA" includes all categories of the NASA budget; NASA construction is not included in "Aerospace Products and Services." See additional explanation with following table.

a Outlays for aircraft and missile procurement. Does not include RDT&E, which DoD has not reported by product group since 1977, and which, for comparability, has been subtracted from d previously reported in this table for earlier years. Also included are revisions to missile procurement data.

b 1991–1993 reflects transfers from the Defense Cooperation Account funded by foreign government and private cash contributions reducing total U.S.-funded military outlays.

E Estimate. Latest year reflects Administration's budget proposal.

Tr.Qtr. See Glossary.

FEDERAL OUTLAYS FOR AEROSPACE PRODUCTS AND SERVICES

Fiscal Years 1967–1998
(Millions of Dollars)

Year	TOTAL	Department of Defense[a]			NASA[b]
		TOTAL	Aircraft	Missiles	
1967	$15,478	$10,341	$ 8,411	$ 1,930	$ 5,137
1968	16,279	11,681	9,462	2,219	4,598
1969	15,872	11,686	9,177	2,509	4,186
1970	14,559	10,860	7,948	2,912	3,699
1971	12,918	9,580	6,549	3,031	3,338
1972	12,309	8,936	5,927	3,009	3,373
1973	11,360	8,089	5,066	3,023	3,271
1974	11,168	7,987	5,006	2,981	3,181
1975	11,554	8,373	5,484	2,889	3,181
1976	12,364	8,816	6,520	2,296	3,548
Tr.Qtr.	2,885	1,959	1,557	402	926
1977	13,229	9,389	6,608	2,781	3,840
1978	13,926	10,067	6,971	3,096	3,859
1979	16,686	12,622	8,836	3,786	4,064
1980	20,269	15,558	11,124	4,434	4,711
1981	24,276	19,002	13,193	5,809	5,274
1982	29,501	23,575	16,793	6,782	5,926
1983	35,364	28,808	21,013	7,795	6,556
1984	39,663	32,723	23,196	9,527	6,940
1985	44,483	37,335	26,586	10,749	7,148
1986	49,773	42,558	30,828	11,730	7,215
1987	51,871	44,429	32,956	11,473[c]	7,442
1988	48,848	39,922	28,246	11,676	8,926
1989	52,933	42,072	27,569	14,503	10,861
1990	53,194	40,992	26,142	14,851	12,202
1991	53,630	40,089	25,689	14,400	13,541
1992	50,569	37,085	23,581	13,504	13,484
1993	45,496	31,763	20,359	11,404	13,733
1994	41,082	27,774	18,840	8,934	13,308
1995	36,696	23,638	16,125	7,513	13,058
1996	32,947	20,530	14,331	6,199	12,417
1997[E]	31,427	19,133	13,316	5,817	12,294
1998[E]	30,377	18,123	13,231	4,892	12,254

Source: Department of Defense, "Status of Funds" (Annual Summaries); Office of Management and Budget, "The Budget of the United States Government" (Annually); and NASA, "Pocket Statistics" (Annually).

a Outlays for aircraft and missile procurement. Does not include RDT&E, which DoD has not reported by product group since 1977, and which for comparability, has been subtracted from data previously reported in this table for earlier years.

b Includes Research & Development and Research & Program Management, and effective with 1984 data, Space Flight, Control, and Data Communications; excludes Construction of Facilities.

c Beginning in 1978, DoD combined Navy Missile Procurement with torpedoes and other related products into Navy Weapons Procurement, of which missiles comprise approximately 80 percent.

E Estimate. Latest year reflects Administration's budget proposal.

Tr.Qtr. See Glossary.

DEPARTMENT OF DEFENSE
TOTAL MILITARY OUTLAYS BY FUNCTIONAL TITLE[a]

Fiscal Years 1989–1998
(Millions of Dollars)

	1989	1990	1991	1992
TOTAL	$294,880	$289,755	$262,389[d]	$286,892[d]
Procurement—TOTAL	$ 81,620	$ 80,972	$ 82,028	$ 74,881
Aircraft	27,569	26,142	25,689	23,581
Missiles[b]	14,503	14,851	14,400	13,504
Ships	10,587	11,016	11,512	11,035
Weapons[b]	4,384	3,873	3,716	3,324
Ammunition	1,993	2,003	2,103	1,996
Other[c]	22,585	23,088	24,609	21,442
Military Personnel—TOTAL	80,676	75,622	83,439	81,171
Active Forces	71,571	66,541	74,571	71,433
Reserve Forces	9,104	9,081	8,868	9,738
RDT&E	37,002	37,458	34,589	34,632
Operations & Maintenance	87,001	88,340	101,769	91,989[r]
Military Construction	5,275	5,080	3,497	4,262
Family Housing	3,257	3,501	3,296	3,271
Other[d]	50	(1,218)	(46,229)[d]	(3,313)[dr]

Source: Department of Defense, "Status of Funds" (Annual Summaries) and Office of Management and Budget, "The Budget of the United States Government" (Annually).

NOTE: Data in parentheses are credit items. Detail may not add to totals because of rounding.

a Includes all items in the DoD military budget; excludes the DoD civil budget for the Army Corps of Engineers and other non-defense related activites.

b Beginning in 1978, DoD combined Navy Missiles Procurement with torpedoes and other related products into Navy Weapons Procurement. Missiles comprise approximately 80 percent of the value of this category.

c Includes Communications and Electronics.

d 1991–1993 reflects transfers from the Defense Cooperation Account funded by foreign government and private contributions reducing total U.S.-funded military outlays.

E Estimate. Latest year reflects Administration's budget proposal.

r Revised.

DEPARTMENT OF DEFENSE
TOTAL MILITARY OUTLAYS BY FUNCTIONAL TITLE[a] (Continued)

Fiscal Years 1989–1998
(Millions of Dollars)

1993	1994	1995	1996	1997 [E]	1998 [E]
$278,561[d]	$268,622[r]	$259,442	$253,187	$254,272	$247,492
$ 69,936	$ 61,769[r]	$ 54,982	$ 48,913	$ 45,575	$ 43,142
20,359	18,840	16,125	14,331	13,316	13,231
11,404	8,934	7,513	6,199	5,817	4,892
10,136	9,132	8,780	7,346	7,012	6,692
3,061	1,795	1,783	1,788	1,819	1,688
1,383	997	1,339	1,232	1,727	1,565
23,593	22,071[r]	19,441	18,017	15,884	15,073
75,904	73,137	70,809	66,669	70,053	69,346
66,494	63,686	61,606	57,843	60,800	60,367
9,410	9,449	9,203	8,826	9,253	8,979
36,968	34,762	34,594	36,494	36,034	34,645
94,094	87,929[r]	91,078[r]	88,759	92,143	92,579
4,831	4,979	6,823	6,683	6,568	5,593
3,255	3,316	3,571	3,828	4,352	3,928
(6,428)[d]	2,729[r]	(2,415)[r]	1,841	(453)	(1,741)

FEDERAL PRICE DEFLATORS FOR GDP, DEFENSE, PPI, AND CPI

(1967–1998)

Year	GDP[r]		Federal Government Defense Purchases[r]		PPI, Capital Equip-ment	CPI, (Urban) All items
	FY GDP (FY 1992 =100)	CY GDP (CY 1992 =100)	Durable Goods (CY 1992 =100)	Goods & Services (CY 1992 =100)	(CY 1982 =100)	(CY 82–84 =100)
1967	26.3	26.6	NA	NA	35.8	33.4
1968	27.3	27.7	NA	NA	37.0	34.8
1969	28.5	29.0	NA	NA	38.3	36.7
1970	30.0	30.6	NA	NA	40.1	38.8
1971	31.6	32.1	52.3	28.2	41.7	40.5
1972	33.1	33.5	52.1	31.0	42.8	41.8
1973	34.5	35.4	52.1	33.7	44.2	44.4
1974	37.0	38.5	54.1	37.2	50.5	49.3
1975	40.8	42.2	57.1	41.1	58.2	53.8
1976	43.7	44.6	58.6	43.9	62.1	56.9
1977	47.0	47.5	62.7	47.2	66.1	60.6
1978	50.3	50.9	68.0	50.8	71.3	65.2
1979	54.5	55.3	73.7	55.8	77.5	72.6
1980	59.3	60.4	79.0	62.0	85.8	82.4
1981	65.2	66.1	86.5	68.2	94.6	90.9
1982	69.8	70.2	91.7	73.0	100.0	96.5
1983	73.0	73.2	95.8	76.2	102.8	99.6
1984	75.8	75.9	99.5	81.2	105.2	103.9
1985	78.4	78.6	99.9	83.5	107.5	107.6
1986	80.6	80.6	98.5	84.5	109.7	109.6
1987	82.9	83.1	94.4	85.6	111.7	113.6
1988	85.8	86.1	93.9	87.3	114.3	118.3
1989	89.4	89.7	94.6	89.8	118.8	124.0
1990	93.2	93.6	96.8	92.9	122.9	130.7
1991	97.2	97.3	98.9	96.5	126.7	136.2
1992	100.0	100.0	100.0	100.0	129.1	140.3
1993	102.6	102.6	101.9	102.1	131.4	144.5
1994	105.0	105.0	105.8	104.5	134.1	148.2
1995	107.6	107.6	108.5	108.1	136.7	152.4
1996	110.1	110.0	112.3	110.5	138.3	156.9
1997[E]	112.9	112.9	NA	NA	NA	161.2
1998[E]	116.0	116.0	NA	NA	NA	165.5

Source: Bureau of Economic Analysis, "Current Business Statistics" (Monthly) and Price Measurement Branch; Council of Economic Advisers, "Economic Report of the President" (Annually); and Office of Management and Budget, "The Budget of the United States Government" (Annually).

E Estimate

NA Not Available.

r Revised.

Key: PPI = Producer Price Index for Capital Equipment.

CPI = Consumer Price Index, All Items, All Urban Consumers for 1978 and subsequent years. Previous years, All Urban Wage Earners.

GDP = Gross Domestic Product.

PRICE DEFLATORS FOR AEROSPACE INDUSTRY

Calendar Years 1972–1996

Year	Aerospace Deflators (1987 = 100)					
	Composite	SIC 3721	SIC 3724	SIC 3728	SIC 3761	SIC 3764,9
1972	33.7	39.9	30.1	36.6	39.7	34.4
1973	37.7	41.2	30.9	38.1	39.4	35.6
1974	41.5	44.8	34.9	44.0	41.6	40.5
1975	46.6	48.3	42.3	51.6	45.2	49.2
1976	51.0	52.8	45.9	56.5	50.4	53.8
1977	54.6	56.2	49.1	58.7	55.6	58.2
1978	57.5	59.3	54.6	55.2	60.7	63.6
1979	63.5	65.3	60.9	58.9	69.7	70.0
1980	70.6	72.9	66.3	65.3	78.9	78.5
1981	79.5	80.8	77.0	74.9	87.1	89.5
1982	87.9	89.8	85.2	84.3	93.4	97.2
1983	92.2	94.4	89.5	87.9	98.6	101.5
1984	99.8	105.9	98.1	93.6	100.7	102.9
1985 [a]	98.7	100.7	99.2	94.4	102.4	103.2
1986	99.8	100.6	99.3	97.9	103.5	102.4
1987	100.0	100.0	100.0	100.0	100.0	100.0
1988	101.9	102.2	103.0	103.5	95.0	100.3
1989	106.1	111.0	105.8	106.8	91.4	100.6
1990	110.5	116.8	111.7	109.8	91.5	98.1
1991	114.6	121.3	117.0	113.6	94.4	94.6
1992 [b]	118.2	125.2	122.7	118.0	93.1	83.5
1993	121.2	129.5	124.7	120.9	94.4	84.5
1994	124.0	133.9	128.0	123.5	94.3	80.7
1995	126.1	138.3	129.9	124.4	93.5	77.3
1996	127.5	141.5	132.4	128.8	86.1	78.0

Source: Aerospace Industries Association, based on data from: Bureau of Labor Statistics, Producer Price Indices; Bureau of Economic Analysis, Chain-Type Price Indexes and Implicit Price Deflators; and International Trade Administration.

a The International Trade Administration has discontinued its reporting of the Aerospace Deflators with 1986. Subsequent composite deflators computed by AIA and deflators for 1985 and 1986 revised for consistency.

b The Bureau of Economic Analysis discontinued its reporting in 1995 of the National Defense Purchases Deflators (used in AIA's Composite calculations). 1992-1994 revised using 1992 fixed weights and BEA's Chain-Type Price Indexes for National Defense Investment and Consumption Expenditures.

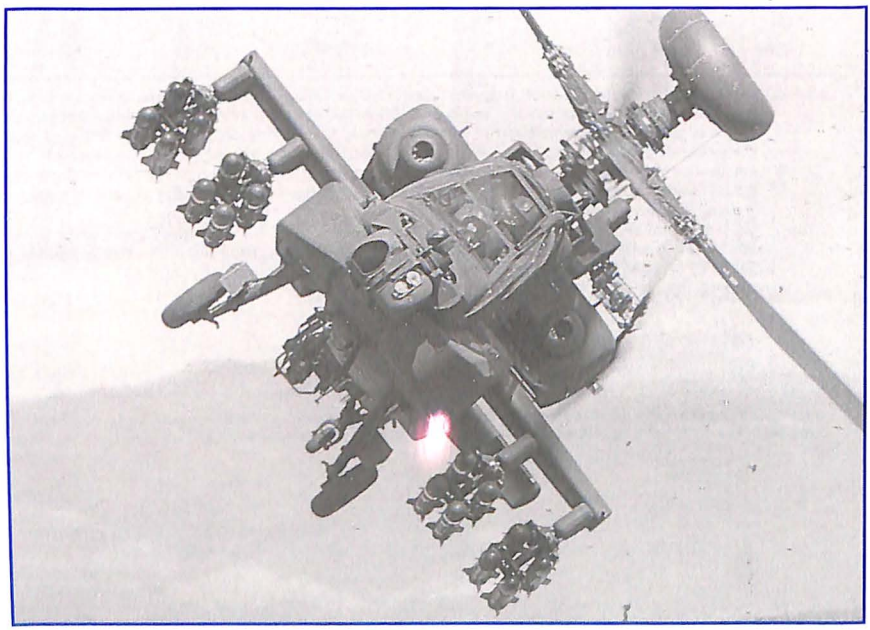
Key: SIC = Standard Industrial Classification, SIC 3721 = Aircraft; SIC 3724 = Aircraft Engines and Engine Parts; SIC 3728 = Aircraft Parts; SIC 3761 = Missiles and Space Vehicles; SIC 3764 = Space Propulsion; SIC 3769 = Space Equipment not elsewhere classified.

Gains in both civil and military aircraft business caused the aerospace industry's aircraft sales to rise strongly in 1996, according to data supplied by the Census Bureau. Aircraft sales, including engines and parts, amounted to $61 billion, a 10.5% increase over the previous year's level of $55 billion. As usual, aircraft sales were the largest single component of the industry's overall sales volume.

The biggest gain was in sales of non-military aircraft, which totaled $36 billion, up from $32 billion in 1995. Military aircraft sales, at $24.4 billion, were up from $22.9 billion in 1995. In inflation-adjusted constant dollars, these gains helped to push total aerospace sales higher after five straight years of decline.

Census reported an even greater surge in new orders for aircraft, engines, and parts in 1996. Total orders came to $76 billion, almost 35% more than the $56 billion in orders received during the previous year. Here again there were sharp gains in both the military and non-military categories. More than 60% of the total orders were in the non-military category—$48 billion, up from $36 billion. Military orders amounted to $28 billion, up from $19.9 billion.

The backlog at year-end 1996 reached $153 billion compared with $137 billion at year-end 1995. The 1996 backlog was compounded of $104 billion (68% of the total) in orders for non-military aircraft, engines, and parts, and $48 billion in military orders.



The largest component of the "non-military" sales category was civil aircraft shipments. Numerically, the industry delivered 1,677 civil aircraft, 52 more than in the previous year; a breakdown shows 269 commercial transports (up 13), 278 helicopters (down 14), and 1,130 general aviation aircraft (up 53). In dollar value, 84% of the total value of shipments was in transport aircraft ($17.6 billion out of a $20.9 billion total). Helicopter sales came to $193 million, almost exactly the same as the 1995 figure, and general aviation sales climbed to $3.1 billion, up from $2.8 billion. It was the highest sales level ever for general aviation before adjustment for inflation.

Although the number and value of civil transport shipments rose, they do not adequately reflect the expansion currently under way. The flow of new orders increased sharply in 1996, and the number of planes on backlog climbed from 1,291 at year-end 1995 to 1,617 in 1996 (dollar value not available). AIA is predicting record level dollar volumes of transport sales in 1997 and 1998.

Military aircraft production for 1996 amounted to 555 units. Of that total 316 were exported either through Foreign Military Sales or by direct company-to-foreign customer sales; 239 were delivered to U.S. military agencies. The comparable figures for 1995 were 811 total, 457 exports, and 354 for the U.S. military services.

For FY 1997, the largest single military aircraft procurement was $2.1 billion for eight C-17 Globemaster III transports for the Air Force. Other major procurements included $2.1 billion for 12 Navy F/A-18E/F fighters; $733 million for five Navy/Marine Corps V-22 Ospreys; $406 million for Army AH-64 Apache helicopters; $537 million for two USAF E-8C JSTARS surveillance aircraft; $360 million for 12 Navy/Marine Corps AV-8B Harrier V/STOL fighters; and $293 million for 34 Army UH-60 Black Hawk helicopters. The principal procurements planned for FY 1998 were $2.2 billion for additional Globemasters, $2.2 billion for F/A-18E/Fs, and $512 million for Army Apaches.

SALES OF AIRCRAFT, ENGINES, AND PARTS

Calendar Years 1982–1996
(Millions of Dollars)

Year	GRAND TOTAL	TOTAL		Complete Aircraft & Parts		Aircraft Engines & Parts	
		Military	Non-Mil.	Military	Non-Mil.	Military	Non-Mil.
CURRENT DOLLARS							
1982	$31,886	$17,743	$14,143	$13,541	$ 9,678	$4,202	$ 4,465
1983	35,879	19,809	16,070	15,651	11,666	4,158	4,404
1984	37,285	23,268	14,017	18,218	10,039	5,050	3,978
1985	43,940	25,758	18,182	21,642	12,607	4,116	5,575
1986	47,757	27,043	20,714	23,089	14,876	3,954	5,838
1987	49,062	27,806	21,256	22,168	14,862	5,638	6,394
1988	50,742	25,068	25,674	19,030	16,681	6,038	8,993
1989	53,825	24,287	29,538	18,256	20,140	6,031	9,398
1990	66,289	27,667	38,622	22,023	27,872	5,644	10,750
1991	68,540	25,385	43,155	19,710	33,215	5,675	9,940
1992	67,669	23,509	44,160	18,411	35,595	5,098	8,565
1993	61,086	20,099	40,987	16,118	32,780	3,981	8,207
1994	54,553	23,652	30,901	20,127	23,176	3,525	7,725
1995 r	55,029	22,944	32,085	19,596	22,897	3,348	9,188
1996	60,788	24,352	36,436	20,370	24,707	3,982	11,729
CONSTANT DOLLARS [a]							
1982	$36,275	$20,185	$16,090	$15,405	$11,010	$4,780	$ 5,080
1983	38,914	21,485	17,430	16,975	12,653	4,510	4,777
1984	37,360	23,315	14,045	18,255	10,059	5,060	3,986
1985	44,519	26,097	18,421	21,927	12,773	4,170	5,648
1986	47,853	27,097	20,756	23,135	14,906	3,962	5,850
1987	49,062	27,806	21,256	22,168	14,862	5,638	6,394
1988	49,796	24,601	25,195	18,675	16,370	5,925	8,825
1989	50,730	22,891	27,840	17,206	18,982	5,684	8,858
1990	59,990	25,038	34,952	19,930	25,224	5,108	9,729
1991	59,808	22,151	37,657	17,199	28,983	4,952	8,674
1992	57,250	19,889	37,360	15,576	30,114	4,313	7,246
1993	50,401	16,583	33,818	13,299	27,046	3,285	6,771
1994	43,994	19,074	24,920	16,231	18,690	2,843	6,230
1995 r	43,639	18,195	25,444	15,540	18,158	2,655	7,286
1996	47,677	19,100	28,577	15,976	19,378	3,123	9,199

Source: Bureau of the Census, "Aerospace Industry (Orders, Sales, and Backlog)" Series MA37D (Annually).
a Based on AIA's aerospace composite price deflator, 1987=100.
r Revised.

ORDERS AND BACKLOG OF AIRCRAFT, ENGINES, AND PARTS

Calendar Years 1982–1996
(Millions of Current Dollars)

Year	GRAND TOTAL	TOTAL		Complete Aircraft & Parts		Aircraft Engines & Parts	
		Military	Non-Mil.	Military	Non-Mil.	Military	Non-Mil.
NET NEW ORDERS							
1982	$ 33,775	$24,186	$ 9,589	$19,632	$ 6,523	$4,554	$ 3,066
1983	33,599	26,231	12,368	21,494	7,596	4,737	4,772
1984	47,102	29,894	17,208	23,312	14,064	6,582	3,144
1985	49,942	28,201	21,741	24,526	15,689	3,675	6,052
1986	47,957	24,124	23,833	19,852	17,592	4,272	6,241
1987	52,347	19,347	33,000	15,070	24,083	4,277	8,917
1988	82,148	24,242	57,906	17,493	41,762	6,749	16,144
1989	96,591	28,818	67,773	23,569	52,619	5,249	15,154
1990	82,386	17,735	64,651	12,766	52,371	4,969	12,280
1991	67,490	26,675	40,815	22,140	30,745	4,535	10,070
1992	49,741	19,631	30,110	16,391	20,548	3,240	9,562
1993	35,608	19,518	16,090	15,853	11,238	3,665	4,852
1994	43,518	23,352	20,166	19,806	12,854	3,546	7,312
1995 r	56,321	19,854	36,467	16,248	27,156	3,606	9,311
1996	75,866	28,048	47,818	24,460	36,972	3,588	10,846
BACKLOG AS OF DECEMBER 31							
1982	$ 58,154	$33,309	$ 24,845	$27,291	$ 18,905	$6,018	$ 5,940
1983	60,372	38,824	21,548	32,227	15,241	6,597	6,307
1984	70,189	45,450	24,739	37,321	19,266	8,129	5,473
1985	76,191	47,893	28,298	40,205	22,348	7,688	5,950
1986	76,391	44,974	31,417	36,968	25,064	8,006	6,353
1987	80,015	36,514	43,501	29,869	34,625	6,645	8,876
1988	111,280	35,515	75,765	28,186	59,679	7,329	16,086
1989	159,150	44,026	115,124	36,888	95,108	7,138	20,016
1990	172,940	33,788	139,152	27,259	119,123	6,529	20,029
1991	173,676	39,149	134,527	32,795	116,139	6,354	18,388
1992	168,577	44,255	124,322	39,748	107,686	4,507	16,636
1993	142,405	46,177	96,228	41,732	82,772	4,445	13,456
1994	129,929	44,624	85,305	40,206	72,295	4,418	13,010
1995 r	136,871	44,642	92,229	39,673	77,802	4,969	14,427
1996	152,538	48,318	104,220	43,743	90,051	4,575	14,169

Source: Bureau of the Census, "Aerospace Industry (Orders, Sales, and Backlog)" Series MA37D (Annually).
r Revised.

U.S. AIRCRAFT PRODUCTION—CIVIL

Calendar Years 1969–1996

Year	TOTAL	Domestic Shipments			Export Shipments		
		Trans-ports	Heli-copters	General Aviation	Trans-ports	Heli-copters	General Aviation
1969	13,505	332	282	9,996	182	252	2,461
1970	8,076	127	150	5,246	184	332	2,037
1971	8,158	50	171	5,900	173	298	1,566
1972	10,576	79	319	7,702	148	256	2,072
1973	14,709	143	342	10,482	151	428	3,163
1974	15,326	91	433	9,903	241	395	4,263
1975	15,251	127	528	10,804	188	336	3,268
1976	16,429	64[a]	442	12,232	158	315	3,218
1977	17,913	54	527	13,441	101	321	3,469
1978	18,962	130	536	14,346	111	368	3,471
1979	18,460	176	570	13,177	200	459	3,878
1980	13,634	150	841	8,703	237	525	3,178
1981	10,916	132	619	6,840	255	453	2,617
1982	5,085	111	333	3,326	121	254	940
1983	3,356	133	187	2,172	129	216	519
1984	2,999	102	143	2,013	83	233	425
1985	2,691	126	247	1,545	152	137	484
1986	2,156	171	120	1,031	159	210	464
1987	1,800	187	116	598	170	242	487
1988	1,949	206	103	500	217	280	643
1989	2,448	138	221	225	260	294	1,310
1990	2,268	215	254	335	306	349	809
1991	2,181	204	253	487	385	318	534
1992	1,790	180	112	541	387	212	358
1993	1,630	130	83	631	278	175	333
1994	1,545	87	154	543	222	154	385
1995	1,625	119	82	714	137	210	363
1996	1,677	97	64	747	172	214	383

Source: Aerospace Industries Association, based on company reports; General Aviation Manufacturers Association; and Department of Commerce, International Trade Administration.

a Prior to 1976, includes the C-130 military transport.

U.S. AIRCRAFT PRODUCTION—MILITARY

Calendar Years 1969–1996

Year	TOTAL	U.S. Military Agencies	Exports		
			Total	FMS[a]	Direct[b]
1969	4,290	3,644	646	NA	NA
1970	3,720	3,085	635	NA	NA
1971	2,914	2,232	682	NA	NA
1972	2,530	1,993	537	124	413
1973	1,821	1,243	578	129	449
1974	1,513	799	714	365	349
1975	1,779	844	935	525	410
1976	1,318	625	693	518	175
1977	1,134	454	680	408	272
1978	996	467	529	256	273
1979	837	531	306	203	103
1980	1,047	625	422	194	228
1981	1,062	703	359	215	144
1982	1,159	690	469	68	401
1983	1,053	766	287	70	217
1984	936	561	375	71	304
1985	919	643	276	134	142
1986	1,107	708	399	110	289
1987	1,210	725	485	133	352
1988	1,305	687	618	138	480
1989	1,261	614	647	92	555
1990	1,053	664	387	99	290
1991	911	556	355	94	261
1992	753	422	331	122	209
1993	955[c]	437	518	146	372[c]
1994	764	418	346	69	277
1995	811[dr]	354[r]	457	108[r]	349[r]
1996	555	239	316	109	207

Source: Aerospace Industries Association, based on USAF, USN, and USA survey responses and Department of Commerce, International Trade Administration.

a Also includes acceptances of NATO AWACS aircraft.

b Military aircraft exported via commercial contracts, directly from manufacturers to foreign governments.

c The number of small (450 kg–2000 kg), new aircraft exported doubled in 1993 to 340 worth $18 million.

d Includes 358 small (450 kg–2000 kg), new aircraft worth $14.7 million.

NA Not available.

r Revised.

CIVIL AIRCRAFT SHIPMENTS

Calendar Years 1982–1996

Year	TOTAL	Transport Aircraft[a]	Helicopters	General Aviation
NUMBER OF AIRCRAFT SHIPPED				
1982	5,085	232	587	4,266
1983	3,356	262	403	2,691[b]
1984	2,999	185	376	2,438
1985	2,691	278	384	2,029
1986	2,155	330	330	1,495
1987	1,800	357	358	1,085
1988	1,949	423	383	1,143
1989	2,448	398	515	1,535
1990	2,268	521	603	1,144
1991	2,181	589	571	1,021
1992	1,790	567	324	899
1993	1,630	408	258	964
1994	1,545	309	308	928
1995	1,625	256	292	1,077
1996	1,677	269	278	1,130
VALUE—Millions of Dollars				
1982	$ 8,610	$ 6,246	$365	$1,999
1983	9,773	8,000	303	1,470[b]
1984	7,717	5,689	330	1,698
1985	10,385	8,448	506	1,431
1986	11,858	10,308	288	1,262
1987	12,148	10,507	277	1,364
1988	15,855	13,603	334	1,918
1989	17,129	15,074	251	1,804
1990	24,477	22,215	254	2,008
1991	29,035	26,856	211	1,968
1992	30,728	28,750	142	1,836
1993	26,389	24,133	113	2,144
1994	20,666	18,124[E]	185	2,357
1995	18,299	15,263[E]	194	2,842
1996	20,884	17,564[E]	193	3,127

Source: Aerospace Industries Association, based on company reports and General Aviation Manufacturers' Association.

a U.S.-manufactured fixed-wing aircraft over 33,000 pounds empty weight, including all jet transports plus the four-engine turboprop-powered Lockheed L-100.

b Includes 3 off-the-shelf Gulfstream G-III's delivered to the U.S. Air Force for C-20 VIP transports.

E Estimated.

CIVIL TRANSPORT AIRCRAFT BACKLOG[a]

As of December 31, 1992–1996

Company and Model	1992	1993	1994	1995	1996
TOTAL AIRCRAFT ON ORDER					
(Domestic and Foreign Orders)	1,493	1,356	1,126	1,291	1,617
Value (Millions of Dollars)	$96,724	$77,735	$67,709[E]	NA	NA
Boeing—TOTAL	1,210	1,153	959	1,079	1,418
B-737	488	463	391	491	764
B-747	214	156	111	121	161
B-757	241	246	182	132	134
B-767	145	141	128	118	86
B-777	122	147	147	217	273
McDonnell Douglas—TOTAL ...	283	203	167	212	199
MD-11	97	60	45	21	15
MD-80/90	186	143	122	141	134
MD-95	—	—	—	50	50
TOTAL FOREIGN ORDERS	884	661	539	701	753
Value (Millions of Dollars)	$66,795	$50,409	$42,962[E]	NA	NA
Boeing—TOTAL	687	511	415	570	637
B-737	228	152	132	199	234
B-747	192	143	103	112	133
B-757	91	48	28	21	25
B-767	88	66	50	58	38
B-777	88	102	102	180	207
McDonnell Douglas—TOTAL ...	197	150	124	131	116
MD-11	76	56	39	14	14
MD-80/90	121	94	85	117	102
MD-95	—	—	—	—	—

Source: Aerospace Industries Association, based on company reports.
NOTE: Boeing's unfilled orders not reported on a firm order basis beginning with 1993.
a Unfilled firm orders excluding options for U.S.-manufactured transport aircraft over 33,000 pounds. Includes new transports contracted for lease from the manufacturer.
E Estimate.
NA Not available.

SHIPMENTS OF CIVIL TRANSPORT AIRCRAFT[a]

Calendar Years 1992–1996

Company and Model	1992	1993	1994	1995	1996
TOTAL					
Number of Aircraft Shipped	567	408	309	256	269
Value (Millions of Dollars)	$28,750	$24,133	$18,124[E]	$15,263[E]	$18,915[E]
Boeing—TOTAL	441	330	270	206	218
B-737	218	152	121	89	76
B-747	61	56	40	25	26
B-757	99	71	69	43	42
B-767	63	51	40	36	42
B-777	—	—	—	13	32
McDonnell Douglas—TOTAL	126	78	39	50	51
MD-11	42	36	17	18	15
MD-80	84	42	22	18	12
MD-90	—	—	—	14	24

Source: Aerospace Industries Association, based on company reports.
a U.S.-manufactured fixed-wing aircraft over 33,000 lbs.
E Estimated.

SPECIFICATIONS OF U.S. CIVIL JET TRANSPORT AIRCRAFT[a]

On Order or in Production as of 1996

Number of Engines and Crew, and Model Designation[b]	Initial Service	Standard Mixed Class	Operating Empty Weight (000's lbs)	Maximum Takeoff Gross Weight (000's lbs)	Range (Nautical Miles)[c]	Engine Manufacturer[d] and Model
FOUR ENGINES/CREW OF 2						
747-400•	1989	380-585	404	800-875	6,060 -7,200	GE CF6-80C2, P&W PW4000, or RR RB211-524
THREE ENGINES/CREW OF 2						
MD-11•	1989	250-410	287	631	6,840	GE CF6-80C2-DF1 or P&W PW4460
MD-11ER•	1996	250-410	287	631	7,220	GE CF6-80C2-DF1 or P&W PW4460
TWO ENGINES/CREW OF 2						
737-300	1984	128-149	72-73	125-140	2,270	CFMI CFM56-3C-1
737-400	1988	146-168	76-78	139-150	2,090	CFMI CFM56-3C-1
737-500	1990	108-132	70-71	116-134	2,400	CFMI CFM56-3C-1
737-600	1998	108-132	81	124-144	3,230	CFMI CFM56-7B
737-700	1997	128-149	83	133-153	3,200	CFMI CFM56-7B
737-800	1998	162-189	91	156-173	2,900	CFMI CFM56-7B
757	1983	194-231	128	220-255	2,500 -3,900	RR RB211-535 or P&W PW2000
767-200•	1982	181-285	186	395	6,670	P&W PW4000, GE CF6-80C2, or RR RB211-524
767-300•	1986	218-325	200	412	6,200	P&W PW4000, GE CF6-80C2, or RR RB211-524
777-200•	1995	305-440	303-318	506-648	5,230 -7,470	RR Trent, GE GE90, or P&W PW4000
777-300•	1998	368-550	348	580-660	5,820	RR Trent, GE GE90, or P&W PW4000
MD-80 series:						
MD-81	1980	155	80	140	1,565	P&W JT8D-209 or P&W JT8D-217A
MD-82	1981	155	80	150	2,076	P&W JT8D-217C
MD-83	1985	155	81	160	2,534	P&W JT8D-219
MD-87	1987	130	76	140	2,405	P&W JT8D-217C
MD-88	1987	155	82	150	2,534	P&W JT8D-219C or P&W JT8D-217C
MD-90	1995	155	88	156	2,400	IAE V2500-D5
MD-95	1999	106	67	114	1,547	BMW-RR BR715

Source: Aerospace Industries Association, based on company reports.

a All jet-powered passenger transport aircraft 33,000 pounds or more empty weight.

b The Boeing Company manufacturers models: 737, 747, 757, 767, & 777 and McDonnell Douglas Corporation manufacturers models: MD-11, MD-80, MD-90, and MD-95.

c Full passenger load and baggage.

d P&W = Pratt & Whitney; GE = General Electric; RR = Rolls-Royce; CFMI = General Electric/Snecma; IAE = International Aero Engines; BMW = Bayerische Motoren Werke.

• Wide-body aircraft.

SPECIFICATIONS OF U.S. CIVIL HELICOPTERS

In Production as of 1996

Company	Commercial Model	Number of Places	Useful Load (Lbs.)	Range with Useful Load (N.Miles)	External Cargo Payload (Lbs.)
Enstrom Helicopter	F-28 Series	3	1,030	241	1,000
	280 Series	3	1,015	260	1,000
	480 Series	5	1,175	375	1,000
Hiller Aircraft	UH-12E	3	1,341	232	1,000
Kaman	K-1200	1	NA	NA	6,000
McDonnell Douglas Helicopter	500 Series	5	1,519	264	2,069
	520 Series	5	1,764	210	2,364
	900 Series	8	2,975	NA	3,000
Robinson Helicopter	R22	2	515	209	—
	R44	4	1,000	210	—
Schweizer Aircraft	300C	3	950	201	1,050
	300CB	2	662	NA	—
	330	4	1,120	300	1,000
Sikorsky Aircraft	S-76B	14	4,328	350	3,300
	S-76C	14	4,813	439	3,300

Source: Helicopter Association International, "1997 Helicopter Annual" (Annually).
NA Not available.

CIVIL HELICOPTER SHIPMENTS[a]

Calendar Years 1992–1996

Company and Model	1992	1993	1994	1995	1996
CIVIL SHIPMENTS	324	258	308	292	278
Value (Millions of Dollars)	$142	$113	$185	$194	$193
Bell—TOTAL	1	2	—	—	—
214 series	1	2	—	—	—
Enstrom—TOTAL	6	10	17	11	11
F-28 series	3	(b)	(b)	(b)	(b)
280 series	3	8[b]	13[b]	3[b]	4[b]
480 series	—	2	4	8	7
Hiller[c]—TOTAL	3	—	—	1	1
UH12E	3	—	—	1	1
Kaman—TOTAL	—	—	5	6	8
K-1200	—	—	5	6	8
McDonnell Douglas—TOTAL	51	26	36	34	29
500 series	23	5	3	12	9
520N series	17	21	9	10	5
530 series	11	—	22	—	—
900 series	—	—	2	12	15
Robinson—TOTAL	212	166	195	179	164
R22	212	135	89	83	86
R44	—	31	106	96	78
Schweizer—TOTAL	39	45	40	47	56
300C	39	40	35	22	20
300CB	—	—	—	21	31
330	—	5	5	4	5
Sikorsky—TOTAL	12	9	15	14	9
S-76	12	9	15	14	9

Source: Aerospace Industries Association, based on company reports.
NOTE: All data exclude production by foreign licensees.
a Domestic and export helicopter shipments for non-military use. Helicopters in military configuration exported to foreign governments and purchased under commercial contract are reported elsewhere. Models which may be shipped in either a civil or a military configuration appear in both tables.
b Reporting of F-28 and 280 series combined.
c Formerly reported as Rogerson.

DIRECT EXPORT SHIPMENTS OF MILITARY HELICOPTERS[a]

Calendar Years 1992–1996

Manufacturer and Model	1992	1993	1994	1995	1996
DIRECT MILITARY EXPORT SHIPMENTS	51	64	30	21	8
Value (Millions of Dollars)	$460	$429	$248	$142	$131
Boeing Vertol CH-47/414/352	6	—	—	2	7
Robinson R22	10	—	—	—	—
Sikorsky S-70C	24	64	29	19	1
Sikorsky S-80M	11	—	1	—	—

Source: Aerospace Industries Association, company reports.

a Shipments of helicopters in military configuration exported directly from U.S. manufacturers to foreign governments. Military helicopters exported via Foreign Military Sales (FMS) are reported with Dept. of Defense (DoD) aircraft acceptance data elsewhere in this chapter. Some models reported on this page may be shipped in either military or civil configuration; see Civil Helicopter Shipments table for additional data.

GENERAL AVIATION AIRCRAFT SHIPMENTS

By Selected Manufacturers
Calendar Years 1992–1996

	1992	1993	1994	1995	1996
NUMBER OF AIRCRAFT SHIPPED	899	964	928	1,077	1,130
Single-Engine, Piston	510	516	444	515	530
Multi-Engine, Piston	41	39	55	61	70
Turboprop	177	211	207	255	289
Turbojet	171	198	222	246	241
VALUE OF SHIPMENTS[a] (Millions of Dollars)	$1,836	$2,144	$2,357	$2,842	$3,127
Piston	$ 92	$ 76	$ 94	$ 123	$ 146
Turboprop	460	595	595	653	734
Turbojet	1,284	1,473	1,681	2,066	2,247
Number of Aircraft By Selected Manufacturer					
American Champion	NA	38	22	46	53
American General	51	30	—	—	—
Aviat	63	56	47	42	56
Bellanca	3	4	2	1	2
Cessna	140	173	172	200	229
Classic	9	7	4	7	6
Commander	25	31	22	25	15
Fairchild	14	20	16	7	7
Gulfstream	25	26	22	26	27
Lake	9	3	—	—	—
Learjet	23	38	36	43	34
Maule	33	70	65	68	63
Mooney	69	64	71	84	73
Piper	85	99	132	165	183
Raytheon[b]	348	305	317	363	382
Taylorcraft	2	—	—	—	—

Source: General Aviation Manufacturers' Association.
a Manufacturers' net billing price.
b Formerly reported as Beech.
NA Not available.

MILITARY AIRCRAFT ACCEPTED BY U.S. MILITARY AGENCIES

Number and Flyaway Value
Calendar Years 1982–1996

Year	TOTAL	Bomber/ Patrol/ Command/ Control	Fighter/ Attack	Trans- port/ Tanker	Trainer	Heli- copter	Other
NUMBER							
1982	758	26	478	14	60	172	8
1983	836	34	421	22	120	233	6
1984	632	34	298	18	30	240	12
1985	777	34	409	25	—	306	3
1986	818	52	424	76	—	266	—
1987	858	74	483	36	—	265	—
1988	842	55	509	31	—	247	—
1989	706	24	408	21	—	253	—
1990	763	24	454	25	—	260	—
1991	650	17	395	23	—	215	—
1992	544	10	312	30	37	155	—
1993	583	11	293	25	56	198	—
1994	487	6	167	40	114	157	3
1995	462[r]	4	133[r]	32	102	176[r]	15
1996	348	4	115	28	54	147	—
FLYAWAY VALUE—Millions of Dollars							
1982	$ 8,605	$ 886	$6,383	$ 410	$ 42	$ 872	$12
1983	9,640	1,259	6,708	575	79	1,009	10
1984	9,308	1,270	5,774	627	18	1,597	22
1985	14,122	3,640	7,923	838	—	1,715	6
1986	20,903	8,177	8,004	2,665	—	2,057	—
1987	21,459	8,569	8,900	2,218	—	1,772	—
1988	16,031	2,911	8,953	2,314	—	1,853	—
1989	11,968	1,423	7,735	743	—	2,067	—
1990	13,036	1,499	8,731	605	—	2,201	—
1991	11,754	1,023	8,517	437	—	1,777	—
1992	11,482	613	7,673	1,346	267	1,583	—
1993	12,101	1,530	6,400	1,553	484	2,134	—
1994	13,000	3,861	3,661	3,298	477	1,686	17
1995	12,369[r]	3,585	3,547[r]	2,759[r]	460[r]	1,922[r]	98
1996	11,367	3,596	3,497	2,348	338	1,588	—

Source: Aerospace Industries Association, based on USAF, USN, and USA survey responses.
NOTE: Data represent new U.S.-manufactured aircraft, excluding gliders and targets. Values include spares, spare parts, and support equipment that are procured with the aircraft. Includes aircraft accepted for shipment to foreign governments for military assistance programs and foreign military sales.
r Revised.

MILITARY AIRCRAFT ACCEPTANCES BY UNITED STATES AIR FORCE[a]

Calendar Years 1995–1996
(Costs in Millions of Dollars)

Type and Model	Number		Flyaway Cost[b]		Weapon System Cost[c]	
	1995	1996	1995	1996	1995	1996
AIR FORCE—TOTAL	83	66	$6,695[r]	$6,316	$8,058[r]	$7,933
Bomber—TOTAL	4	4	$3,585	$3,596	$4,593	$4,756
B-2	4	4	3,585	3,596	4,593	4,756
Fighter/Attack—TOTAL	23	18	470	412	611	603
F-16	23	18	470	412	611	603
Transports/Tankers—TOTAL	24	9	2,522[r]	2,171	2,705[r]	2,422
C-17	6	6	1,960[r]	2,056	2,083[r]	2,290
C-20H	—	1	—	27	—	36
C-130 variants	18	2	562	88	621	96
Trainer—TOTAL	32	35	118	137	150	152
T-1A	32	35	118	137	150	152

Source: Department of the Air Force.
a Air Force acceptances for own use; excludes FMS/MAP shipments.
b Flyaway Cost includes airframe, engines, electronics, communications, armament, other installed equipment, and non-recurring costs associated with the manufacture of aircraft.
c Weapon system cost includes flyaway costs, peculiar ground equipment, training equipment, and technical data.
r Revised.

MILITARY AIRCRAFT ACCEPTANCES BY UNITED STATES ARMY[a]

Calendar Years 1995–1996

Type and Model	Number		Flyaway Cost[b]		Weapon System Cost[c]	
	1995	1996	1995	1996	1995	1996
ARMY—TOTAL	138	112	$615[r]	$850	$648[r]	$984
Helicopters—TOTAL	68	87	$472[r]	$785	$505[r]	$919
AH-64	4	18	32[E]	313[E]	32[E]	408[E]
UH-60L	64	69	440[r]	471	473[r]	511
Transports/Tankers—TOTAL	—	15	—	57	—	57
C-12	—	14	—	52	—	52
UC-35	—	1	—	5	—	5
Trainer—TOTAL	55	10	45	8	45	8
TH-67	55	10	45	8[E]	45	8[E]
Other—TOTAL	15	—	98	—	98	—
RC-12	15	—	98	—	98	—

Source: Department of the Army.
a Army acceptances for own use; excludes FMS/MAP shipments.
b Flyaway cost includes airframes, engines, electronics, communications, armament and other installed equipment.
c Weapon System Cost includes flyaway cost, initial spares, ground equipment, training equipment and other support items.
E Estimate.
r Revised.

MILITARY AIRCRAFT ACCEPTANCES BY UNITED STATES NAVY[a]

Calendar Years 1995–1996
(Costs in Millions of Dollars)

Type and Model	Number		Flyaway Cost[b]		Weapon System Cost[c]	
	1995	1996	1995	1996	1995	1996
NAVY—TOTAL	133[r]	64	$3,134[r]	$1,598	$3,669[r]	$1,967
Fighter/Attack—TOTAL	43	28	1,505	980	1,816	1,230
F-14	1	—	62	—	93	—
F/A-18	36	24	1,282	883	1,454	1,099
AV-8B	6[r]	4	161	97	269	131
Transports/Tankers—TOTAL	8	4	237	120	257	129
C-130T	6	2	169	56	186	61
KC-130	2	2	68	64	71	68
Trainers—TOTAL	15	9	296[r]	194	336[r]	228
T-45A	15	9	296[r]	194	336[r]	228
Helicopters—TOTAL	67[r]	23	1,096[r]	304	1,260[r]	379
AH-1W	24	7	214	64	286	116
CH-53	17[r]	5	387	117	422[r]	132
HH-60H	14	9	294	103	311	110
SH-2	1[r]	—	7[r]	—	8[r]	—
SH-60B	11	2	194	19	234	21

Source: Department of the Navy.
a Navy acceptances for own use; excludes FMS shipments.
b Flyaway Cost includes airframe, engines, electronics, communications, armament, other installed equipment, non-recurring costs, and ancillary equipment.
c Weapons System Cost (Investment Cost) includes flyaway cost, initial spares, ground equipment, training equipment, and other support items.
r Revised.

MILITARY AIRCRAFT ACCEPTANCES FOR REIMBURSABLE PROGRAMS[a]

Calendar Years 1995–1996
(Millions of Dollars)

Accepting Agency, Type, and Model	Number of Aircraft Accepted		Flyaway Cost [b]	
	1995	1996	1995	1996
TOTAL ACCEPTANCES FOR REIMBURSABLE PROGRAMS ...	108[r]	109	$1,925[r]	$2,603
AIR FORCE—TOTAL	57[r]	53	$1,242[r]	$1,572
Fighter Attack—TOTAL	57[r]	53	1,242[r]	1,572
F-15	5	11	270	594
F-16	52[r]	42	972[r]	978
NAVY—TOTAL	19	25	$ 425	$ 633
Fighter/Attack—TOTAL	10	16	330	533
AV-8B	3	5	80[E]	128
F/A-18	7	11	250[E]	405
Helicopters—TOTAL	9	9	95	100
AH-1	9	9	95	100
ARMY—TOTAL	32	28	$ 259	$ 399
Helicopters—TOTAL	32	28	259	399
AH-64	32	20	259[E]	348[E]
S-76N	—	6	—	35[E]
UH-60	—	2	—	16

Source: Aerospace Industries Association, based on USAF, USN, and USA survey responses.
a Foreign government aircraft purchases through the Department of Defense Foreign Military Sales program.
b Flyaway cost includes airframes, engines, electronics, communications, armament, other installed equipment, and non-recurring costs associated with the manufacture of the aircraft.
E Estimate.
r Revised.

MILITARY AIRCRAFT PROGRAM PROCUREMENT

Fiscal Years 1996, 1997, and 1998
(Millions of Dollars[a])

Agency and Model	1996		1997 E		1998 E	
	No.	Cost	No.	Cost	No.	Cost
AIR FORCE						
B-1B	—	$ 54.4	—	$ 13.5	—	$ 10.9
B-2 Spirit	—	749.0	—	91.3	—	74.1
C-17 Globemaster III	8	2,485.6	8	2,112.6	9	2,201.5
C-130 Hercules	2	98.0	1	62.8	1	49.9
Civil Air Patrol Aircraft	27	2.6	27	2.6	27	2.6
E-8C JSTARS	2	467.9	2	536.9	1	336.4
EC-130J	—	—	1	70.4	—	—
F-15E Eagle	6	351.3	6	275.2	3	170.0
F-16 Falcon	6	157.1	6	154.8	—	—
F-22	—	—	—	81.3	—	80.9
HH-60G	—	—	8	107.8	—	—
JPATS	3	15.3	15	67.1	18	65.4
Unmanned Aerial Vehicles	—	—	16	107.8	15	116.5
VCX	—	—	2	99.2	2	190.1
WC-130	3	131.8	3	165.7	—	—
ARMY						
AH-64 Apache	—	$ 444.5	—	$ 405.6	—	$ 511.8
C-XX	5	21.1	5	22.0	—	—
OH-58D Kiowa Warrior	—	210.6	—	198.7	—	38.8
TIARA	—	25.4	2	34.9	—	44.4
UH-60 Black Hawk	60	397.6	34	293.0	18	208.2
NAVY						
AH-1W Sea Cobra	6	$ 73.1	—	$ —	—	$ —
AV-8B Harrier	8	445.1	12	359.7	11	296.5
CH-60	—	—	—	—	—	31.8
E-2C Hawkeye	3	211.9	4	297.0	3	256.0
EA-6B Prowler	—	163.8	—	219.1	—	86.8
F/A-18C/D	18	794.5	6	273.2	—	—
F/A-18E/F Hornet	—	233.6	12	2,094.8	20	2,191.6
HH-60H	—	13.0	—	—	—	—
KC-130J	—	—	4	206.4	—	—
SH-60B Seahawk	—	16.3	—	6.2	—	—
T-39N	17	43.6	—	—	—	—
T-45 Goshawk	12	304.6	12	292.5	12	250.2
V-22 Osprey	—	47.1	5	733.0	5	541.7

Source: Department of Defense Budget, "Program Acquisition Costs by Weapon System" (Annually) and "Procurement Programs (P-1)" (Annually).
NOTE: See Research and Development Chapter for aircraft program RI &E authorization data.
a Total Obligational Authority for procurement, excluding initial spares.
E Estimate. Latest year reflects Administration's budget proposal.

ACTIVE U.S. MILITARY AIRCRAFT[a]

Fiscal Years 1980–1996

Year	Total[a]	Fixed-Wing Aircraft				Helicopters
		Total	Jet	Turboprop	Piston	
1980	18,969	11,362	8,794	1,869	699	7,607
1981	19,363	11,645	9,111	1,943	591	7,718
1982	21,728	12,063	9,647	1,900	516	9,665
1983	18,652	11,603	9,495	1,745	363	7,049
1984	18,833	11,661	9,551	1,777	333	7,172
1985	19,333	11,929	9,640	1,881	408	7,404
1986	20,157	11,919	9,730	1,803	386	8,238
1987	20,514	12,054	9,819	1,865	370	8,460
1988	21,010	12,481	9,954	2,222	305	8,529
1989	19,223	11,893	9,501	2,131	261	7,330
1990	20,017	12,817	10,360	2,199	258	7,200
1991	19,966	12,587	10,221	2,119	247	7,379
1992	19,210	11,936	9,672	2,035	229	7,274
1993	17,231	9,681	7,651	1,852	178	7,550
1994[E]	17,018	9,803	7,786	1,835	182	7,215
1995[E]	16,207	9,277	7,294	1,754	229	6,930
1996[b]	20,554	10,154	7,798	2,199	157	10,400

Source: Aerospace Industries Association.

a Includes Army, Air Force, Navy, and Marine regular service aircraft, as well as Reserve and National Guard Aircraft.

b Prior years data provided by Office of the Secretary of Defense and limited to aircraft in the continental United States.

E Estimate.

DEPARTMENT OF DEFENSE
OUTLAYS FOR AIRCRAFT PROCUREMENT

By Agency
Fiscal Years 1963–1998
(Millions of Dollars)

Year	TOTAL AIRCRAFT PROCUREMENT	Air Force	Navy	Army
1963	$ 6,309	$ 3,747	$ 2,328	$ 234
1964	6,053	3,894	1,859	300
1965	5,200	3,115	1,739	346
1966	6,635	4,074	2,021	540
1967	8,411	4,842	2,607	962
1968	9,462	5,079	3,244	1,139
1969	9,177	5,230	2,821	1,126
1970	7,948	4,623	2,488	837
1971	6,631	3,960	2,125	546
1972	5,927	3,191	2,347	389
1973	5,066	2,396	2,557	113
1974	5,006	2,078	2,806	122
1975	5,484	2,211	3,137	136
1976	6,520	3,323	3,061	136
Tr.Qtr.	1,557	859	672	26
1977	6,608	3,586	2,721	301
1978	6,971	3,989	2,602	380
1979	8,836	5,138	3,140	558
1980	11,124	6,647	3,689	787
1981	13,193	7,941	4,397	855
1982	16,793	9,624	5,872	1,297
1983	21,013	11,799	7,490	1,724
1984	23,196	12,992	8,040	2,165
1985	26,586	15,619	8,263	2,705
1986	30,828	18,919	8,922	2,987
1987	32,956	20,036	9,614	3,306
1988	28,246	15,961	9,407	2,878
1989	27,569	14,662	10,073	2,834
1990	26,142	14,303	9,031	2,808
1991	25,689	13,794	9,055	2,840
1992	23,581	13,154	7,907	2,520
1993	20,359	11,438	7,246	1,675
1994	18,840	10,303	6,826	1,711
1995	16,125	8,891	5,685	1,549
1996	14,331	7,862	5,034	1,435
1997[E]	13,316	6,986	5,044	1,286
1998[E]	13,231	6,496	5,420	1,315

Source: Office of Management and Budget, "Budget of the United States Government" (Annually).
NOTE: Detail may not add to totals because of rounding.
E Estimate. Latest year reflects Administration's budget proposal.
Tr.Qtr. See Glossary.

SPECIFICATIONS OF U.S. MILITARY AIRCRAFT

On Order or in Production as of 1996

Primary Mission, DoD Designation, & Popular Name	Manufacturer	U.S. Military Service	Crew	Empty Weight (000's lbs)	Engines	Performance Typical for Primary Mission	Remarks
ATTACK							
AV-8B Harrier II	MDC/BAe	USMC	1	13	1xRR F402	Mach 0.91	VTOL
BOMBERS							
B-2 Spirit	NGC	USAF	2	154	4xGE F118	6,000+ n.m.	Radar eluding strategic bomber
FIGHTERS							
F-15E Eagle	MDC	USAF	2	37	2xP&W F100	Mach 2.5 class	Dual role fighter/long range interdiction
F-16A/B Fighting Falcon	LM	USAF	1-2	17	1xP&W F100	Mach 2+ class	Multirole fighter; fully fly-by-wire; missiles, guns.
F-16C/D Fighting Falcon	LM	USAF	1-2	19	1xP&W F100/ 1xGE F110	Mach 2+ class	Provisions for AMRAAM, LANTIRN, Harpoon, HARM
F/A-18C/D Hornet	MDC/NGC	USN/USMC	1-2	23	2xGE F404	Mach 1.8 class	Multi-mission night strike fighter
F/A-18E/F Hornet	MDC/NGC	USN/USMC	1-2	31	2xGE F414	Mach 1.8 class	Multi-mission night strike fighter
F-22A Raptor	LM/Boeing	USAF	1	30	2xP\W F119	Mach 2+ class	Air dominance with near-precision ground attack
COMMAND/CONTROL AND PATROL							
E-2C Hawkeye	NGC	USN	5	40	2xAll T56	6 hr. mission duration	AEW command & control; active & passive detection
RC-12 P/Q	Raytheon	Army	2	9	2xP&W PT6A	4 hr. loiter	Electronic intercept
CARGO-TRANSPORT							
C-12R	Raytheon	Army	2	8	2xP&W PT6A	268 mph; 788 n.m.	Utility/transport
C-17A Globemaster III	MDC	USAF	3	267	4xP&W F117	Mach 0.77; 3,000 n.m.	102 troops or 172,000 lbs.
C-20F/G/H	Gulfstream	All	2	42-43	2xRR Tay	Mach. 0.80; 4,200 n.m.	Versions of Gulfstream IV
C/HC-130H Hercules	LM	USAF/USN	4	82/77	4xAll T56	340 mph; 3,280 mi.	64-92 troops or 39-41,000 lbs.
C-130J	LM	USAF	3	80	4xAll AE2100	385 mph; 3,850 mi.	
KC-130T	LM	USN	5-7	80	4xAll T56	9,900 gals.	Tanker
MC-130H Combat Talon II	LM	USAF	6	90	4xAll T56	340 mph; 3,250 mi.	Support requirements of SOF
V-22 Osprey	Bell/Boeing	USMC/SOF	3	33	2xAll T406	Max 316 mph; 2,100 n.m.	With internal fuel tanks, engines tilt for VTOL
TRAINING							
T-6A Texan II	Raytheon	USN/USAF	2	6	1xP&W PT6A	311 mph	Version of Beech MKII
T-1A Jayhawk	Raytheon	USAF	2	10	2xP&W JT-15D	Max 538 mph	Tanker/transport trainer
T-45A Goshawk	MDC/BAe	USN	2	9	1xRR F405	Mach 1.04 at 25,000 ft.	Next generation trainer
TH-67 Creek	Bell	Army	1	2	1xAll 250	Max 135 mph; 405 mi.	Rotary wing trainer
HELICOPTERS							
AH-1W Super Cobra	Bell	USMC	2	10	2xGE T700	Max 218 mph; 395 mi.	Marinized attack helicopter
AH-64 Apache	MDC	Army	2	11	2xGE T700	Max 197 mph; 445 mi.	Attack helicopter
CH-53E	Sikorsky	USN	3-8	33-36	3xGE T64	Max 196 mph; 710 mi.	55 passengers, aux. tanks/ minesweeping
CH-60	Sikorsky	USN	4	11	2xGE T700	Max 184 mph; 373 mi.	Vertical replenish
HH-60H Seahawk	Sikorsky	USN	4-12	14	2xGE T700	Max 184 mph; 500 mi.	Combat search and rescue, SOF
MH-60G Pave Hawk	Sikorsky	USAF/Army	3	12	2xGE T700	Max 184 mph; 1,380 mi.	11 troops; combat; search; rescue
OH-58D Kiowa Warrior	Bell	Army	2	3	1xAll 250	Max 140 mph; 220 mi.	Armed attack/reconnaissance
SH-2G Super Sea-Sprite	Kaman	USN	3-4	9	2xGE T700	Max 159 mph; 500 mi.	Multi-mission helicopter
UH-60L Black Hawk	Sikorsky	Army/USAF	3	11	2xGE T700	Max 184 mph; 373 mi.	UTTAS

Source: Aerospace Industries Association, based on company reports.

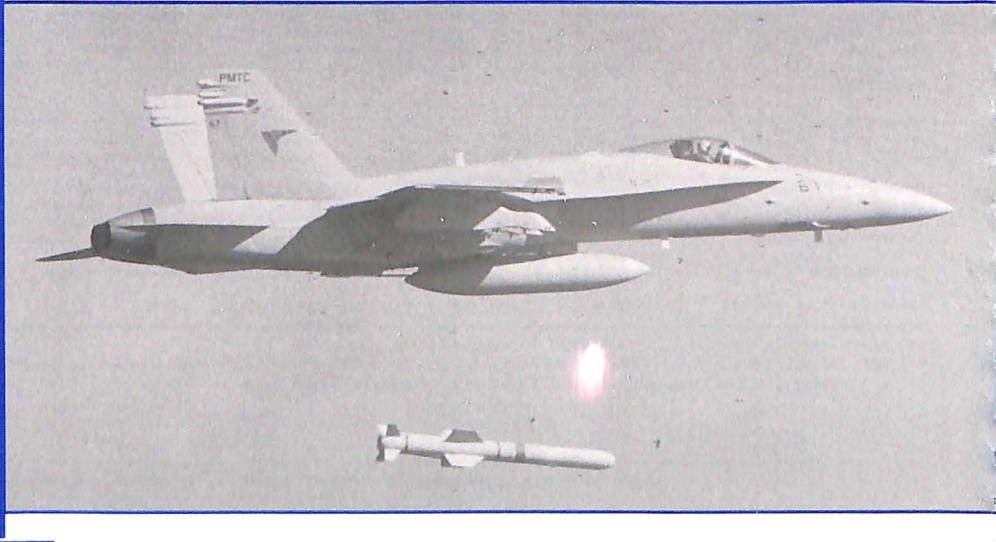
KEY: All = Allison Gas Turbine; BAe = British Aerospace; GE = General Electric; LM = Lockheed Martin; MDC = McDonnell Douglas; NGC = Northrop Grumman; P&W = Pratt & Whitney; RR = Rolls Royce.

The decline in industry sales of missile systems continued into its fourth year in 1996, according to data compiled by the Bureau of the Census. Sales of missile systems and parts amounted to $3.8 billion, down from $4.7 billion in the previous year (these figures exclude the sale of some propulsion units). In inflation-adjusted constant dollar terms, the 1996 figure represented the lowest sales level since the early 1950s.

There was, however, an increase in new orders for missile systems in 1996. The total of net new orders received by industry came to $4.4 billion, which compares with $3.2 billion in the previous year. Despite the increase, the missile backlog as of year-end 1996 continued to drop; it fell to $4.2 billion (down from $4.8 billion) and marked the ninth consecutive year of decline from a 1987 peak of more than $14 billion.

A historical summary of DoD outlays during the 1990s underlines the sharp de-emphasis on missile procurement in the DoD restructuring program. Falling from a peak in FY 1990 of $14.9 billion, missile outlays have continued to fall. In FY 1997 missile outlays totaled $5.8 billion, and planned outlays in FY 1998 will be $4.9 billion. The breakdown for FY 1998 allocates $2.7 billion to the Air Force, $1.3 billion to the Navy, and $0.9 billion to the Army.

Missile programs in production or in operational status during 1996/97 and planned for procurement funding under FY 1998 appropriations include:



Air Force: AMRAAM, the USAF/Navy joint use Advanced Medium Range Air-to-Air Missile, $174.9 million; Joint Direct Attack Munition (JDAM), a joint USAF/Navy program for enhanced accuracy of air-launched munitions, $99.8 million; and the Wind-Corrected Munitions Dispenser (WCMD), initial production, $19.9 million.

Navy: Trident II Fleet Ballistic Missile, $336.6 million; Standard air defense missile, $196.5 million; Joint Standoff Weapon (JSOW), Navy-procured for both Navy/USAF use, $59.8 million; Tomahawk cruise missile, $51.8 million; and the RAM (Rolling Airframe Missile), $44.1 million.

Army: Hellfire helicopter-launched antiarmor missile, $279.7 million; Javelin advanced antitank weapon, $185.2 million; and ATACMS (Army TACtical Missile System), $97.8 million; and the BAT (Brilliant Antiarmor Submunition), initial production, $85.2 million.

BMDO: Patriot PAC-3 air defense system, $349.1 million and the Navy Area Theater system, $15.4 million.

In FY 1997-98 most DoD missile outlays or planned outlays go for RDT&E rather than for procurement, and most RDT&E activity is concerned with development of systems for defense against ballistic weapons. The RDT&E program, conducted by the Ballistic Missile Defense Organization (BMDO), was funded at $3.4 billion in FY 1997 and is estimated at $2.6 billion in FY 1998. The largest program of the latter year (in terms of funding) is the Theater High Altitude Area Defense (THAAD) system with planned funding of $561 million. The Air Force's missile program receiving the greatest planned level of RDT&E funding in FY 1998 is the JASSM (Joint Air-to-Surface Standoff Missile) at $212.9 million; the Army's BAT, $202.3 million; and the Navy's Tomahawk, $93.4 million.

MISSILE PROGRAM PROCUREMENT

Fiscal Years 1996, 1997, and 1998
(Millions of Dollars[a])

Agency and Model	1996		1997 E		1998 E	
	No.	Cost	No.	Cost	No.	Cost
AIR FORCE						
AGM-130	100	$106.3	100	$ 35.0	—	$ 1.5
AMRAAM[b]	406	245.9	233	172.6	273	174.9
HAVE NAP	54	37.6	31	34.9	—	—
JDAM[b]	—	—	937	23.0	3,341	99.8
WCMD	—	—	—	—	280	19.9
NAVY						
Harpoon	75	$ 83.5	—	$ —	—	$ —
JSOW[b]	—	25.5	150	86.2	113	59.8
RAM	210	61.3	135	47.6	100	44.1
Standard	22	127.8	127	215.0	127	196.5
Tomahawk	107	112.1	155	111.5	65	51.8
Trident II	6	506.6	7	310.9	7	336.6
ARMY						
ATACMS	120	$121.3	97	$160.8	153	$ 97.8
BAT	—	—	—	—	305	85.2
Hellfire	1,102	236.0	2,856	357.3	1,465	279.7
Javelin[c]	1,010	200.9	1,161	233.5	1,274	185.2
MLRS	1,326	44.6	1,674	41.4	—	2.9
BMDO						
Patriot[d]	—	$290.0	—	$219.4	52	$349.1
Navy Area Theater[f]	—	16.3	—	9.1	—	15.4

Source: Department of Defense, "Program Acquisition Costs by Weapon System" (Annually).
NOTE: See Research and Development Chapter for missile program RDT&E authorization data.
a Total Obligational Authority excluding initial spares and RDT&E.
b Navy and Air Force funding.
c Army and Marine Corps funding.
d Army and BMDO funding.
E Estimate. Latest year reflects Administration's budget proposal.
f Navy and BMDO funding.
NA Not available.

DEPARTMENT OF DEFENSE
OUTLAYS FOR MISSILE PROCUREMENT

By Agency
Fiscal Years 1963–1998
(Millions of Dollars)

Year	TOTAL MISSILE PROCUREMENT	Air Force	Navy	Army
1963	$ 3,817	$2,676	$ 718	$ 423
1964	3,577	2,100	981	496
1965	2,096	1,320	522	254
1966	2,069	1,313	512	244
1967	1,930	1,278	432	220
1968	2,219	1,388	436	395
1969	2,509	1,382	534	593
1970	2,912	1,467	702	743
1971	3,140	1,497	791	852
1972	3,009	1,334	831	844
1973	3,023	1,454	628	941
1974	2,981	1,537	541	903
1975	2,889	1,602	615	672
1976	2,296	1,549	584	163
Tr.Qtr.	402	347	148	(93)
1977	2,781	1,501	905	374
1978	3,096[a]	1,376	1,302[a]	418
1979	3,786	1,537	1,702	547
1980	4,434	1,810	1,973	651
1981	5,809	2,366	2,297	1,146
1982	6,782	3,069	2,444	1,269
1983	7,795	3,383	2,812	1,600
1984	9,527	4,640	2,809	2,079
1985	10,749	5,409	2,941	2,399
1986	11,731	6,473	2,780	2,478
1987	11,473	6,002	3,157	2,314
1988	11,676	6,046	3,392	2,239
1989	14,503	7,349	4,445	2,709
1990	14,851	7,951	4,446	2,453
1991	14,400	6,906	4,954	2,540
1992	13,504	6,409	4,694	2,401
1993	11,404	5,424	3,794	2,187
1994	8,934	4,312	3,238	1,384
1995	7,513	3,845	2,694	974
1996	6,199	3,235	2,045	919
1997[E]	5,817	3,189	1,611	1,017
1998[E]	4,892	2,694	1,260	938

Source: Office of Management and Budget, "The Budget of the United States Government" (Annually).
NOTE: Detail may not add to totals because of rounding.
a Beginning 1978, DoD combined Navy Missile Procurement with torpedoes and other related products into Navy Weapons Procurement. Missiles comprise approximately 80 percent of the value of this category.
E Estimate. Latest year reflects Administration's budget proposal.
Tr.Qtr. See Glossary.

MAJOR MISSILE PROGRAMS
RESEARCH, DEVELOPMENT, PRODUCTION, OPERATION

Program	Agency	Status	Systems Contractor	Propulsion Manufacturer	Guidance Manufacturer
AIR-TO-AIR					
AMRAAM-120A	USAF/USN	P,O	Hughes/Ray	Alliant/ Aerojet	Hughes/Ray
Phoenix-54A	USN	O	Hughes/Ray	Alliant	Hughes
Phoenix-54C	USN	O	Hughes/Ray	Alliant	Hughes/Ray
Sidewinder-9J	USAF	O	LM	Alliant/ Aerojet	LM
Sidewinder-9L	USN/USAF	O	NASC	Bermite/TKC/ Alliant	Raytheon/ LM
Sidewinder-9M	USN/USAF	O	NASC	TKC/Alliant/ ARC	Ray/LM
Sidewinder-9N	USAF	O	LM	Alliant/ Aerojet	LM
Sidewinder-9P	USAF	O	LM	Alliant/ Aerojet	LM
Sidewinder-9S	USN	O	NASC	TKC/Alliant	LM/Ray
Sidewinder-9X	USN	D	Ray/Hughes	Alliant	GEC
Sparrow-7F	USN/USAF	O	Ray/Hughes	Alliant/Hughes	Ray/Hughes
Sparrow-7M	USN/USAF	P	Ray/Hughes	Alliant	Ray/Hughes
Sparrow-7P	USN	P,O	Ray/Hughes	Alliant	Ray/Hughes
Sparrow-7R	USN	P	Ray/Hughes	Alliant	Ray/Hughes
AIR-TO-SURFACE					
AGM-129	USAF	O	Hughes/MDC	WI	Kearfott
AGM-130A/B	USAF	P,O	Boeing	Alliant	GEC/Boeing
AGM-142	USAF	P,O	LM/Rafael	Rafael	GEC
AGM-86B/C	USAF	P,O	Boeing	WI	Litton/Boeing/ Interstate
GATS/GAM	USAF	P	NGC	—	Honeywell
GBU-15	USAF	P	Boeing	—	Boeing
HARM-88A/B	USN/USAF	P	TI	TKC/Alliant	TI
Harpoon-84A/C/D*	USN	P,O	MDC	TCAE/Aerojet	TI/IBM/LSI
JASSM	USN/USAF	D	LM/MDC	—	HI/Litton/ Boeing
JDAM	USAF/USN	D	MDC	—	Honeywell/RI
JSOW-154	USN	D	TI	—	Kearfott
Maverick-65A/B	USAF	O	Hughes	Alliant	Hughes
Maverick-65D	USAF	O	Hughes/Ray	Alliant	Hughes/Ray
Maverick-65E	USMC	O	Hughes	Alliant	Hughes
Maverick-65F	USN	O	Hughes/Ray	Alliant	Hughes/Ray
Paveway	USN/USAF	P	TI	—	GEC
Shrike-45A/B	USN/USAF	O	NWC/PMTC	Aerojet/ Alliant	Texas Instruments
Sidearm 1-122A	USMC	O	Motorola	TKC/Alliant	Motorola
SLAM-84E	USN	P	MDC	TCAE	MDC/Hughes/RI/HI
SRAM-69A	USAF	O	Boeing	TKC/LM	Kearfott
Standard ARM-78D	USN/USAF	O	Hughes	NOSIH	Hughes

* Also Surface-to-Surface

(Continued on next page)

MAJOR MISSILE PROGRAMS (Continued)

Program	Agency	Status	Systems Contractor	Propulsion Manufacturer	Guidance Manufacturer
AIR-TO-SURFACE (Cont'd.)					
Walleye 1-62	USN	O	LM	—	LM/Hughes
Walleye 1ER-62	USN	R,D	NAC	—	NAC
Walleye 2-62	USN	O	NAC	—	NAC
Walleye 2 (ER/DL)-62	USN	O	NAC	—	NAC
WCMD	USAF	D	LM	—	HI/LM
ANTI-SUBMARINE					
VLA-44A	USN	P,O	LM	TKC	LM
SURFACE-TO-AIR					
Chaparral-72A	Army	O	LM	Alliant/ Bermite	GE/Raytheon
Chaparral-72C/E/H	Army	O	LM	ARC/Alliant	LM
Chaparral-72G/J	Army	P,O	LM	Alliant	Hughes/LM
Hawk-23B	Army	P,O	Raytheon	Aerojet	Raytheon
MEADS	Army	D	LM/Ray/ Hughes	—	Hughes/Ray
Patriot-104	Army	P	Raytheon	TKC	Raytheon
PAC-3	Army	D	LM	ARC	LM/HI/ Boeing
RAM-116A	USN	P,O	Hughes	TKC/Alliant	Hughes
Roland-115	Army	O	Hughes/ Boeing	Alliant	Hughes/ Boeing
Sea Sparrow-7M	USN	P,O	Ray/Hughes	Alliant	Ray/Hughes
Sea Sparrow-Evolved	USN	D	Hughes	Alliant/Raufoss	Hughes/HI
SLID	Army	D	Raytheon	UTC	Raytheon
Standard 1 MR	USN	O	Hughes	Aerojet/NOSIH	Hughes/HI
Standard 2 MR	USN	P,O	Hughes/Ray	ARC	Hughes/HI
Standard 1 ER	USN	O	Hughes/Ray	ARC/NOSIH	Hughes/HI
Standard 2 ER	USN	P,O	Hughes/Ray	ARC/TKC	Hughes/Ray/HI
Standard 2-IV	USN	P	Hughes/Ray	ARC/UTC	Hughes/Ray/HI
Stinger-92A	Army/USMC	P,O	Hughes/Ray	ARC	Hughes/Ray/HI
Stinger-92E	All	P,O	Hughes	ARC	Hughes
THAAD	Army	D	LM	UTC/Boeing	—

(Continued on next page)

MAJOR MISSILE PROGRAMS (Continued)

Program	Agency	Status	Systems Contractor	Propulsion Manufacturer	Guidance Manufacturer
SURFACE-TO-SURFACE					
*Harpoon-84A/C/D	USN	P,O	MDC	TCAE/TKC	TI/IBM/LSI/ NGC
Minuteman 2-30F	USAF	O	AFLC	TKC/Aerojet/ Alliant/ARC	Boeing
Minuteman 3-30G/P	USAF	O	AFLC	TKC/Aerojet/ ARC/UTC	Boeing
Peacekeeper (MX)-118A	USAF	O	BMO	TKC/Avco/ Aerojet/LM/ Alliant/Boeing	Boeing/NGC/ Honeywell/ Litton
Tomahawk (SLCM)	USN	P,O	Hughes	WI/UTC	Hughes
Trident 1 (C-4)	USN	O	LM	Alliant/TKC/ARC	LM/Draper/ Ray/Hughes/ Kearfott
Trident 2 (D-5)	USN	P,O	LM	Alliant/TKC/ UTC/ARC	LM/Draper/ Ray/Hughes/ Kearfott/RI
BATTLEFIELD SUPPORT AND ANTIARMOR					
ATACMS	Army	P,O	LM	ARC	Honeywell
Dragon-47	Army	P,O	MDC	MDC	MDC
EFOGM	Army	O	Raytheon	ARC	HI
HELLFIRE-114A/C/F	Army/USMC	P,O	Boeing/LM	Alliant/TKC	LM/Boeing
HELLFIRE II-114K	Army/USMC	P,O	LM/Boeing	Alliant/TKC	LM/Boeing
Longbow HELLFIRE 114L	Army/USMC	P	LM/NGC	Alliant	LM/NGC/GEC
Javelin	Army/USMC	P,O	TI/LM	ARC	GEC
MLRS-26,-270	Army	P,O	LM	ARC	—
MPIM/SRAW	Army	D	LM	LM	LM
Predator	USMC	D	LM	LM	LM
SMAW	USMC	P,O	MDC	MDC	—
TOW-71A	Army	O	Hughes	Alliant	Emerson El.
ITOW-71C	Army	P,O	Hughes	Alliant	Emerson El.
TOW2-71D	Army	P,O	Hughes	Alliant/TKC	Emerson El./TI
TOW2A-71E	Army	P,O	Hughes	Alliant/TKC	Emerson El./TI
TOW2B-71F	Army	P	Hughes	Alliant	Emerson El./TI

Source: Aerospace Industries Association, based on company reports.
Status: R-Research; D-Development; P-Production; O-Operational.
* Also Air-to-Surface

Abb: AFLC — Air Force Logistics Cmd.
ARC — Atlantic Research
BMO — Ballistic Missile Office
GE — General Electric
GEC — General Electric Co PLC
HI — Honeywell
LSI — Lear Siegler
LM — Lockheed Martin
MDC — McDonnell Douglas
NAC — Naval Avionics Center
NASC — Naval Air Systems Command
NGC — Northrop Grumman
NOSIH — Naval Ordnance Station, Indian Head
NWC — Naval Weapons Center
PMTC — Pacific Missile Test Center
Ray — Raytheon
RI — Rockwell
TCAE — Teledyne Ryan Aeronautical
TI — Texas Instruments
TKC — Thiokol
UTC — United Technologies
WI — Williams International

ORDERS, SALES, AND BACKLOG
MISSILE SYSTEMS AND PARTS[a]

Calendar Years 1982–1996
(Millions of Dollars)

Year	SALES—Current Dollars	SALES—Constant Dollars[b]
1982	$ 5,676	$ 6,457
1983	5,991	6,498
1984	6,094	6,106
1985	7,975	8,080
1986	8,236	8,253
1987	9,671	9,671
1988	9,485	9,308
1989	9,283	8,749
1990	9,102	8,237
1991	8,989	7,844
1992	9,032	7,641
1993	7,713	6,364
1994	5,294	4,269
1995[r]	4,688	3,718
1996	3,841	3,013

Year	NET NEW ORDERS	BACKLOG AS OF DECEMBER 31
1982	$ 6,034	$ 7,107
1983	7,231	8,406
1984	7,731	10,043
1985	8,122	10,190
1986	11,023	12,754
1987	11,482	14,302
1988	9,437	14,255
1989	8,998	14,005
1990	7,917	12,956
1991	8,072	12,571
1992	9,234	11,814
1993	4,775	9,305
1994	2,785	5,823
1995	3,164[r]	4,833
1996	4,430	4,239

Source: Bureau of the Census, "Aerospace Industry (Orders, Sales, and Backlog)" Series MA37D (Annually).
a Excludes engines and propulsion units where separable.
b Based on AIA's aerospace composite price deflator (1987=100).
r Revised.

BALLISTIC MISSILE DEFENSE ORGANIZATION FUNDING BY PROJECT NUMBER

Fiscal Years 1994–1998
(Millions of Dollars)

Project Number and Title		1994	1995	1996	1997[E]	1998[E]
1105	Sensor Studies & Experiments	57	—	—	—	—
1106	Sensor Studies & Experiments	110	—	—	—	—
1110	Sensor Integration	28	—	—	—	—
1151	Passive Sensors	9	112	191	—	—
1155	Phenomenology	57	78	58	69	79
1161	Advanced Sensor Technology	—	13	21	36	28
1170	TMD Risk Reduction	—	24	42	23	35
1202	Interceptor Integration Technology	37	—	—	—	—
1210	Leap Technology Demonstration	76	—	—	—	—
1262	Mead Technology	4	—	20	56	48
1265	Boost Phase Int/Exo	16	41	—	—	—
1266	Sea-Based Theater Wide Defense	5	75	200	304	195
1267	Ground-Based Interceptor	—	137	285	—	—
1270	Advanced Interceptors	—	15	36	68	32
1294	UAV/BPI	—	—	6	24	13
1302	Chemical Laser Technology	54	—	—	—	—
1360	Directed Energy Programs	—	41	77	96	29
1460	BMC3	—	27	81	—	—
1502	Lethality & Target Hardening	30	—	—	—	—
1602	New Concepts Development	32	—	—	—	—
1651	Innovative Science & Technology	38	44	48	58	51
1660	Statutory & Mandated Programs	—	40	54	51	55
1701	Flight Test	27	—	—	—	—
2106	ACTS	42	—	—	—	—
2154	TMD Ground-Based Radar	258	170	—	—	—
2160	TMD Existing System Modifications	—	16	20	22	12
2202	Ground-Based Exoatmospheric Interceptor Development	54	—	—	—	—
2208	ERINT	97	—	—	—	—
2257	PATRIOT	239	597	663	601	206
2259	ACES/ADP	61	42[r]	59	44	39
2260	THAAD	429	479	579	619	561
2262	Corps SAM	16	14	—	—	—
2263	Sea-Based Area TBMD	150	154	294	310	268

(Continued on next page)

BALLISTIC MISSILE DEFENSE ORGANIZATION FUNDING BY PROJECT NUMBER (Continued)

Fiscal Years 1994–1998
(Millions of Dollars)

Project Number and Title		1994	1995	1996	1997[E]	1998[E]
2300	Command Center	24	—	—	—	—
2358	HAWK System BMC3	30	31	37	15	—
2401	NMD Integration	—	—	—	58	7
2402	Sensor Technology	—	—	—	54	30
2403	Ground-Based Interceptor	—	—	—	236	128
2404	BMC3 Ground-Based Radar	—	—	—	51	44
2405	Ground-Based Radar	—	—	—	66	20
2406	UEWR	—	—	—	12	17
2407	Systems Engineering	—	—	—	43	42
2408	Deployment Planning	—	—	—	17	17
2409	Program Support	—	—	—	31	34
2410	Test & Evaluation	—	—	—	102	84
2411	Risk Reduction	—	—	—	53	—
3100	System Engineering	53	—	—	—	—
3152	NMD System Engineering	—	21	58	—	—
3153	Architecture Analysis/BMC3 Initiatives	—	11	13	9	11
3157	Environment, Siting, & Facilities	—	5	9	7	6
3160	Readiness Planning	—	14	26	2	2
3200	Systems Analysis	80[r]	—	—	—	—
3251	System Engineering & Technical Support	—	50	45	51	65
3261	C4I Concepts	—	20	64	52	34
3265	User Interface	—	20	18	14	15
3270	Threat & Countermeasures	—	29	28	29	29
3300	Test & Evaluation Support	322	—	—	—	—
3352	Modeling & Simulations	—	89	87	99	97
3354	Targets Support	—	66[r]	23	23	28
3359	System Test & Evaluation	—	41	63	43	41
3360	Test Resources	—	43	42	47	42
4000	Management	242	157	159	143	150
	Other programs[a]	177[r]	14[r]	—	—	—
	TOTAL DETAILED PROJECTS	$2,728	$2,714	$3,405	$3,638	$2,589

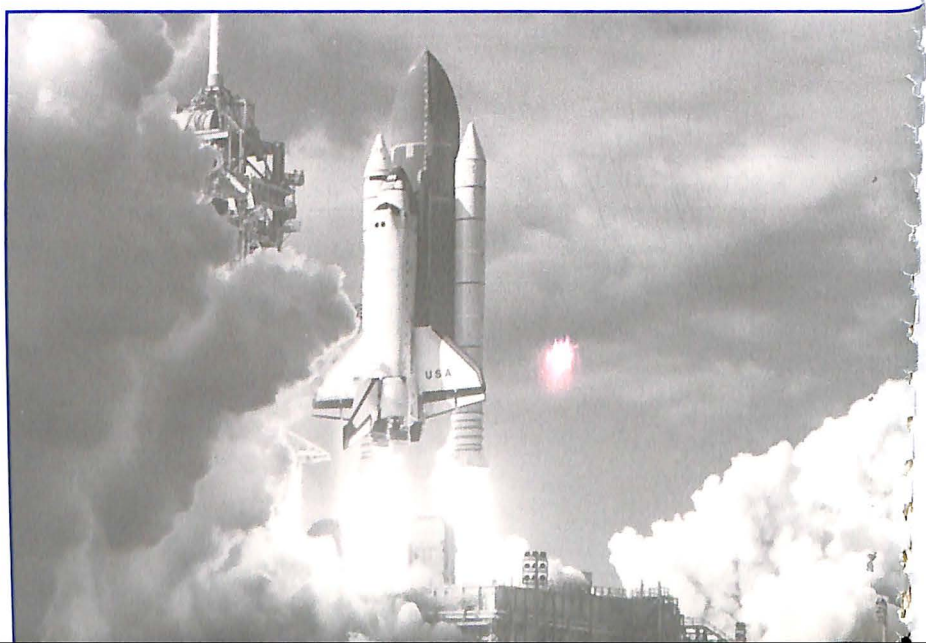
Source: Ballistic Missile Defense Organization.
a Projects with five year funding under $20 million herein combined.
E Estimate. Represents Administration's budget request.
r Revised.

As reported by the Bureau of the Census, sales of space systems in 1996 dipped slightly but remained close to the record level of 1995. New orders, however, increased significantly, and the combined backlog for military and civil space systems climbed to a new all-time high under the dual impetus of expanded orders for International Space Station hardware and further mounting requirements for commercial space systems.

Sales in 1996 amounted to $11.2 billion, down from $11.3 billion in the previous year. The sales figure includes space launch vehicles and government-sponsored civil and military spacecraft hardware fabrication and related ground equipment; it does not, however, include propulsion units for spacecraft nor does it include the extensive R&D activity carried out by industry firms under government contract. The broader figure for all industry space revenues is contained in the "Aerospace Summary" chapter of this volume.

The $11.2 billion sales figure for 1996 included $6.4 billion in non-military work (commercial plus government-sponsored civil space) and $4.8 billion in military sales. Non-military sales declined $100 million in 1996 while military sales remained unchanged.

Net new orders amounted to $14.1 billion, compared with $13.2 billion in the previous year. The 6.4% gain was entirely in non-military orders, up $864 million to $9.4 billion. The 1996 orders boosted the space systems backlog to $18.3 billion, a figure 17% higher than the previous all-

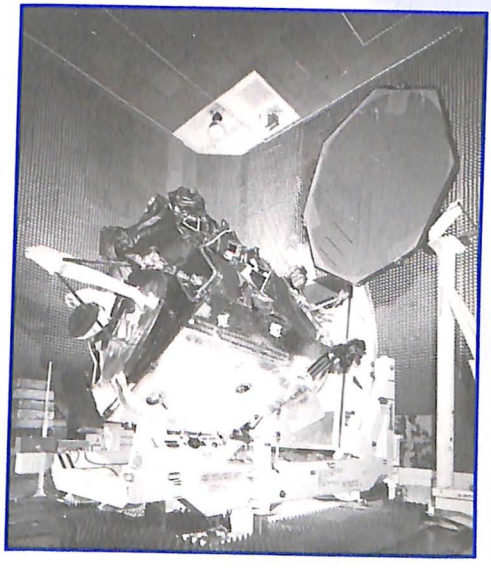


time record $15.7 billion in 1995. The 1996 backlog included $12.4 billion in non-military orders (up from $9.8 billion) and $5.9 billion in military orders (same as the previous year).

Census separately reported sales, orders, and backlog for propulsion units, but the data provide only a loose approximation of trends in the space market because they include missile system propulsion units as well as space propulsion. Total sales in this category were $2 billion, down from $2.4 billion. Non-military sales were up slightly at $1.4 billion, but military sales were down sharply; this suggests that the decline in propulsion sales was entirely in missile (rather than space vehicle) propulsion.

The reverse was true, however, regarding net new orders for propulsion systems: non-military orders totaled only $1.1 billion (down from $2.4 billion) while military orders increased from $444 million in 1995 to $761 million in 1996. The total for new orders was $1.8 billion, down from $2.8 billion. Backlog similarly fell by $1 billion, from $6.6 billion in 1995 to $5.6 billion in 1996. Non-military backlog, at $4.5 billion, represented 80% of the total.

Total federal government investment in space for FY 1996 was estimated at $24.7 billion, matching the previous year's outlays. NASA outlays in FY 1996 would once again top those of the Department of Defense. This would mark the third straight year in which NASA has spent more on space than DoD, which had the lead for 11 years. NASA outlays were expected to reach $12.7 billion, up from $12.6 billion in FY 1995. DoD outlays were estimated at $11.4 billion, down from $11.5 billion.



Together, NASA and DoD spending accounted for more than 97% of the total government space outlay estimate for FY 1996. Estimates for other agencies included: Department of Commerce, $322 million (down $8 million); Department of Energy, $46 million (down $24 million); and the National Science Foundation, the Environmental Protection Agency, and the Departments of the Interior, Agriculture, and Transportation, a combined total of $228 million (up $13 million).

ORDERS, SALES, AND BACKLOG
SPACE VEHICLE SYSTEMS[a]

Calendar Years 1982–1996
(Millions of Dollars)

Year	SALES—Current Dollars			SALES—Constant Dollars[b]		
	TOTAL	Military	Non-Military	TOTAL	Military	Non-Military
1982	$ 4,749	$2,606	$2,143	$ 5,403	$2,965	$2,438
1983	4,940	2,420	2,520	5,358	2,625	2,733
1984	5,225	3,019	2,206	5,235	3,025	2,210
1985	6,300	4,241	2,059	6,383	4,297	2,086
1986	6,304	4,579	1,725	6,317	4,588	1,728
1987	8,051	5,248	2,803	8,051	5,248	2,803
1988	8,622	6,190	2,432	8,461	6,075	2,387
1989	9,758	6,457	3,301	9,197	6,086	3,111
1990	9,691	6,556	3,135	8,770	5,933	2,837
1991	10,515	6,770	3,745	9,175	5,908	3,268
1992	9,266	5,887	3,379	7,839	4,981	2,859
1993	7,317	4,175	3,142	6,037	3,445	2,592
1994	10,594	5,707	4,887	8,544	4,602	3,941
1995[r]	11,314	4,782	6,532	8,972	3,792	5,180
1996	11,209	4,777	6,432	8,791	3,747	5,045

Year	NET NEW ORDERS			BACKLOG AS OF DECEMBER 31		
	TOTAL	Military	Non-Military	TOTAL	Military	Non-Military
1982	$ 5,842	$2,718	$3,124	$ 4,254	$2,277	$1,977
1983	5,399	3,016	2,383	4,865	2,733	2,132
1984	4,984	3,385	1,599	4,624	3,099	1,525
1985	8,383	6,083	2,300	6,707	4,941	1,766
1986	7,437	5,666	1,771	8,063	6,028	2,035
1987	11,455	9,000	2,455	12,393	9,460	2,933
1988	7,296	4,561	2,735	10,838	7,880	2,958
1989	11,709	8,107	3,602	13,356	9,192	4,164
1990	9,598	6,256	3,342	12,462	8,130	4,332
1991	11,222	5,468	5,754	11,664	6,221	5,443
1992	10,491	6,773	3,718	12,809	7,622	5,187
1993	8,436	5,106	3,330	13,663	7,384	6,279
1994	9,041	4,896	4,145	12,888	6,732	6,156
1995[r]	13,212	4,679	8,533	15,650	5,872	9,778
1996	14,059	4,662	9,397	18,262	5,864	12,398

Source: Bureau of the Census, "Aerospace Industry (Orders, Sales, and Backlog)" Series MA37D (Annually).
a Excludes engines and propulsion units where separable.
b Based on AIA's aerospace composite price deflator, 1987=100.
r Revised.

ORDERS, SALES, AND BACKLOG ENGINES AND PROPULSION UNITS FOR MISSILES AND SPACE VEHICLES

Calendar Years 1982–1996
(Millions of Dollars)

Year	SALES—Current Dollars			SALES—Constant Dollars[a]		
	TOTAL	Military	Non-Military	TOTAL	Military	Non-Military
1982	$1,555	$ 899	$ 656	$1,769	$1,023	$ 746
1983	1,814	951	863	1,967	1,031	936
1984	2,305	1,116	1,189	2,310	1,118	1,191
1985	2,466	1,256	1,210	2,498	1,273	1,226
1986	2,995	1,796	1,199	3,001	1,800	1,201
1987	2,993	1,563	1,430	2,993	1,563	1,430
1988	3,407	1,830	1,577	3,343	1,796	1,548
1989	3,602	1,771	1,831	3,395	1,669	1,726
1990	3,247	1,911	1,336	2,938	1,729	1,209
1991	3,807	1,869	1,938	3,322	1,631	1,691
1992	3,051	1,577	1,474	2,581	1,334	1,247
1993	3,104	1,619	1,485	2,561	1,336	1,225
1994	2,518	1,123	1,395	2,031	906	1,125
1995[r]	2,364	1,035	1,329	1,875	821	1,054
1996	2,015	630	1,385	1,580	494	1,086

Year	NET NEW ORDERS			BACKLOG AS OF DECEMBER 31		
	TOTAL	Military	Non-Military	TOTAL	Military	Non-Military
1982	$2,112	$1,134	$ 978	$1,901	$1,063	$ 838
1983	1,618	942	676	1,691	1,052	639
1984	3,770	2,258	1,512	3,156	2,194	962
1985	3,823	1,323	2,500	4,513	2,261	2,252
1986	1,985	1,224	761	3,503	1,689	1,814
1987	3,335	1,995	1,340	3,849	2,121	1,728
1988	3,507	1,623	1,884	3,985	1,998	1,987
1989	6,113	2,475	3,638	6,410	2,595	3,815
1990	2,692	1,891	801	6,230	2,887	3,343
1991	5,661	1,087	4,574	8,422	2,327	6,095
1992	3,124	2,097	1,027	8,310	2,729	5,581
1993	1,708	710	998	6,543	1,903	4,640
1994	1,879	484	1,395	6,035	1,390	4,645
1995[r]	2,805	444	2,361	6,630	1,065	5,565
1996	1,828	761	1,067	5,603	1,132	4,471

Source: Bureau of the Census, "Aerospace Industry (Orders, Sales, and Backlog)" Series MA37D (Annually).
a Based on AIA's aerospace composite price deflator, 1987=100.
r Revised.

U.S. GOVERNMENT SPACECRAFT RECORD[a]

Calendar Years 1957–1996

Year	Earth Orbit[b]		Earth Escape[b]		Year	Earth Orbit[b]		Earth Escape[b]	
	Success	Failure	Success	Failure		Success	Failure	Success	Failure
1957	—	1	—	—	1978	34	2	7	—
1958	5	8	—	4	1979	18	—	—	—
1959	9	9	1	2	1980	16	4	—	—
1960	16	12	1	2	1981	20	1	—	—
1961	35	12	—	2	1982	21	—	—	—
1962	55	12	4	1	1983	31	—	—	—
1963	62	11	—	—	1984	35	3	—	—
1964	69	8	4	—	1985	37	1	—	—
1965	93	7	4	1	1986	11	4	—	—
1966	94	12	7	1[c]	1987	9	1	—	—
1967	78	4	10	—	1988	16	1	—	—
1968	61	15	3	—	1989	24	—	2	—
1969	58	1	8	1	1990	40	—	1	—
1970	36	1	3	—	1991	32[d]	—	—	—
1971	45	2	8	1	1992	26[d]	—	1	—
1972	33	2	8	—	1993	28[d]	1	1	—
1973	23	2	3	—	1994	31[d]	1	1	—
1974	27	2	1	—	1995	24[d]	2	1	—
1975	30	4	4	—	1996[f]	26	—	1	—
1976	33	—	1	—					
1977	27	2	2	—	**TOTAL**	1,368	148	87	15

Source: NASA, "Aeronautics and Space Report of the President" (Annually).

a Payloads, rather than launchings; some launches account for multiple spacecraft. Includes spacecraft from cooperating countries launched on U.S. launch vehicles.

b The criterion of success is attainment of Earth orbit or Earth escape rather than judgement of mission success. "Escape" flights include all that were intended to go at least an altitude equal to the lunar distance from the Earth.

c This Earth-escape failure did attain Earth orbit and therefore is included in the Earth-orbit success totals.

d Excludes commercial satellites.

f Through September 30.

WORLDWIDE SPACE LAUNCHINGS[a] WHICH ATTAINED EARTH ORBIT OR BEYOND

Calendar Years 1957–1996

Country	Total 1957–1996	1992	1993	1994	1995[r]	1996
TOTAL	3,723	100	78	90	76	58
U.S.S.R.	2,519	55	45	49	33	19
United States	1,077	31	24	26	27	26
European Space Agency	85	7	7	6	12	9
Japan	50	2	1	2	1	1
People's Republic of China	41	3	1	5	2	2
India	9	2	—	2	—	1
Israel	3	—	—	—	1	—
Other[b]	20	—	—	—	—	—

Source: NASA, "Aeronautics and Space Report of the President" (Annually).

a Number of launchings rather than spacecraft; some launches orbited multiple spacecraft.

b Includes 10 by France, 8 by Italy (5 were U.S. spacecraft), 1 by Australia, and 1 by the United Kingdom.

r Revised.

U.S. SPACE LAUNCH VEHICLES

As of 1996

Vehicle and Initial Launch & First Launch of this Modification	Stages	Thrust (Kilo-newtons)	Maximum Payload (Kg)[a] 185-Km Orbit	Geo-synch.-Transfer Orbit	Circular Sun-Synch. Orbit
Pegasus (1990)	1. Orion 50S* 2. Orion 50* 3. Orion 38*	484.9 118.2 31.9	380 280[b]	—	210
Pegasus XL (1994)[z]	1. Orion 50S-XL* 2. Orion 50-XL* 3. Orion 38*	743.3 201.5 31.9	460 350[b]	—	335
Taurus (1994)	0. Castor 120* 1. Orion 50S* 2. Orion 50* 3. Orion 38*	1,687.7 580.5 138.6 31.9	1,400 1,080[b]	255	1,020
Delta II 7900 Series (1960; 1990)	1. RS-270/A plus 9 Hercules GEM* 2. AJ10-118K 3. Star 48B*	1,043.0 4,388.4 42.9 66.4	5,089 3,890[b]	1,842[c]	3,175
Atlas E (1958; 1968)	1. Atlas MA-3	1,739.5	820[b] 1,860[bd]	— —	— 910[d]
Atlas I (1966; 1990)	1. Atlas MA-5 2. 2 Centaur I	1,952.0 146.8	—	2,255	—
Atlas II (1966; 1991)	1. Atlas MA-5A 2. 2 Centaur II	2,110.0 146.8	6,580 5,510[b]	2,810	4,300
Atlas IIA (1966; 1992)	1. Atlas MA-5A 2. 2 Centaur II	2,110.0 185.1	6,828 6,170[b]	3,062	4,750
Atlas IIAS (1966; 1993)	1. Atlas MA-5A plus 4 Castor IV* 2. 2 Centaur II	2,110.0 1,734.4 185.1	8,640 7,300[b]	3,606	5,800

(Continued on next page)

U.S. SPACE LAUNCH VEHICLES

As of 1996 (Continued)

Vehicle and Initial Launch & First Launch of this Modification	Stages	Thrust (Kilo-newtons)	Maximum Payload (Kg)[a]		
			185-Km Orbit	24-Hour Polar Orbit	Circular Sun-Synch. Orbit
Titan II (1964; 1988)	1. 2 LR-87 2. LR-91	2,090.0 440.0	1,905[b]	—	—
Titan III (1964; 1989)	0. 2 5 1/2-segment, 3.05-m. dia* 1. 2 LR-87 2. LR-91	12,420.0 2,429.0 462.8	14,515	5,000[f]	—
Titan IV (1989)	0. 2 7-segment, 3.05-m. dia* 1. 2 LR-87 2. LR-91	14,000.0 2,429.0 462.8	17,700 14,110[b]	6,350[f]	—
Titan IV/Centaur (1994)	0. 2 7-segment, 4.3-m. dia* 1. 2 LR-87 2. LR-91 3. Centaur 4. SRMU	14,000.0 2,429.0 462.5 73.4 7,690.0	—	5,760	—
Space Shuttle (reusable) (1981)	0. 3 main engines (SSMEs) fire in parallel with solid-fueled rocket boosters (SRBs) 1. 2 SRBs mounted on external tank (ET) fire in parallel with SSMEs 2. 2 OMS	5,006.1 23,580.0 53.4	24,900[g]	5,900[h]	—

Source: NASA, "Aeronautics and Space Report of the President" (Annually) and NASA Historian's office.

* Solid propellant; all others are liquid.

a Due east launch except as indicated.

b Polar launch.

c With Star 48B.

d With TE-M-364-4 upper stage.

f With appropriate upper stage.

g In full performance configuration (280–420 km orbit).

h With IUS or TOS.

z First launch was a failure.

FEDERAL SPACE ACTIVITIES OUTLAYS

Fiscal Years 1961–1996
(Millions of Current Dollars)

Year	TOTAL	NASA[a]	DoD	Energy	Commerce	Other[b]
1961	$ 1,468	$ 694	$ 710	$ 64	$ —	$ —
1962	2,387	1,226	1,029	130	1	1
1963	4,079	2,517	1,368	181	12	1
1964	5,930	4,131	1,564	220	12	3
1965	6,886	5,035	1,592	232	24	3
1966	7,719	5,858	1,637	188	28	7
1967	7,237	5,337	1,673	184	39	5
1968	6,667	4,595	1,890	147	29	6
1969	6,326	4,078	2,095	118	31	5
1970	5,453	3,565	1,756	103	24	5
1971	4,999	3,171	1,693	97	30	8
1972	4,772	3,195	1,470	60	37	10
1973	4,719	3,069	1,557	51	29	13
1974	4,854	2,960	1,777	39	64	14
1975	4,891	2,951	1,831	34	64	11
1976	5,314	3,336	1,864	26	71	16
Tr.Qtr.	1,361	869	458	8	23	4
1977	5,559	3,600	1,833	22	87	18
1978	6,188	3,582	2,457	29	101	20
1979	6,808	3,744	2,892	55	97	21
1980	7,734[r]	4,340	3,162	49	89	94[r]
1981	9,238[r]	4,877	4,131	47	81	102[r]
1982	10,542[r]	5,463	4,772	60	142	106[r]
1983	12,668[r]	6,101	6,247	40	178	103[r]
1984	14,813[r]	6,461	8,000	33	209	109[r]
1985	17,353[r]	6,607	10,441	34	155	115[r]
1986	18,683[r]	6,756	11,449	35	317	127[r]
1987	21,948[r]	7,254	14,264	37	262	130[r]
1988	23,521[r]	8,451	14,397	199	334	140[r]
1989	25,255[r]	10,195	14,504	97	306	153[r]
1990	25,788[r]	12,292	12,962	79	279	177[r]
1991	28,484[r]	13,351	14,432	251	266	184[r]
1992	27,998[r]	12,838	14,437	223	298	202[r]
1993	27,537[r]	13,092	13,779	165	295	206[r]
1994	23,929[r]	12,363	10,973	83	297	213[r]
1995	24,702	12,593	11,494	70	330	215
1996[E]	24,643	12,694	11,353	46	322	228

Source: NASA, "Aeronautics and Space Report of the President" (Annually).
NOTE: Detail may not add to totals because of rounding.
a Excludes amounts for air transportation.
b Departments of Interior, Transportation, and Agriculture, the National Science Foundation, and the Environmental Protection Agency.
E Estimated.
r Revised. The National Science Foundation recalculated its space activities from 1980, making them significantly higher than previously reported.
Tr.Qtr. See Glossary.

FEDERAL SPACE ACTIVITIES OUTLAYS IN CONSTANT DOLLARS

Fiscal Years 1961–1996
(Millions of Constant Dollars[a])

Year	TOTAL	NASA[b]	DoD	Energy	Commerce	Other[c]
1961	$ 6,194	$ 2,928	$ 2,996	$270	$ —	$ —
1962	9,987	5,130	4,305	544	4	4
1963	16,855	10,401	5,653	748	50	4
1964	24,204	16,861	6,384	898	49	12
1965	27,655	20,221	6,394	932	96	12
1966	30,271	22,973	6,420	737	110	27
1967	27,517	20,293	6,361	700	148	19
1968	24,421	16,832	6,923	538	106	22
1969	22,196	14,309	7,351	414	109	18
1970	18,177	11,883	5,853	343	80	17
1971	15,820	10,035	5,358	307	95	25
1972	14,417	9,653	4,441	181	112	30
1973	13,678	8,896	4,513	148	84	38
1974	13,119	8,000	4,803	105	173	38
1975	11,988	7,233	4,488	83	157	27
1976	12,160	7,634	4,265	59	162	37
Tr.Qtr.	3,001	1,916	1,010	18	51	9
1977	11,828	7,660	3,900	47	185	38
1978	12,302	7,121	4,885	58	201	40
1979	12,492	6,870	5,306	101	178	39
1980	13,042	7,319	5,332	83	150	159
1981	14,169	7,480	6,336	72	124	156
1982	15,103	7,827	6,837	86	203	152
1983	17,353	8,358	8,558	55	244	141
1984	19,542	8,524	10,554	44	276	144
1985	22,134	8,427	13,318	43	198	147
1986	23,180	8,382	14,205	43	393	158
1987	26,475	8,750	17,206	45	316	157
1988	27,414	9,850	16,780	232	389	163
1989	28,249	11,404	16,224	109	342	171
1990	27,670	13,189	13,908	85	299	190
1991	29,305	13,736	14,848	258	274	189
1992	27,998	12,838	14,437	223	298	202
1993	26,839	12,760	13,430	161	288	201
1994	22,790	11,774	10,450	79	283	203
1995	22,957	11,704	10,682	65	307	200
1996[E]	22,382	11,530	10,312	42	292	207

Source: AIA, derived from NASA, "Aeronautics and Space Report of the President" (Annually).
NOTE: Detail may not add to totals because of rounding.
a Based on fiscal year GDP deflator, 1992 = 100.
b Excludes amounts for air transportation.
c Departments of Interior, Transportation, and Agriculture, the National Science Foundation, and the Environmental Protection Agency.
E Estimated.
Tr.Qtr. See Glossary.

FEDERAL SPACE ACTIVITIES BUDGET AUTHORITY

Fiscal Years 1961–1996
(Millions of Dollars)

Year	TOTAL	NASA[a]	DoD	Energy	Commerce	Other[b]
1961	$ 1,809	$ 926	$ 814	$ 68	$ —	$ 1
1962	3,295	1,797	1,298	148	51	1
1963	5,435	3,626	1,550	214	43	2
1964	6,831	5,016	1,599	210	3	3
1965	6,956	5,138	1,574	229	12	3
1966	6,971	5,065	1,689	187	27	3
1967	6,710	4,830	1,664	184	29	3
1968	6,529	4,430	1,922	145	28	4
1969	5,976	3,822	2,013	118	20	3
1970	5,340	3,547	1,678	103	8	4
1971	4,740	3,101	1,512	95	27	5
1972	4,575	3,071	1,407	55	31	11
1973	4,825	3,093	1,623	54	40	15
1974	4,641	2,759	1,766	42	60	14
1975	4,913	2,915	1,892	30	64	12
1976	5,319	3,225	1,983	23	72	16
Tr.Qtr.	1,341	849	460	5	22	5
1977	5,983	3,440	2,412	22	91	18
1978	6,518	3,623	2,738	34	103	20
1979	7,243	4,030	3,036	59	98	20
1980	8,761[r]	4,680	3,848	40	93	100[r]
1981	10,053[r]	4,992	4,828	41	87	105[r]
1982	12,518[r]	5,528	6,679	61	145	105[r]
1983	15,672[r]	6,328	9,019	39	178	108[r]
1984	17,445[r]	6,858	10,195	34	236	122[r]
1985	20,273[r]	6,925	12,768	34	423	123[r]
1986	21,764[r]	7,165	14,126	35	309	129[r]
1987	26,558[r]	9,809	16,287	48	278	136[r]
1988	26,738[r]	8,322	17,679	241	352	144[r]
1989	28,563[r]	10,097	17,906	97	301	162[r]
1990	27,588[r]	11,460	15,616	79	243	190[r]
1991	27,924[r]	13,046	14,181	251	251	195[r]
1992	28,991[r]	13,199	15,023	223	327	219[r]
1993	27,868[r]	13,064	14,106	165	324	209[r]
1994	26,789[r]	13,022	13,166	74	312	215[r]
1995	23,816	12,543	10,644	60	352	217
1996[E]	24,790	12,569	11,514	46	430	231

Source: NASA, "Aeronautics and Space Report of the President" (Annually).
NOTE: Detail may not add to totals because of rounding.
a Excludes amounts for air transportation.
b Departments of Interior, Transportation, and Agriculture, the National Science Foundation, and the Environmental Protection Agency.
E Estimated.
r Revised. The National Science Foundation recalculated its space activities since 1980, making them significantly higher than previously reported.
Tr.Qtr. See Glossary.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
BUDGET AUTHORITY

Fiscal Years 1968–1998
(Millions of Current Dollars)

Year	TOTAL	Research and Development	Space Flight Control and Data Communications[a]	Construction of Facilities	Research & Program Management[b]
1968	$ 4,589	$3,912	$ —	$ 38	$ 639
1969	3,995	3,314	—	33	648
1970	3,749	2,993	—	53	703
1971	3,312	2,556	—	26	730
1972	3,308	2,523	—	53	732
1973	3,408	2,599	—	79	730
1974	3,040	2,194	—	101	745
1975	3,231	2,323	—	143	765
1976	3,552	2,678	—	82	792
Tr.Qtr.	932	700	—	11	221
1977	3,819	2,856	—	118	845
1978	4,064	3,012	—	162	890
1979	4,559	3,477	—	148	934
1980	5,243	4,088	—	159	996
1981	5,522	4,334	—	117	1,071
1982	6,020	4,772	—	114	1,134
1983	6,875	5,539	—	139	1,197
1984	7,316	2,064[a]	3,772	223	1,256
1985	7,573	2,468	3,594	178	1,332
1986	7,807	2,619	3,670	176	1,342
1987	10,923	3,154	6,100	217	1,453
1988	9,062	3,280	3,806	213	1,763
1989	10,969	4,213	4,555	275	1,927
1990	12,324	5,225	4,645	218	2,023
1991	14,016	6,024	5,271	498	2,212
1992	14,317	6,848	5,352	525	1,576
1993	14,310	7,074	5,059	526	1,652
1994	14,570	7,534	4,835	493	1,708

Year	TOTAL	Science, Aeronautics, & Technology	Human Space Flight	Other[b]	Mission Support
1995[c]	$13,854	$5,936	$5,515	$(130)	$2,533
1996	13,886	5,929	5,457	17	2,483
1997[E]	13,710	5,590	5,540	18	2,562
1998[E]	13,501	5,642	5,327	19	2,513

Source: Office of Management and Budget, "Budget of the United States Government" (Annually).
NOTE: Detail may not add to totals because of rounding.
a Separate budget category beginning in 1984; funds formerly included under Research and Development.
b Includes trust funds, Office of the Inspector General, & GSA building delegation.
c 1995 features major budget account restructuring.
E Estimate. Latest year reflects Administration's budget proposal.
Tr.Qtr. See Glossary.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION OUTLAYS

Fiscal Years 1973–1998
(Millions of Current Dollars)

Year	TOTAL	Research and Development	Space Flight Control and Data Communications[a]	Construction of Facilities	Research & Program Management[b]
1973	$ 3,315	$2,541	$ —	$ 45	$ 729
1974	3,256	2,422	—	75	760
1975	3,267	2,420	—	85	761
1976	3,669	2,749	—	121	799
Tr.Qtr.	951	731	—	26	195
1977	3,945	2,980	—	105	860
1978	3,983	2,989	—	124	870
1979	4,197	3,139	—	133	925
1980	4,852	3,701	—	140	1,010
1981	5,421	4,223	—	147	1,051
1982	6,035	4,796	—	109	1,130
1983	6,664	5,316	—	108	1,240
1984	7,048	2,792[a]	2,915	109	1,232
1985	7,318	2,118	3,707	170	1,323
1986	7,404	2,615	3,267	189	1,332
1987	7,591	2,436	3,597	149	1,409
1988	9,092	2,916	4,362	166	1,648
1989	11,052	3,922	5,030	190	1,909
1990	12,429	5,094	5,117	218	2,000
1991	13,878	5,765	5,590	326	2,196
1992	13,961	6,579	5,118	463	1,802
1993	14,306	7,086	5,025	557	1,638
1994	13,695	6,758	4,899	371	1,666
1995[c]	5,098	3,286	1,409	305	98
1996[c]	1,022	510	241	265	6
1997[cE]	407	230	127	40	10
1998[cE]	50	—	10	40	—

Year	TOTAL	Science, Aeronautics, & Technology	Human Space Flight	Other[b]	Mission Support
1995[c]	$ 8,280	$2,708	$3,528	$ 15	$2,029
1996[c]	12,858	5,017	5,452	16	2,373
1997[cE]	13,289	5,390	5,420	17	2,462
1998[cE]	13,544	5,406	5,604	18	2,516

Source: Office of Management and Budget, "Budget of the United States Government" (Annually).
NOTE: Detail may not add to totals because of rounding.
a Separate budget category beginning in 1984; funds formerly included under Research and Development.
b Includes trust funds, Office of Inspector General, & GSA building delegation.
c 1995 featured major budget account restructuring. Note: 1995, 1996, 1997, and 1998 outlays split between old and new account structure.
E Estimate. Latest year reflects Administration's budget proposal.
Tr.Qtr. See Glossary.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION OUTLAYS IN CONSTANT DOLLARS

Fiscal Years 1973–1998
(Millions of Constant Dollars[a])

Year	TOTAL	Research and Development	Space Flight Control and Data Communications[b]	Construction of Facilities	Research & Program Management[c]
1973	$ 9,364	$ 7,178	$ —	$127	$2,059
1974	8,457	6,291	—	195	1,974
1975	7,742	5,735	—	201	1,803
1976	8,226	6,164	—	271	1,791
Tr.Qtr.	2,065	1,587	—	56	423
1977	8,305	6,274	—	221	1,811
1978	7,825	5,872	—	244	1,709
1979	7,590	5,676	—	241	1,673
1980	8,033	6,127	—	232	1,672
1981	8,201	6,389	—	222	1,590
1982	8,597	6,832	—	155	1,610
1983	9,104	7,262	—	148	1,694
1984	9,286	3,679[b]	3,841	144	1,623
1985	9,310	2,695	4,716	216	1,683
1986	9,186	3,244	4,053	234	1,653
1987	9,135	2,931	4,329	179	1,696
1988	10,560	3,387	5,066	193	1,914
1989	12,321	4,372	5,608	212	2,128
1990	13,279	5,442	5,467	233	2,137
1991	14,263	5,925	5,745	335	2,257
1992	13,961	6,579	5,118	463	1,802
1993	13,943	6,906	4,898	543	1,596
1994	13,043	6,436	4,666	353	1,587
1995[d]	4,738	3,054	1,309	283	91
1996[d]	929	464	219	241	5
1997[dE]	360	204	112	35	9
1998[dE]	43	—	9	34	—

Year	TOTAL	Science, Aeronautics, & Technology	Human Space Flight	Other[c]	Mission Support
1995[d]	$ 7,695	$ 2,517	$3,279	$ 14	$1,886
1996[d]	11,689	4,561	4,956	15	2,157
1997[dE]	11,771	4,774	4,801	15	2,181
1998[dE]	11,676	4,660	4,831	16	2,169

Source: AIA, derived from Office of Management and Budget, "Budget of the United States Government" (Annually).
NOTE: Detail may not add to totals because of rounding.
a Based on fiscal year GDP deflator, (1992=100).
b Separate budget category beginning in 1984; funds formerly included under Research and Development.
c Includes trust funds, Office of Inspector General, & GSA building delegation.
d 1995 featured major budget account restructuring. Note: 1995, 1996, 1997, and 1998 outlays split between old and new account structure.
E Estimate. Latest year reflects Administration's budget proposal.
r Revised.
Tr.Qtr. See Glossary.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION BUDGET AUTHORITY BY MAJOR BUDGET ACCOUNT FOR SELECTED PROGRAMS

Fiscal Years 1997–1998
(Millions of Dollars)

	1997[E]	1998[E]
HUMAN SPACE FLIGHT	$5,675	$5,327
Space Station	$2,149	$2,121
U.S.-Russian Cooperative Space Activities	100	—
Space Shuttle—**Total**	3,151	2,978
Shuttle Operations	2,515	2,494
Safety & Obsolescence Upgrades	636	483
Payload & Utilization Operations	275	227
SCIENCE, AERONAUTICS, & TECHNOLOGY	$5,453	$5,642
Space Science	$1,969	$2,044
Life & Microgravity Sciences & Applications	244	214
Mission To Planet Earth	1,362	1,417
Space Access & Technology	495	549
Aeronautical Research & Technology	844	920
Mission Communication Services	419	401
Academic Programs	120	96
MISSION SUPPORT	$2,564	$2,513
Safety, Reliability, & Quality Assurance	$ 39	$ 38
Space Communication Services	278	246
Research & Program Management	2,093	2,070
Construction of Facilities	155	159
INSPECTOR GENERAL	$ 17	$ 18

Source: "NASA Budget Briefing Background Material" (Annually).
Note: Detail may not add to totals because of rounding.
E Estimate. Latest year reflects Administration's budget proposal.

secutive positive result after three years of losses aggregating more than $6 billion. The 1996 profit was compounded of revenues totaling $102 billion (up $7.4 billion) and expenses of $96 billion (up $7 billion).

Domestic operations accounted for more than 75% of the U.S. airlines' total revenues; they amounted to $76.7 billion, up from $70.9 billion in the previous year. International operations generated revenues of $25 billion, up from $23.4 billion.

U.S. air carriers experienced traffic gains in both domestic and international operations. In 1996 scheduled airlines flew a record 76 billion revenue ton-miles, which compares with 71 billion in 1995. Passenger ton-miles totaled 58 billion (up from 54 billion), and cargo ton-miles amounted to 17.7 billion (up from 16.9 billion).

Total passengers boarded in 1996 came to a record 581 million; the breakdown was 531 million in domestic operations (91%) and 51 million in international enplanements. The year's total boardings compares with 548 million in 1995 and represents an increase of more than six percent. The revenue passenger load factors reached all-time highs, 67.9% in domestic service and 73.3% in international operations.

The world airlines' fleet of turbine-powered aircraft increased by 1,086 units, according to the annual survey sponsored by Exxon International. The total number of turbine-powered aircraft in service at year-end 1996 was 21,127, compared with 20,041 in 1995. The number of in-service planes built in the United States was 12,117 or 57.4% of the total; the 1996 percentage marked a continuing slide that witnessed a reduction of more than five percentage points during the five-year span, 1992-96.

The year 1996 marked the second straight year of economic resurgence for the world's airlines in the wake of a five-year (1990-94) span of net losses. Although some airlines continued to experience recession-induced financial problems in 1996, the scheduled airline industry as a whole recorded a 5.4% gain in total operating revenues and a 2.4% "net result" (net profit as a percentage of revenues).

Data for the member airlines of the International Civil Aviation Organization (ICAO) showed total operating revenues of $282 billion (up from $267 billion in 1995). At the same time operating profits fell from $13.5 billion in 1995 to $12 billion. The reason for the decline was that operating expenses grew faster than revenues. The net result was $6.7 billion, up from $4.5 billion (the net result accounts for income taxes and a number of other factors not directly associated with flight operations, such as interest payments, subsidies, and the financial performance of affiliated companies).

Preliminary ICAO statistics indicated that traffic growth matched or bettered the six percent consensus estimate. Total (passengers, baggage, freight, and mail) ton-miles performed by ICAO airlines amounted to 216 billion, up seven percent from the previous year's 201 billion. The airlines boarded 1.38 billion passengers (up six percent) and carried 25.3 million tons of freight (up 3.3%). The passenger load factor for the year was 68%, up from 67% in 1995.

The U.S.-scheduled airlines recorded a 1996 operating profit of $6.2 billion, according to the Department of Transportation's Office of Aviation Statistics; the figure compared with $5.9 billion in 1995 and represented the fourth con-

secutive positive result after three years of losses aggregating more than $6 billion. The 1996 profit was compounded of revenues totaling $102 billion (up $7.4 billion) and expenses of $96 billion (up $7 billion).

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OPERATING REVENUES AND EXPENSES OF WORLD SCHEDULED AIRLINES[a]

Calendar Years 1993–1996
(Millions of U.S. Dollars)

	1993	1994[r]	1995	1996[p]
OPERATING REVENUES:				
Scheduled Services:				
Passenger	$171,440	$186,520	$205,030	
Freight	20,270	23,890	26,010	
Mail	2,220	2,290	2,670	
				NA
Total Scheduled Services	$193,930	$212,700	$233,710	
Non-Scheduled Services	8,230	9,110	10,620	
Incidental	23,840	22,890	22,670	
Total Operating Revenues	$226,000	$244,700	$267,000	$281,500
OPERATING EXPENSES:				
Flight Operations	$ 59,270	$ 61,400	$ 66,550	
Maintenance & Overhaul	22,530	23,770	26,810	
Depreciation & Amortization	15,580	17,940	18,400	
User Charges & Station Expenses	38,740	41,590	46,240	NA
Passenger Services	23,580	25,690	27,990	
Ticketing, Sales & Promotion	36,590	37,280	39,580	
General, Administrative & Other	27,410	29,330	27,930	
Total Operating Expenses	$223,700	$237,000	$253,500	$269,500
OPERATING RESULT	$ 2,300	$ 7,700	$ 13,500	$ 12,000
Percent of Revenue	1.0%	3.1%	5.1%	4.3%
NET RESULT[b]	$ (4,400)	$ (200)	$ 4,500	$ 6,700
Percent of Revenue	–1.9%	–0.1%	1.7%	2.4%

Source: International Civil Aviation Organization, "Civil Aviation Statistics of the World" (Annually).
a Excludes domestic operations in the Commonwealth of Independent States.
b Net Result equals Operating Result minus non-operating items, including interest, income taxes, retirement of property and equipment, affiliated companies, and subsidies.
NA Not available.
p Preliminary.
r Revised.
( ) Denotes loss.

TRAFFIC STATISTICS
WORLD AIRLINE SCHEDULED SERVICE[a]
Calendar Years 1970–1996

Year	Passengers Carried	Freight Tons Carried	Passenger-Miles Performed	Seat-Miles Available	Passenger Load Factor	Ton-Miles Performed		
						Freight	Mail	TOTAL (Passengers & Baggage, Freight, Mail)
	(Millions)		(Billions)		(Percent)	(Millions)		
1970	383	6.7	286	522	55%	8,230[r]	2,100[r]	38,820[r]
1971	411	7.4	307	568	54	9,060	1,990	41,420
1972	450	8.0	348	609	57	10,290	1,900	46,690
1973	489	9.1	384	667	58	12,010	1,970	51,910
1974	515	9.5	408	688	59	13,030[r]	1,980	55,270
1975	534	9.6	433	733	59	13,270	1,990	58,080[r]
1976	576	10.3	475	789	60	14,750	2,080	63,880
1977	610	11.1	508	837	61	16,190[r]	2,170	68,790
1978	679	11.7	582	902	65	17,770	2,240	77,770
1979	754	12.1	659	999	66	19,190	2,350	86,890
1980	748	12.2	677	1,071	63	20,120	2,520	89,720[r]
1981	752	12.0	695	1,092[r]	64	21,150	2,600	92,810[r]
1982	766	12.8	710	1,115	64	21,600	2,650	94,840[r]
1983	798	13.5	739	1,151	64	24,050	2,740	100,280[r]
1984	848	14.8	794	1,226	65	27,170	2,950	109,050
1985	899	15.1	850	1,293	66	27,290	3,010	114,860
1986	960	16.2	902	1,389	65	29,580	3,110	122,470
1987	1,028	17.7	988	1,471	67	33,100	3,220	134,570
1988	1,082	19.0	1,060	1,568	68	36,480	3,310	145,290[r]
1989	1,109	19.9	1,102	1,621	68	39,140[r]	3,460	152,730[r]
1990	1,165	20.3	1,177	1,740	68	40,270	3,650	161,120[r]
1991	1,135	19.2	1,146	1,726	66	40,160[r]	3,490	157,930[r]
1992[r]	1,146	19.4	1,199	1,822	66	42,910	3,510	165,940
1993[r]	1,142	19.9	1,211	1,872	65	46,880	3,580	171,640
1994[r]	1,234	22.3	1,305	1,970	66	52,890	3,710	187,330
1995	1,302	24.5	1,399	2,089	67	56,930	3,860	201,330
1996[p]	1,380	25.3	1,498	2,196	68	60,830	4,030	215,550

Source: International Civil Aviation Organization (ICAO).
a Includes international and domestic traffic on scheduled service performed by the airlines of the 185 states which were members of ICAO in 1996.
p Preliminary.
r Revised.

OPERATING REVENUES AND EXPENSES OF U.S. AIR CARRIERS[a] DOMESTIC AND INTERNATIONAL OPERATIONS

Calendar Years 1964–1996
(Millions of Dollars)

Year	TOTAL OPERATIONS[b]			Domestic Operations			International Operations		
	Operating Revenues	Operating Expenses	Operating Profit (or Loss)	Operating Revenues	Operating Expenses	Operating Profit (or Loss)	Operating Revenues	Operating Expenses	Operating Profit (or Loss)
1964	$ 4,251	$ 3,781	$ 470	$ 3,169	$ 2,849	$ 320	$ 1,082	$ 932	$ 150
1965	4,958	4,286	672	3,691	3,239	452	1,267	1,047	220
1966	5,745	4,970	775	4,171	3,670	502	1,574	1,300	274
1967	6,865	6,157	708	4,981	4,560	421	1,884	1,597	287
1968	7,753	7,248	505	5,691	5,397	295	2,062	1,852	210
1969	8,791	8,403	387	6,936	6,613	322	1,855	1,790	65
1970	9,290	9,247	43	7,180	7,181	(1)	2,109	2,066	44
1971	10,046	9,717	328	7,753	7,496	257	2,292	2,221	71
1972	11,163	10,578	584	8,652	8,158	493	2,512	2,420	91
1973	12,419	11,834	585	9,694	9,200	494	2,725	2,633	91
1974	14,703	13,978	725	11,546	10,761	785	3,157	3,218	(60)
1975	15,356	15,229	128	12,020	11,903	117	3,336	3,326	11
1976	17,503	16,781	721	13,899	13,324	575	3,605	3,457	147
1977	19,926	19,018	908	15,822	15,166	657	4,104	3,852	252
1978	22,892	21,527	1,366	18,189	17,172	1,018	4,703	4,355	348
1979	27,227	27,028	199	21,652	21,523	129	5,575	5,505	69
1980	33,728	33,949	(222)	26,404	26,409	(6)	6,543	6,766	(223)
1981	36,211	36,612	(401)	28,788	29,051	(264)	6,390	6,574	(184)
1982	36,066	36,804	(739)	28,728	29,478	(750)	6,435	6,452	(17)
1983	38,593	38,231	362	31,014	31,186	(171)	7,163	6,693	470
1984	44,060	41,946	2,114	35,394	33,812	1,582	7,975	7,485	490
1985	48,580	47,207	1,372	37,629	36,611	1,018	8,302	7,984	319
1986	50,086	48,855	1,231	41,001	39,984	1,060	8,621	8,458	163
1987	56,787	54,339	2,448	45,658	43,925	1,733	10,925	10,226	698
1988	63,679	60,236	3,443	50,187	47,739	2,448	13,402	12,403	998
1989	69,225	67,413	1,812	54,314	52,460	1,855	14,911	14,954	(43)
1990	75,984	77,898	(1,913)	57,994	58,983	(989)	17,990	18,914	(924)
1991	75,158	76,943	(1,785)	56,230	56,758	(528)	18,928	20,185	(1,257)
1992	78,140	80,585	(2,444)	57,654	58,801	(1,147)	20,486	21,784	(1,298)
1993	84,559	83,121	1,438	63,233	61,157	2,076	21,326	21,964	(637)
1994	88,313	85,600	2,713	65,949	63,758	2,191	22,364	21,842	522
1995	94,318	88,455	5,863	70,885	66,120	4,765	23,433	22,335	1,098
1996[p]	101,688	95,463	6,224	76,720	71,388	5,332	24,968	24,075	892

Source: Department of Transportation, Office of Aviation Statistics, "Air Carrier Financial Statistics Quarterly" (Quarterly).
NOTE: Detail may not add to totals because of rounding.
a Scheduled and non-scheduled service for all certificated route air carriers. Excludes supplemental air carriers, commuters, and air taxis.
b For 1980 and subsequent years, includes "Other" operations not reported as "Domestic" or "International."
p Preliminary.

U.S. AIR CARRIERS
TOTAL ASSETS AND INVESTMENT IN EQUIPMENT

Calendar Years 1969–1996
(Millions of Dollars)

Year	TOTAL Assets	Value of Flight Equipment	Value of Ground Property & Equipment & Other[a]	Less: Reserves for Depreciation & Overhaul	Equals: Net Value of Owned Operating Property & Equipment	Investment in Operating Property and Equipment as a Percent of Total Assets
1969	$12,069	$ 9,943	$ 1,516	$ 3,560	$ 7,899	65.4%
1970	12,913	10,950	1,951	4,120	8,782	68.0
1971	12,998	11,221	2,028	4,649	8,600	66.2
1972	13,635	11,918	2,225	5,115	9,028	66.2
1973	14,464	12,908	2,424	5,693	9,639	66.6
1974	15,200	13,538	2,539	6,252	9,826	64.6
1975	15,064	14,035	2,635	6,823	9,847	65.4
1976	15,454	14,399	2,792	7,585	9,605	62.2
1977	16,869	14,822	2,997	8,141	9,679	57.4
1978	20,745	16,127	3,367	8,799	10,696	51.6
1979	24,907	18,561	3,985	9,746	12,800	51.4
1980	28,900	20,859	4,682	10,309	15,233	52.7
1981	30,513	22,375	5,175	11,028	16,521	54.1
1982	31,525	23,786	5,424	11,405	17,804	56.5
1983	35,213	26,588	6,191	12,910	19,868	56.4
1984	36,769	28,509	6,061	14,043	20,527	55.8
1985	40,978	30,402	6,772	15,467	21,707	53.0
1986	47,105	31,750	8,468	14,764	25,454	54.0
1987	51,436	33,177	9,223	15,580	26,820	52.1
1988	56,047	35,781	10,248	17,450	28,579	51.0
1989	62,454	38,812	11,903	19,018	31,697	50.8
1990	67,769	40,215	13,523	20,593	33,144	48.9
1991	70,332	42,897	14,285	22,009	35,173	50.0
1992	75,426	48,563	15,219	24,445	39,337	52.2
1993	82,399	51,513	15,438	24,949	42,003	51.0
1994	84,442	51,951	15,844	26,476	41,319	48.9
1995	89,782	56,018	16,804	29,056	43,766	48.7
1996[p]	94,729	58,918	16,639	29,905	45,651	48.2

Source: Department of Transportation, Office of Aviation Statistics, "Air Carrier Financial Statistics Quarterly" (Quarterly).
a Includes land and construction in progress.
p Preliminary.

SOURCES OF OPERATING REVENUES OF U.S. AIR CARRIERS[a] DOMESTIC AND INTERNATIONAL OPERATIONS

Calendar Years 1982–1996
(Millions of Dollars)

Year	TOTAL Operating Revenues	Passenger Service[b]	Mail	Freight[b] & Air Express	Excess Baggage	Other[c]
DOMESTIC OPERATIONS						
1982	$28,728	$25,440	$ 524	$1,505	$42	$1,218
1983	31,014	27,519	516	1,602	52	1,326
1984	35,393	31,437	552	1,716	70	1,618
1985	37,629	33,343	733	1,581	78	1,895
1986	41,001	33,814	679	4,278	85	2,159
1987	45,658	37,492	704	4,952	67	2,443
1988	50,187	41,002	789	5,807	72	2,518
1989	54,314	43,670	767	5,408	70	4,399
1990	57,994	46,282	747	4,276	76	6,613
1991	56,230	44,594	734	4,487	78	6,337
1992	57,654	45,246	937	4,655	87	6,729
1993	63,233	49,289	974	5,266	91	7,612
1994	65,949	50,504	971	5,844	98	8,531
1995	70,885	53,971	1,050	6,546	92	9,227
1996[p]	76,720	59,264	1,022	7,004	98	9,331
INTERNATIONAL OPERATIONS						
1982	$ 6,435	$ 4,959	$ 177	$ 990	$25	$ 283
1983	7,163	5,605	152	999	23	384
1984	7,975	6,074	158	1,169	27	546
1985	8,302	6,451	161	1,130	28	532
1986	8,621	6,551	154	1,451	28	437
1987	10,925	8,374	180	1,783	33	555
1988	13,402	10,357	183	2,150	39	672
1989	14,911	11,181	188	2,417	47	1,078
1990	17,990	13,468	223	2,602	43	1,654
1991	18,928	14,103	223	3,134	50	1,419
1992	20,486	15,664	247	2,980	47	1,547
1993	21,326	15,915	237	3,220	49	1,905
1994	22,364	16,300	212	3,606	46	2,201
1995	23,433	16,788	216	3,994	48	2,387
1996[p]	24,968	17,337	255	4,590	47	2,738

Source: Department of Transportation, Office of Aviation Statistics, "Air Carrier Financial Statistics Quarterly" (Quarterly).
NOTE: Detail may not add to totals because of rounding.
a Scheduled and non-scheduled service for all certificated route air carriers. Excludes supplemental air carriers, commuters, and air taxis.
b Scheduled and charter.
c Includes subsidy, reservation cancellation fees, miscellaneous operating revenues and other transport-related revenues.
p Preliminary.

OPERATING EXPENSES OF U.S. AIR CARRIERS[a] DOMESTIC AND INTERNATIONAL OPERATIONS

Calendar Years 1982–1996
(Millions of Dollars)

Year	TOTAL Operating Expenses	Flying Operations	Maintenance	Passenger Service	Aircraft & Traffic Servicing	Promotion and Sales	Depreciation & Amortization	Other[b]
DOMESTIC OPERATIONS								
1982	$29,478	$11,529	$2,709	$2,668	$ 4,665	$ 4,160	$1,876	$ 1,869
1983	31,186	11,370	2,878	2,983	5,104	4,764	2,107	1,980
1984	33,812	12,161	3,176	3,192	5,369	5,310	2,223	2,380
1985	36,611	12,684	3,604	3,464	5,781	6,089	2,318	2,670
1986	39,934	11,368	4,475	3,793	7,680	6,820	2,652	3,171
1987	43,925	12,509	4,951	4,169	8,575	7,399	2,855	3,468
1988	47,739	13,176	5,643	4,444	9,527	8,235	2,977	3,737
1989	52,460	14,749	6,184	4,775	9,449	8,718	3,078	5,507
1990	58,983	18,166	6,921	5,220	9,094	9,102	3,273	7,207
1991	56,758	16,831	6,682	5,068	9,140	8,856	3,217	6,964
1992	58,801	17,203	6,884	5,327	9,783	8,936	3,340	7,328
1993	61,157	17,622	7,025	5,241	10,172	9,387	3,621	8,089
1994	63,758	17,912	7,312	5,305	10,543	9,882	3,782	9,023
1995	66,120	18,926	7,656	5,281	11,103	9,974	3,762	9,417
1996[p]	71,388	21,451	8,265	5,568	11,551	10,394	3,876	10,283
INTERNATIONAL OPERATIONS								
1982	$ 6,452	$ 2,596	$ 512	$ 577	$ 893	$ 954	$ 396	$ 525
1983	6,693	2,490	548	664	936	1,162	389	505
1984	7,485	2,629	677	749	975	1,308	446	701
1985	7,984	2,738	768	852	1,069	1,414	482	662
1986	8,458	2,402	901	877	1,386	1,665	518	711
1987	10,226	2,836	1,096	1,059	1,749	2,094	533	860
1988	12,403	3,230	1,332	1,280	2,193	2,742	618	1,009
1989	14,954	3,919	1,724	1,454	2,483	3,108	746	1,520
1990	18,878	5,454	2,051	1,738	2,657	3,833	887	2,295
1991	20,185	5,636	2,152	1,861	2,831	4,602	892	2,210
1992	21,784	5,843	2,148	2,204	3,255	5,229	1,033	2,073
1993	21,964	5,928	1,967	2,175	3,072	5,339	1,077	2,406
1994	21,842	5,842	2,064	2,311	3,336	4,335	1,237	2,716
1995	22,335	6,181	2,273	2,467	3,748	3,527	1,106	3,033
1996[p]	24,075	7,241	2,593	2,596	3,735	3,353	1,481	3,077

Source: Department of Transportation, Office of Aviation Statistics, "Air Carrier Financial Statistics Quarterly" (Quarterly).
NOTE: Detail may not add to totals because of rounding.
a Scheduled and non-scheduled service for all certificated route air carriers. Excludes supplemental air carriers, commuters, and air taxis.
b General and administrative and other transport-related expenses.
p Preliminary.

TRAFFIC STATISTICS
U.S. AIR CARRIER SCHEDULED SERVICE[a]
Calendar Years 1964–1996

Year	Revenue Ton-Miles (Millions)			Total Available Ton-Miles (Millions)	Total Revenue Load Factor	Aircraft Revenue Miles (Millions)	Average Overall Flight Stage Length (Miles)	Average Available Seats per Aircraft Mile
	Passenger	Cargo[b]	Total					
1964	5,630	1,803	7,434	15,514	47.9%	1,189	301	93
1965	6,629	2,356	8,986	18,408	48.8	1,354	322	96
1966	7,736	2,949	10,686	20,939	51.0	1,482	339	98
1967	9,561	3,475	13,036	26,968	48.3	1,834	371	101
1968	11,023	4,226	15,249	33,221	45.9	2,146	401	107
1969	12,197	4,701	16,898	38,664	43.7	2,385	443	112
1970	13,171	4,994	18,166	41,693	43.6	2,426	473	117
1971	13,565	5,120	18,685	44,139	42.3	2,378	476	125
1972	15,241	5,506	20,746	45,583	45.5	2,376	471	129
1973	16,196	6,046	22,242	49,019	45.4	2,448	477	135
1974	16,292	6,133	22,425	46,848	47.9	2,258	478	140
1975	16,281	5,905	22,186	47,254	46.9	2,241	476	143
1976	17,899	6,222	24,121	49,325	48.9	2,320	480	146
1977	19,322	6,587	25,909	52,284	49.6	2,419	490	149
1978	22,678	7,001	29,679	54,765	54.2	2,520	502	152
1979	26,202	7,189	33,390	60,844	54.9	2,791	517	154
1980	25,519	7,084	32,603	62,983	51.8	2,816	526	158
1981	24,889	7,060	31,949	61,186	52.2	2,703	519	161
1982	25,964	6,886	32,850	62,401	52.6	2,699	544	167
1983	28,183	7,573	35,756	65,385	54.7	2,809	558	169
1984	30,512	8,185	38,697	72,223	53.6	3,134	575	168
1985	33,640	7,689	41,329	76,059	54.3	3,320	569	168
1986	36,655	9,026	45,681	85,140	53.7	3,725	580	168
1987	40,453	10,016	50,469	92,209	54.7	3,988	606	167
1988	42,330	11,469	53,800	97,899	55.0	4,141	618	169
1989	43,271	12,187	55,458	100,082	55.4	4,193	633	169
1990	45,793	12,549	58,342	107,559	54.2	4,491	649	170
1991	44,795	12,130	56,925	105,599	53.9	4,416	651	169
1992	47,855	13,199	61,054	112,749	54.2	4,661	661	169
1993	48,968	14,120	63,088	115,473	54.6	4,846	669	166
1994	51,938	16,052	67,989	120,798	56.3	5,033	668	163
1995[r]	54,066	16,921	70,987	126,154	56.3	5,293	657	160
1996	57,841	17,698	75,539	131,268	57.5	5,499	668	160

Source: Department of Transportation, Office of Aviation Statistics, "Air Carrier Traffic Statistics Monthly" (Monthly).
NOTE: Detail may not add to totals because of rounding.
a Includes international and domestic operations.
b Includes freight, air express, U.S. and foreign mail.
r Revised.

PASSENGER STATISTICS
U.S. AIR CARRIER SCHEDULED SERVICE
DOMESTIC AND INTERNATIONAL OPERATIONS

Calendar Years 1982–1996

Year	Revenue Passenger Enplanements (Thousands)	Average Passenger Trip-Length (Miles)	Revenue Passenger Miles (Millions)	Available Seat Miles (Millions)	Revenue Passenger Load Factor[a]
DOMESTIC OPERATIONS					
1982	274,342	766	210,149	359,528	58.5
1983	296,721	765	226,909	379,150	59.8
1984	321,047	759	243,692	422,507	57.7
1985	357,109	758	270,584	445,826	60.7
1986	393,864	767	302,090	497,991	60.7
1987	416,831	779	324,637	526,958	61.6
1988	419,210	786	329,309	536,663	61.4
1989	416,331	793	329,975	530,079	62.3
1990	423,565	803	340,231	563,065	60.4
1991	412,360	806	332,566	543,638	61.2
1992	431,693	806	347,931	557,989	62.4
1993	443,172	799	354,177	571,489	62.0
1994	481,755	787	378,990	585,438	64.7
1995[r]	499,000	791	394,708	603,917	65.4
1996	530,661	802	425,489	626,185	67.9
INTERNATIONAL OPERATIONS					
1982	19,760	2,505	49,495	80,591	61.4
1983	21,917	2,506	54,920	85,388	64.3
1984	23,636	2,599	61,424	92,817	66.2
1985	24,913	2,642	65,819	101,963	64.6
1986	25,082	2,570	64,456	109,445	58.9
1987	30,847	2,588	79,834	121,763	65.6
1988	35,404	2,655	93,992	140,140	67.1
1989	37,361	2,750	102,739	154,297	66.6
1990	41,995	2,803	117,695	170,310	69.1
1991	39,941	2,889	115,389	171,561	67.3
1992	43,415	3,009	130,622	194,784	67.1
1993	45,348	2,988	135,508	200,151	67.7
1994	47,093	2,981	140,391	198,893	70.6
1995	48,773	2,992	145,948[r]	203,160[r]	71.8
1996	50,540	3,026	152,919	208,504	73.3

Source: Department of Transportation, Office of Aviation Statistics, "Air Carrier Traffic Statistics Monthly" (Monthly).
a Revenue passenger miles as a percent of available seat miles.
r Revised.

TURBINE-ENGINED AIRCRAFT IN THE WORLD AIRLINE FLEET

(By Model, 1992–1996)

	1992	1993	1994	1995[a]	1996[a]
TOTAL AIRCRAFT IN SERVICE	16,100	17,284	18,347	20,041	21,127
Turbojets—TOTAL	10,504	11,345	12,000	12,810	13,425
Aerospatiale SE-210 Caravelle	34	29	28	27	20
Airbus A300	346	374	391	414	405
Airbus A310	207	222	217	218	222
Airbus A319	—	—	—	—	18
Airbus A320	354	413	463	510	549
Airbus A321	—	—	17	35	52
Airbus A330	—	1	10	38	49
Airbus A340	—	20	44	60	86
Antonov 72/74	—	—	—	4	8
Antonov 124	7	13	13	11	16
Antonov 225	—	—	—	—	1
Avro RJ-70/85/100	(a)	12	30	51	77
B.Ae./Aerospatiale Concorde	14	14	13	13	13
B.Ae. 146	173[b]	185	196	204	206
B.Ae. One-Eleven	143	121	120	112	121
B.Ae. Trident	9	9	9	—	—
B.Ae. (HS) 125	19	23	22	19	20
Beech 400 Beechjet	3	2	2	2	3
Boeing 707/720	176	151	151	123	122
Boeing 727	1,457	1,390	1,373	1,346	1,363
Boeing 737	2,189	2,363	2,476	2,569	2,623
Boeing 747	865	918	957	963	996
Boeing 757	497	566	629	697	718
Boeing 767	462	515	550	580	628
Boeing 777	—	—	—	13	45
Canadair CL-601 Challenger	2	4	2	2	2
Canadair Regional Jet	2	23	49	83	136
Cessna Citation I/II/III	35	31	36	44	45
Convair 880/990	1	1	1	—	—
Dassault Falcon 10/20/50	41	46	60	66	65
Dassault Mercure	8	8	5	—	—
Fokker F-28 Fellowship	191	190	185	185	175
Fokker 70	—	—	—	23	34
Fokker 100	150	220	253	267	272
Gulfstream II/III/IV G-1159	17	17	16	15	16
Ilyushin IL-62	33	49	84	106	105
Ilyushin IL-76	64	83	154	209	238
Ilyushin IL-86	—	12	37	51	98
Ilyushin IL-96	—	—	5	5	7
Israel Aircraft 1121/1124	3	12	13	13	11
Learjet	37	28	39	49	54
Lockheed L-1011 Tristar	214	213	208	190	190
Lockheed L-1329 Jetstar	4	4	4	3	3
MBB Hansa HFB-320	—	—	3	13	16
McDonnell Douglas DC-8	261	264	270	274	263
McDonnell Douglas DC-9	741	767	791	787	785
McDonnell Douglas DC-10	361	354	347	335	351
McDonnell Douglas MD-11	73	107	127	146	159
McDonnell Douglas MD-80	1,032	1,067	989	1,115	1,120

(Continued on next page)

TURBINE-ENGINED AIRCRAFT IN THE WORLD AIRLINE FLEET

(By Model, 1992–1996, continued)

	1992	1993	1994	1995[a]	1996[a]
Turbojets (continued)					
McDonnell Douglas MD-90	—	—	—	14	36
Rockwell Sabreliner 60	2	1	—	—	—
Tupolev Tu-134	82	138	155	192	188
Tupolev Tu-154	131	225	283	379	422
Tupolev Tu-204	—	—	5	4	6
Yakolev Yak-40/42	64	140	168	231	267
Turbine-Powered Helicopters—TOTAL	176	242	295	774	851
Aerospatiale SA-315 Lama	—	—	—	2	2
Aerospatiale SA-316 Alouette III	—	—	—	3	5
Aerospatiale SA-318 Alouette II	2	1	1	1	2
Aerospatiale SA-319 Alouette III Astazou	2	—	—	—	—
Aerospatiale SA-341 Gazelle	1	—	—	—	—
Aerospatiale (Nurtanio) SA-330 Puma	18	28	17	22	20
Aerospatiale AS-332 Super Puma	5	5	16	69	70
Aerospatiale AS-350 Ecureuil/ Astar	7	3	4	40	49
Aerospatiale AS-355 Ecureuil 2/ Twinstar	4	8	8	15	15
Aerospatiale SA-365 Dauphin II	10	13	17	24	25
Agusta A109	3	—	1	1	1
Bell (Agusta/Fuji) 204	3	3	2	5	4
Bell 205	2	2	1	19	16
Bell 206 Jetranger/Longranger	33	36	54	145	155
Bell 212	16	20	21	105	106
Bell 214	—	—	4	12	11
Bell 222 UT	—	—	1	1	2
Bell 412	6	17	16	25	25
Boeing 107	—	—	—	16	16
Boeing Vertol BV-234	—	—	—	9	10
Hughes (Kawasaki) 500/369D	—	—	—	12	12
Kamov Ka-32	—	—	—	2	2
MBB BK-117	—	—	—	2	2
MBB/Nurtanio Bo.105	33	41	41	58	58
Mil Mi-2	—	—	—	—	24
Mil Mi-8	—	—	17	18	48
Mil Mi-14	—	—	—	—	1
Sikorsky S-55T	5	5	5	4	6
Sikorsky S-58T	4	4	1	1	1
Sikorsky S-61	10	33	42	81	82
Sikorsky S-62	—	—	1	1	1
Sikorsky S-64	—	—	—	5	5
Sikorsky S-76	12	23	25	72	75

(Continued on next page)

TURBINE-ENGINED AIRCRAFT IN THE WORLD AIRLINE FLEET

(By Model, 1992–1996, continued)

	1992	1993	1994	1995[a]	1996[a]
Turboprops—TOTAL	5,420	5,697	6,052	6,457	6,851
Aerospatiale N.262/Mohawk 298	15	10	12	13	9
Aerospatiale/Aeritalia ATR 42	227	242	245	259	283
Aerospatiale/Aeritalia ATR 72	76	103	138	158	177
Airtech CN-235	23	24	24	25	24
Antonov An-12	19	25	23	46	68
Antonov An-22	2	2	2	2	5
Antonov An-24/26/28/30/32	171	258	307	400	484
B.Ae. ATP	46	50	53	52	55
B.Ae. Vanguard	4	3	2	1	—
B.Ae. Viscount	25	23	25	24	20
B.Ae. (HP-137) Jetstream 31	309	296	306	296	274
B.Ae. Jetstream 41	2	18	30	66	74
B.Ae. HS-748	123	115	122	126	126
Beech 18 Turbo	17	1	21	21	20
Beech 90 King Air	30	38	30	35	39
Beech 99	130	139	140	143	140
Beech 100 King Air	31	38	44	46	48
Beech 200/300 Super King Air	87	94	101	121	126
Beech 1300	2	4	5	5	5
Beech 1900C/D	224	251	291	371	389
Bristol 175 Britannia	5	5	3	1	1
Canadair CL-44	8	8	4	2	1
CASA/Nurtanio C-212 Aviocar	104	102	107	114	111
Cessna 208 Caravan I	307	312	380	458	528
Cessna F406 Caravan II	23	19	21	35	28
Cessna 425/441 Conquest I/II	4	5	7	4	5
Convair 580/600/640	99	98	110	111	114
DHC-2/3 Turbo Beaver/Otter	4	6	9	17	22
DHC-5 Buffalo	1	1	1	1	1
DHC-6 Twin Otter	437	419	405	395	394
DHC-7 Dash 7	80	84	73	70	75
DHC-8 Dash 8	307	341	358	365	408
Dornier DO-228	112	116	126	106	112
Dornier DO-328	—	3	15	42	59
Douglas DC-3T Turbo Express	—	—	2	2	1
Embraer EMB-110 Bandeirante	181	189	188	192	211
Embraer EMB-120 Brasilia	255	267	276	254	295
Fokker/Fairchild F-27/FH-227 Friendship	378	354	348	315	312
Fokker 50	134	152	164	171	176
GAF Nomad	12	11	22	18	13
Grumman G-21 Turbo Goose	1	1	1	1	—
Grumman G-73 Turbo Mallard	5	6	5	5	5
Grumman G-159 Gulfstream I	31	33	41	39	34

(Continued on next page)

TURBINE-ENGINED AIRCRAFT IN THE WORLD AIRLINE FLEET

(By Model, 1992–1996, continued)

	1992	1993	1994	1995[a]	1996[a]
Turboprops (continued)					
Handley Page Herald	16	15	16	15	10
Harbin YU-12 II	26	33	40	41	42
IAI Arava	1	1	2	2	2
Ilyushin IL-18	31	29	33	33	38
Ilyushin IL-114	—	—	—	2	2
LET L-410	51	19	25	61	87
Lockheed L-188 Electra	65	56	65	51	53
Lockheed L-100/L-382 Hercules	56	53	14	56	56
Mitsubishi MU-2B	5	6	7	14	15
Nihon AMC YS-11	92	85	85	81	78
Pilatus Britten-Norman BN-2T Turbo Islander	2	2	2	2	5
Pilatus PC-6 Turbo Porter	—	—	—	25	28
Pilatus PC-XII	—	—	—	—	2
Piper PA-31T/42 Cheyenne	19	19	17	16	18
Piper T-1040	13	11	10	12	13
PZL (Antonov) An-28	3	3	1	6	6
Rockwell Turbo Commander	12	11	9	9	9
Saab SF-340A/B	312	347	347	355	379
Saab 2000	—	—	5	22	34
Shorts SC-5 Belfast	5	4	2	2	2
Shorts SC-7 Skyliner/Skyvan	24	25	31	35	35
Shorts 330	55	56	62	50	52
Shorts 360	147	148	108	106	104
Swearingen Merlin	36	49	49	38	45
Swearingen Metro	357	377	396	423	398
Transall C-160	8	6	6	6	—
Xian (Antonov) Y-7	65	61	65	66	66
TOTAL AIRCRAFT IN SERVICE	16,100	17,284	18,347	20,041	21,127
Number Manufactured in U.S.	10,064	10,523	10,913	11,775	12,117
Percent Manufactured in U.S.	62.5%	60.9%	59.5%	58.8%	57.4%
Turbojet Aircraft in Service	10,504	11,345	12,000	12,810	13,425
Number Manufactured in U.S.	8,427	8,759	8,949	9,265	9,520
Percent Manufactured in U.S.	80.2%	77.2%	74.6%	72.3%	70.9%
Turboprop Aircraft in Service	5,420	5,697	6,052	6,457	6,851
Number Manufactured in U.S.	1,549	1,624	1,793	2,002	2,074
Percent Manufactured in U.S.	28.6%	28.5%	29.6%	31.0%	30.3%
Turbine-Powered Helicopters In Service	176	242	295	774	851
Number Manufactured in U.S.	88	140	171	508	523
Percent Manufactured in U.S.	50.0%	57.9%	58.0%	65.6%	61.5%

Source: Exxon International Company, "Air World Survey," compiled by Aviation Data Service, Inc. (Annually).
NOTE: The "Air World Survey" covers aircraft in airline service as of December 31. Excludes air taxi operators.
a Includes aircraft operated in the Commonwealth of Independent State countries. Formerly grouped under Aeroflot and excluded from the summary.
b RJ-70 combined with B.Ae. 146.

PERCENT OF CIVIL TURBOJET ENGINE MARKET BY MANUFACTURER AND AIRCRAFT MODEL

as of December 1996

Aircraft Manufacturer and Model	Total Installed Engines	Engine Manufacturers					
		P&W	GE	RR	CFM	IAE	Other
TOTAL ENGINES	38,153	15,493	4,512	3,592	4,804	514	9,238
PERCENT SHARE	100.0%	40.6%	11.8%	9.4%	12.6%	1.3%	24.2%
Airbus A300[a]	288	18%	82%	–%	–%	–%	–%
Airbus A300B4-200	274	11	89	–	–	–	–
Airbus A300B4-600R ...	304	51	49	–	–	–	–
Airbus A310[a]	158	35	65	–	–	–	–
Airbus A310-300	296	42	58	–	–	–	–
Airbus A319	34	–	–	–	100	–	–
Airbus A320[a]	36	–	–	–	100	–	–
Airbus A320-200	1,044	–	–	–	63	37	–
Airbus A321	108	–	–	–	52	48	–
Airbus A330	98	53	16	31	–	–	–
Airbus A340	340	–	–	–	100	–	–
Antonov AN-72	18	–	–	–	–	–	100
Antonov AN-74	14	–	–	–	–	–	100
Antonov AN-124	156	–	–	–	–	–	100
AS Corvette.....	8	100	–	–	–	–	–
AS Caravelle	42	67	–	33	–	–	–
AS/BAe Concorde	52	–	–	100	–	–	–
Avro Int'l RJ	308	–	–	–	–	–	100
BAe 1-11.....	252	–	–	100	–	–	–
BAe 146	812	–	–	–	–	–	100
BAe HS Trident	9	–	–	100	–	–	–
BAe HS 125	52	4	–	35	–	–	62
Beech 400 Beechjet	4	100	–	–	–	–	–
Boeing B-707[a]	124	97	–	3	–	–	–
Boeing B-707-320C	492	100	–	–	–	–	–
Boeing B-720	20	100	–	–	–	–	–
Boeing B-727 series[a]	1,245	91	–	9	–	–	–
Boeing B-727 Adv F	453	100	–	–	–	–	–
Boeing B-727-200[b]	369	100	–	–	–	–	–
Boeing B-727-200 ADV	2,172	100	–	–	–	–	–
Boeing B-737[a]	286	80	–	–	20	–	–
Boeing B-737-200	316	100	–	–	–	–	–
Boeing B-737-200 ADV	1,392	100	–	–	–	–	–
Boeing B-737-300	1,846	–	–	–	100	–	–
Boeing B-737-400	796	–	–	–	100	–	–
Boeing B-737-500	628	–	–	–	100	–	–
Boeing B-747[a]	1,528	44	46	10	–	–	–
Boeing B-747-100	548	95	–	5	–	–	–
Boeing B-747-200B	764	70	15	15	–	–	–
Boeing B-747-400	1,156	42	31	27	–	–	–
Boeing B-757[a]	182	40	–	60	–	–	–
Boeing B-757-200	1,258	44	–	56	–	–	–
Boeing B-767[a]	376	24	76	–	–	–	–
Boeing B-767-200ER	260	48	52	–	–	–	–
Boeing B-767-300ER	618	39	52	8	–	–	–
Boeing B-777	90	58	18	24	–	–	–
Canadair Regional Jet ...	258	–	100	–	–	–	–

(Continued on next page)

PERCENT OF CIVIL TURBOJET ENGINE MARKET BY MANUFACTURER AND AIRCRAFT MODEL (continued)

Aircraft Manufacturer and Model	Total Installed Engines	Engine Manufacturers					
		P&W	GE	RR	CFM	IAE	Other
Canadair CL 600/601	4	–%	50%	–%	–%	–%	50%
Cessna 500s	82	100	–	–	–	–	–
Cessna 650	18	–	–	–	–	–	100
Convair CV 880/990	8	–	100	–	–	–	–
Dassault Falcon	147	–	83	–	–	–	17
Dassault Mercure 100	8	100	–	–	–	–	–
Embraer EMB-145	4	–	–	–	–	–	100
Fokker F-28[a]	146	–	–	100	–	–	–
Fokker F-28-4000	210	–	–	100	–	–	–
Fokker 70	64	–	–	100	–	–	–
Fokker 100	544	–	–	100	–	–	–
Gulfstream II/III/IV	34	–	–	100	–	–	–
IAI 1124	24	–	–	–	–	–	100
Ilyushin IL-62[a]	280	–	–	–	–	–	100
Ilyushin IL-62M	616	–	–	–	–	–	100
Ilyushin IL-76[a]	592	–	–	–	–	–	100
Ilyushin IL-76MD	668	–	–	–	–	–	100
Ilyushin IL-76TD	476	–	–	–	–	–	100
Ilyushin IL-86	380	–	–	–	–	–	100
Ilyushin IL-96	36	–	–	–	–	–	100
Learjet 23/24/25	40	–	100	–	–	–	–
Learjet 35/36/55/60	90	2	–	–	–	–	98
Lockheed JetStar	24	50	–	–	–	–	50
Lockheed L-1011	594	–	–	100	–	–	–
MBB Hansa Jet	32	–	100	–	–	–	–
Douglas DC-8	1,040	66	–	–	34	–	–
Douglas DC-9[a]	568	100	–	–	–	–	–
Douglas DC-9-30	1,020	100	–	–	–	–	–
Douglas DC-10[a]	324	38	62	–	–	–	–
Douglas DC-10-10	309	–	100	–	–	–	–
Douglas DC-10-30	411	–	100	–	–	–	–
MDC MD-11 series[a]	126	26	74	–	–	–	–
MDC MD-11[b]	357	48	52	–	–	–	–
MDC MD-80s[a]	142	100	–	–	–	–	–
MDC MD-81	232	100	–	–	–	–	–
MDC MD-82	1,112	100	–	–	–	–	–
MDC MD-83	450	100	–	–	–	–	–
MDC MD-88	306	100	–	–	–	–	–
MDC MD-90	74	–	–	–	–	100	–
Tupolev TU-134[a]	318	–	–	–	–	–	100
Tupolev TU-134A	720	–	–	–	–	–	100
Tupolev TU-154[a]	738	–	–	–	–	–	100
Tupolev TU-154B2	930	–	–	–	–	–	100
Tupolev TU-154M	630	–	–	–	–	–	100
Tupolev TU-204	24	–	–	–	–	–	100
Yakolev YAK-40[b]	945	–	–	–	–	–	100
Yakolev YAK-42	372	–	–	–	–	–	100

Source: Aerospace Industries Association, based on data from Aviation Data Service.
a Data for major (100 or more aircraft) series excluded and reported separately.
b Series bearing same designation as model number, but qualifies for separate reporting as a major series.
KEY: AS = Aerospatiale; BAe = British Aerospace; CFM = CFM International; GE = General Electric; IAE = International Aero Engines; IAI = Israel Aircraft Industries; MBB = Messerschmitt Bolkow Blohm; MDC = McDonnell Douglas; P&W = Pratt & Whitney; RR = Rolls-Royce.

ACTIVE[a] U.S. AIR CARRIER FLEET

By Type of Aircraft, Number of Engines and Model
Active as of December 1992–1996

	1992	1993	1994	1995	1996
TOTAL	7,320	7,297	7,370	7,411	7,478
Turbojets—TOTAL	4,446	4,584	4,634[r]	4,832[r]	4,922
Four-Engine—TOTAL	389	410	420	435	440
Boeing 707	20	13	16	6	5
Boeing 747	178	183	186	189	195
B.Ae./AVRO 146	23	20	15	21	21
McDonnell Douglas DC-8	168	194	203	219	219
Three-Engine—TOTAL	1,381	1,292	1,236	1,210	1,212
Boeing 727	1,029	953	906	877	856
Lockheed L-1011	113	100	86	97	102
McDonnell Douglas DC-10/MD-11	239	239	244	236	254
Twin-Engine—TOTAL	2,676	2,882	2,978[r]	3,187[r]	3,270
Airbus A-300	58	58	63	53	62
Airbus A-310	21	27	17	23	27
Airbus A-320	54	75	86	104	113
Boeing 737	915	1,013	1,012	1,055	1,055
Boeing 757	328	375	395	440	457
Boeing 767	170	187	194	210	213
Boeing 777	—	—	—	7	15
Canadair CL-600	—	5	—	35	53
Cessna C500/C501	2	3	—	—	—
Cessna C650	1	—	—	—	—
Fokker F-28	117	129	148	155	155
Grumman G-1159	1	—	—	—	—
Israel Aircraft 1121	1	—	—	—	—
Learjet LR-25	3	—	—	—	2
Learjet LR-35	3	1	2	3	4
McDonnell Douglas DC-9/ MD-80/MD-90	1,002	1,009	1,061	1,102	1,114
Turboprops—TOTAL	1,894	1,868	1,782	1,715	1,700
Four-Engine—TOTAL	107	102	87	81	56
Canadair CL44D	5	1	1	1	—
De Havilland DHC-7	40	38	27	16	12
Lockheed 188 Electra	44	45	41	43	23
Lockheed 382	18	18	18	21	21
Twin-Engine—TOTAL	1,787	1,751	1,695	1,634	1,639
Beech BE65	16	—	—	—	—
Beech BE90	1	3	1	1	3
Beech BE95	—	—	1	—	—
Beech BE99	39	29	41	36	27
Beech BE100	4	1	1	1	2

(Continued on next page)

ACTIVE[a] U.S. AIR CARRIER FLEET (Continued)

By Type of Aircraft, Number of Engines, and Model
Active as of December 1992–1996

	1992	1993	1994	1995	1996
Twin-Engine (continued)					
Beech BE200	11	9	7	4	11
Beech BE1900	231	251	281	289	254
B.Ae. ATP	10	9	9	10	10
B.Ae. Jetstream	240	247	237	174	223
CASA C212 Aviocar	—	1	1	1	—
Cessna C425	1	2	—	—	—
Cessna C441	2	—	2	2	2
Convair 580/600/640	19	16	29	34	23
DeHavilland DHC-6	74	67	53	44	38
DeHavilland DHC-8	115	120	142	137	151
Dornier DO228	13	13	7	—	—
Dornier DO328	—	—	—	33	39
Embraer EMB110	16	14	15	14	3
Embraer EMB120	195	217	223	217	235
Fairchild/Fokker F-27/FH-227	53	50	37	35	36
Grumman G-73	5	—	5	5	5
Grumman G-159	1	—	—	—	—
McKinnon G-21	—	2	2	2	4
Mitsubishi MU-2	10	—	—	—	3
Nihon YS-11	31	25	25	11	11
Nord ND-262/STC-262	1	—	—	—	—
Piper PA31T	99	79	1	5	9
Piper 42	1	—	1	1	2
Saab-Fairchild SF340	195	209	202	219	226
Shorts SC-7	6	6	5	3	3
Shorts SD-3	88	74	63	38	39
SNAIS ATR-42	108	108	111	110	99
SNAIS ATR-72	14	27	44	51	51
Swearingen SA-226	14	14	11	13	9
Swearingen SA-227	174	158	138	144	121
Single-Engine—TOTAL	NA	15	—	—	5
Piston-Engine—TOTAL	847	721	826[r]	746[r]	735
Four-Engine—TOTAL	20	22	19	15	18
Douglas DC-6	19	21	18	15	18
Douglas DC-7	1	1	1	—	—
Three-Engine—TOTAL	5	—	5	1	7
Pilatus Britten-Norman BN2A-MK-3 Turbo Islander	5	—	5	1	7
Twin-Engine—TOTAL	415	293	337[r]	331[r]	313
Single-Engine—TOTAL	407	406	465	399	397
Helicopters—TOTAL	133	124	128	118	121

Source: Federal Aviation Administration, "FAA Statistical Handbook of Aviation" (Annually).
NOTE: Effective 1978, includes certificated route air carriers, supplemental air carriers (charters), multi-engine aircraft in passenger service of commuters, and all aircraft over 12,500 pounds operated by air taxis, commercial operators, and travel clubs.
a "Active aircraft" equals the average number of aircraft reported in operation during the last quarter of the year.
NA Not Available.
r Revised.

JET FUEL COSTS AND CONSUMPTION BY U.S. AIR CARRIERS[a]

Calendar Years 1977–1996

Year	Gallons Consumed (Millions)	Total Cost (Millions)	Cost Per Gallon (Cents)	Cost Index (1982 = 100)	Cost of Fuel as Percent of Cash Operating Expenses
1977	10,282.0	$ 3,729.8	36.3 ¢	37.0	20.1 %
1978	10,627.1	4,178.2	39.3	40.1	19.7
1979	11,278.1	6,503.0	57.7	58.8	24.4
1980	10,874.0	9,769.5	89.8	91.6	29.7
1981	10,087.8	10,498.0	104.1	106.1	29.3
1982	9,942.1	9,755.2	98.1	100.0	27.4
1983	10,214.4	9,073.1	88.8	90.5	24.5
1984	11,050.4	9,361.7	84.7	86.3	23.8
1985	11,675.1	9,326.7	79.9	81.4	22.2
1986	12,643.0	6,995.8	55.3	56.4	16.3
1987	13,629.5	7,593.8	55.7	56.8	16.0
1988	14,204.8	7,557.2	53.2	54.2	14.4
1989	14,103.9	8,472.7	60.1	61.2	14.9
1990	14,841.1	11,465.2	77.3	78.7	17.6
1991	13,798.4	9,329.5	67.6	68.9	14.8
1992	14,172.0	8,907.9	62.9	64.1	13.5
1993	14,165.0	8,452.9	59.7	60.8	12.7
1994	14,153.5[r]	7,722.6[r]	54.6	55.6	11.7
1995[r]	13,999.1	7,770.4	55.5	56.6	11.6
1996	14,525.3	9,422.8	64.9	66.1	13.4

Source: Air Transport Association of America, "Airline Cost Index" (Quarterly).
a Majors and Nationals excluding Air Florida, Capitol, Transamerica, and World.
r Revised.

U.S. CIVIL AND JOINT-USE AIRCRAFT FACILITIES[a] BY TYPE AND STATE

As of December 31, 1996

State	TOTAL[a]	Public[b]	Paved	Lighted	State	TOTAL[a]	Public[b]	Paved	Lighted
Alabama	240	101	154	99	Nevada	119	56	59	34
Alaska	546	406	65	159	New Hampshire	94	27	50	19
Arizona	276	76	158	72	New Jersey	348	53	153	49
Arkansas	265	100	174	97	New Mexico	164	64	79	49
California	933	267	681	250	New York	535	168	216	134
Colorado	391	79	178	84	North Carolina	358	115	157	118
Connecticut	136	25	87	27	North Dakota	434	94	88	97
Delaware	35	10	13	12	Ohio	739	183	289	184
Dist. of Col.	17	2	16	4	Oklahoma	410	153	213	132
Florida	769	131	333	150	Oregon	411	101	164	75
Georgia	401	110	191	114	Pennsylvania	755	146	314	134
Hawaii	46	13	38	14	Rhode Island	26	8	19	7
Idaho	227	122	80	47	South Carolina	167	68	79	67
Illinois	896	127	286	160	South Dakota	156	74	67	74
Indiana	603	114	175	118	Tennessee	258	84	149	84
Iowa	305	125	174	136	Texas	1,684	384	831	422
Kansas	384	148	137	130	Utah	125	47	84	45
Kentucky	179	66	110	59	Vermont	73	16	17	11
Louisiana	426	88	249	78	Virginia	365	69	158	85
Maine	150	64	51	33	Washington	437	133	218	136
Maryland	200	36	78	47	West Virginia	104	40	64	32
Massachusetts	226	50	123	42	Wisconsin	485	135	177	138
Michigan	471	233	196	187	Wyoming	104	41	53	37
Minnesota	475	157	146	140	**50 States—Total**	18,216	5,349	8,169	4,824
Mississippi	221	83	124	81	Puerto Rico	32	11	28	10
Missouri	507	142	231	141	Virgin Islands	9	2	3	2
Montana	243	123	106	88	S. Pacific[c]	35	27	18	11
Nebraska	297	93	115	92	**TOTAL**	18,292	5,389	8,218	4,847

FACILITIES BY CLASS

Class	Total[a]	Public[b]	Private
Airports	13,175	5,104	8,071
Heliports	4,596	85	4,511
Stolports	84	5	79
Seaplane Bases	437	195	242
Total Facilities	18,292	5,389	12,903

Source: Federal Aviation Administration, "FAA Statistical Handbook of Aviation" (Annually).

a Included in these data are facilities having joint civil-military use.

b "Public" refers to use, whether publicly or privately owned.

c American Samoa, Guam, and Trust Territories.

HELIPORTS/HELIPADS[a] IN THE UNITED STATES BY STATE

As of 1996

State	Total Helipads in State	Private Use		Public Use	
		Heliports & Helistops	Helipads at Airports	Heliports & Helistops	Helipads at Airports
Alabama	71	70	—	—	1
Alaska	26	16	1	6	3
Arizona	96	91	1	—	4
Arkansas	77	74	1	—	2
California	401	381	3	—	17
Colorado	157	154	—	—	3
Connecticut	79	73	1	2	3
Delaware	12	10	—	1	1
District of Columbia	19	19	—	—	—
Florida	250	247	1	1	1
Georgia	101	100	—	—	1
Hawaii	18	16	—	—	2
Idaho	34	32	1	—	1
Illinois	237	224	3	10	—
Indiana	111	105	3	2	1
Iowa	80	79	—	—	1
Kansas	33	29	—	—	4
Kentucky	48	48	—	—	—
Louisiana	217	210	2	4	1
Maine	16	15	—	—	1
Maryland	56	53	1	1	1
Massachusetts	132	127	—	2	3
Michigan	80	77	1	2	—
Minnesota	43	38	1	—	4
Mississippi	45	45	—	—	—
Missouri	116	111	1	3	1
Montana	22	19	—	3	—
Nebraska	30	28	1	—	1
Nevada	25	24	—	—	1
New Hampshire	42	41	—	—	1

(Continued on next page)

HELIPORTS/HELIPADS[a] IN THE UNITED STATES BY STATE (Continued)

As of 1996

State	Total Helipads in State	Private Use		Public Use	
		Heliports & Helistops	Helipads at Airports	Heliports & Helistops	Helipads at Airports
New Jersey	231	226	—	3	2
New Mexico	22	20	1	1	—
New York	145	131	—	8	6
North Carolina	62	59	—	3	—
North Dakota	14	13	—	—	1
Ohio	204	185	1	15	3
Oklahoma	88	84	—	4	—
Oregon	90	86	2	2	—
Pennsylvania	283	272	1	7	3
Rhode Island	16	15	—	1	—
South Carolina	26	24	—	—	2
South Dakota	13	13	—	—	—
Tennessee	85	81	2	1	1
Texas	412	397	3	5	7
Utah	39	37	—	—	2
Vermont	17	17	—	—	—
Virginia	115	112	—	—	3
Washington	109	103	3	1	2
West Virginia	31	28	—	—	3
Wisconsin	69	68	—	—	1
Wyoming	18	17	—	—	1
Total U.S.	4,763	4,544	35	88	96

Source: Helicopter Association International, "1997 Helicopter Annual" (Annually).
NOTE: 96.1 percent of all U.S. helicopter landing areas are private, while 3.9 percent are public.
a Excludes temporary heliports, offshore heliports, and infrequently used helicopter landing sites.

ACTIVE U.S. CIVIL AIRCRAFT[a]

As of December 31, 1963–1995
(in thousands)

Year	TOTAL	Air Carrier[b]	General Aviation Aircraft					
			TOTAL	Fixed-Wing Aircraft			Rotor-craft[c]	Other[d]
				Multi-Engine	Single-Engine			
					4-place & over	3-place & less		
1963	87.2	2.079	85.1	9.7	42.6	31.0	1.2	0.6
1964	90.8	2.057	88.7	10.6	45.8	30.4	1.3	0.6
1965	97.6	2.125	95.4	12.0	49.8	31.4	1.5	0.8
1966	107.0	2.272	104.7	13.5	53.0	35.7	1.6	0.9
1967	116.6	2.452	114.2	14.7	56.9	39.7	1.9	1.1
1968	126.8	2.586	124.2	16.8	61.0	42.8	2.4	1.3
1969	133.5	2.690	130.8	18.1	63.7	45.0	2.6	1.4
1970	134.4	2.679	131.7	18.3	64.8	44.9	2.3	1.6
1971	133.8	2.642	131.1	17.9	64.5	44.8	2.4	1.7
1972	147.6	2.583	145.0	19.8	71.0	49.4	2.8	1.9
1973	156.1	2.599	153.5	21.9	74.8	51.4	3.1	2.3
1974	164.0	2.472	161.5	23.4	78.9	53.0	3.6	2.5
1975	171.0	2.495	168.5	24.6	82.6	54.4	4.1	2.8
1976	180.8	2.492	178.3	25.7	88.2	56.7	4.5	3.2
1977	186.8	2.473	184.3	26.7	92.0	57.3	4.7	3.6
1978	201.3	2.545	198.8	28.8	101.5	59.2	5.3	4.0
1979	213.9	3.609	210.3	31.3	106.0	62.4	5.9	4.8
1980	214.9	3.808	211.0	31.7	107.9	60.5	6.0	4.9
1981	217.2	3.973	213.2	33.3	108.0	59.9	7.0	5.0
1982	213.9	4.027	209.8	34.2	106.5	57.7	6.2	6.2
1983	217.5	4.203	213.3	34.6	107.1	59.1	6.5	5.9
1984	225.3	4.370	220.9	35.6	109.9	62.0	7.1	6.3
1985	201.2	4.678	196.5	31.3	98.5	54.9	6.0	5.8
1986	210.2	4.909	205.3	32.0	102.0	58.3	6.5	6.5
1987	208.0	5.253	202.7	30.8	100.4	59.3	5.9	6.3
1988	201.9	5.660	196.2	30.1	98.1	55.6	6.0	6.4
1989	210.8	5.778	205.0	31.9	100.5	58.4	7.0	7.2
1990	204.1	6.083	198.0	30.5	97.6	56.4	6.9	6.6
1991	204.6	6.054	198.5	30.5	98.5	55.7	6.3	7.6
1992	191.7	7.320	184.4	27.3	91.0	52.5	5.8	7.8
1993	183.3	7.297	176.0	23.9	89.4	41.3	4.5	16.2
1994	178.0	7.370[r]	170.6	23.3	84.3	39.0	4.4	19.0
1995	188.7	7.411	181.3	25.0	88.6	41.0	5.1	21.7

Source: Federal Aviation Administration, "FAA Statistical Handbook of Aviation" (Annually).

a "Active aircraft" must have a current U.S. registration and have flown during the calendar year. Prior to 1971, only a current U.S. registration was necessary.

b Effective 1978, includes certificated route air carriers, supplemental air carriers (charters), multi-engine aircraft in commuter passenger service, and all aircraft over 12,500 pounds operated by air taxis, commercial operators, and travel clubs.

c Includes autogiros; excludes air carrier helicopters.

d Includes gliders, dirigibles, balloons, and experimental aircraft.

r Revised.

ACTIVE U.S. CIVIL AIRCRAFT BY PRIMARY USE AND TYPE OF AIRCRAFT

As of December 31, 1995

Primary Use[a]	TOTAL	Fixed-Wing			Rotor-craft[b]	Other[c]
		Turbojet	Turboprop	Piston		
TOTAL—ALL AIRCRAFT ...	188,752	9,411	6,245	146,198	5,235	21,661
Air Carrier—TOTAL	7,411	4,834	1,715	744	118	—
Large	5,614	4,829	739	46	—	—
Small	1,797	5	976	698	118	—
General Aviation—TOTAL	181,341	4,577	4,530	145,454	5,117	21,661
Executive.....	9,944	3,444	2,345	3,011	893	250
Business	25,996	230	560	24,269	255	679
Air Taxi[d]	3,996	326	706	2,474	384	104
Instructional	14,389	13	27	13,063	528	756
Personal	108,492	119	266	90,401	602	17,101
Aerial Application	4,924	—	297	3,979	603	43
Aerial Observation.....	4,536	2	26	3,185	1,096	225
Sight Seeing	1,267	3	3	499	168	589
External Load	186	—	—	—	186	—
Other Work	1,174	—	59	820	38	255
Other	6,430	436	238	3,748	359	1,647

Source: Federal Aviation Administration, "FAA Statistical Handbook of Aviation" (Annually) and General Aviation Manufacturers Association, "General Aviation Statistical Databook" (Annually).

NOTE: Detail may not add to totals because of estimating procedures.

a Definitions of "primary use" categories available in Glossary of "FAA Statistical Handbook."

b Includes helicopters and autogiros.

c Includes gliders, dirigibles, and balloons.

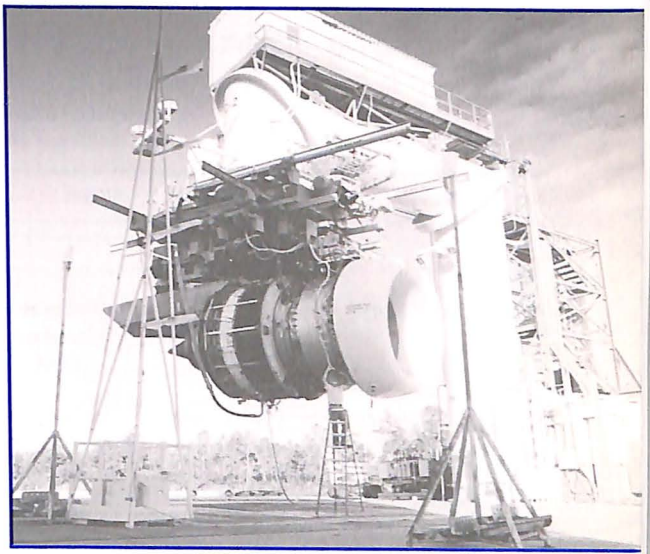
d Limited to Air taxis under 12,500 pounds. Otherwise, aircraft included in "Air Carrier."

U.S. GENERAL AVIATION
TYPE OF AIRCRAFT AND HOURS FLOWN
Calendar Years 1991–1995

	1991	1992	1993[a]	1994	1995
Number of Active Aircraft by Type (in thousands)					
All Aircraft—TOTAL	198.5	184.4	176.0	170.6	181.3
Fixed-Wing:	184.6	170.8	155.3	147.2	154.6
Piston:	175.3	162.1	147.1	138.9	145.5
Single-Engine	154.1	143.6	130.7	123.3	128.8
Twin-Engine	21.1	18.5	16.4	15.5	16.6
Other	0.1	0.1	0.0	0.1	0.1
Turboprop:	4.9	4.7	4.4	4.2	4.5
Twin-Engine	4.4	4.1	3.6	3.6	3.8
Other	0.5	0.6	0.7	0.6	0.8
Turbojet:	4.4	4.0	3.9	4.1	4.6
Twin-Engine	4.1	3.8	3.7	3.9	4.3
Other	0.3	0.2	0.2	0.2	0.3
Rotorcraft:	6.3	5.8	4.5	4.4	5.1
Piston	2.5	2.2	1.6	1.4	1.5
Turbine	3.8	3.5	2.9	3.0	3.6
Balloons, Dirigibles, and Gliders	6.7	7.8	5.2	6.2	5.3
Experimental	NA	NA	10.9	12.9	16.4
Hours Flown by Type of Aircraft (in thousands)					
All Aircraft—TOTAL	30,067	26,493	24,340	23,866	25,447
Fixed-Wing: Piston	24,102	21,251	19,029	18,370	18,886
Turboprop	1,513	1,478	1,227	1,106	1,356
Turbojet	1,236	1,072	1,165	1,241	1,392
Rotorcraft: Piston	585	416	370	340	341
Turbine	2,172	1,866	1,462	1,666	1,992
Balloons, Dirigibles, and Gliders	459	410	376	424	319
Experimental	NA	NA	711	718	1,162
Average Hours Flown Annually by Type					
All Aircraft—TOTAL	149.1	140.4	134.4	135.8	135.3
Fixed-Wing: Piston	137.5	130.4	129.3	132.1	130.1
Turboprop	307.7	314.1	227.5	263.6	286.7
Turbojet	289.7	270.7	298.4	309.4	316.4
Rotorcraft: Piston	233.7	184.6	218.8	252.7	233.7
Turbine	592.2	491.3	506.0	571.4	528.1
Balloons, Dirigibles, and Gliders	61.4	50.9	71.7	68.7	60.0
Experimental	NA	NA	65.0	53.4	67.1

Source: Federal Aviation Administration, "FAA Statistical Handbook of Aviation" (Annually) and the Federal Aviation Administration, Office of Management Systems.
NOTE: Detail may not add to totals because of rounding and/or estimating procedures.
a Beginning in 1993, commuters were excluded from the survey.
NA Not available.

For 1997 NSF estimated that total R&D funding would amount to $206 billion and that industry would once again be the principal funding source (65%) and principal performer (75%).



In calendar year 1995 (the latest year for which NSF data was available by industry), aerospace R&D funding amounted to $17 billion; that represented an increase of 19% above the previous year's level. A breakdown shows that $11.5 billion (68%) was funded by federal agencies, and $5.5 billion was invested by aerospace companies. The $17 billion total represented 13% of the R&D funding for all U.S. industries in 1995.

The NSF survey reiterated the fact that the aerospace industry usually records a significantly higher level of R&D funding (as a percentage of net sales) than the average for all U.S. manufacturing industries. In 1995 aerospace R&D (federal and company funds) amounted to 12.9% of net sales, down from 13.8% in 1994; that compares with the all-manufacturing industry average of 3.6% in 1995. Company funding, as a percentage of net sales, was 4.2%; the all-manufacturing industry average was 2.9%.

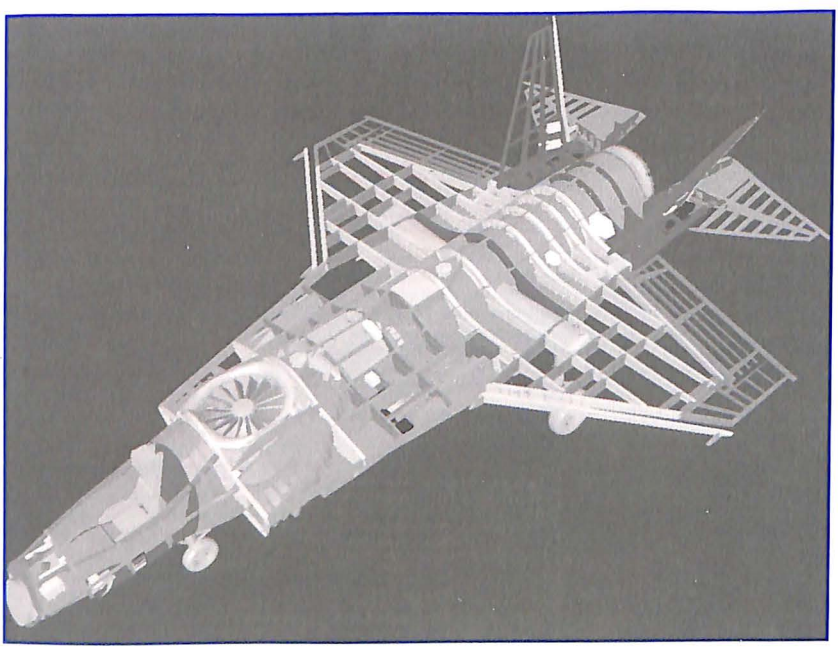
In FY 1996 DoD prime contract awards for RDT&E totaled $20.3 billion, down for the third consecutive year and some $1.3 billion lower than in FY 1995. A breakdown shows that the largest dollar outlays went for aircraft RDT&E, $5.4 billion (down from $5.8 billion). In other areas awards for missile/space RDT&E amounted to $5 billion (down from $5.3 billion); electronics and communications equipment, $2.9 billion (down from $3.5 billion); and all other areas combined, $7 billion (the same as in the previous year).

In a geographical breakdown of FY 1996 DoD awards for RDT&E to business firms, the South Atlantic region headed the list for the third straight year with contracts totaling $4.8 billion. In second place was the Pacific region ($3.7 billion), followed by the New England ($1.7 billion) and Mountain ($1.7 billion) regions.

After remaining at $68 billion for four consecutive years, federal outlays for R&D took a slight upturn in FY 1997, according to data supplied by the Office of Management and Budget (OMB). The increase, however, was minuscule; in inflation-adjusted constant dollars it came to less than one percent. In current dollars outlays rose to $70 billion, and the figure was technically a record.

OMB estimated FY 1998 outlays at approximately the same level ($70 billion), a 2.8% decrease in constant dollar terms. The federal R&D plan allocated half of the total ($35 billion) to DoD. NASA spending was estimated at $9 billion, and the Department of Energy at $5.9 billion. The estimate for the "other" category (the National Science Foundation, National Institutes of Health, and the Departments of Transportation and Agriculture) was $20.3 billion.

In calendar year 1996 total U.S. funding for R&D amounted to $193 billion, up from $183 billion in the previous year, according to the National Science Foundation (NSF) annual survey. Almost 63% of the total was funded by U.S. industry ($121 billion). Federal funding ($63 billion) constituted 33%; colleges and universities ($6.0 billion), 3.1%; and nonprofit institutions ($3.3 billion), less than two percent. The great bulk of U.S. R&D was performed by industry (more than 73%).



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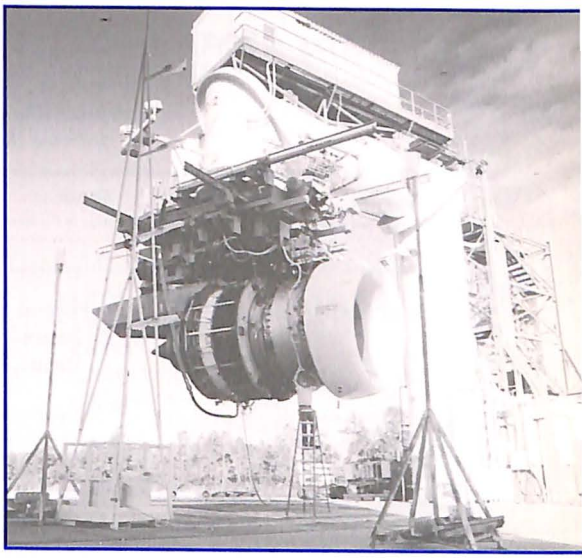

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TOTAL U.S. FUNDS FOR RESEARCH AND DEVELOPMENT BY SOURCE AND PERFORMER[a]

Calendar Years 1994–1997
(Millions of Dollars)

Source of Funds	TOTAL, All Performers	Performer				
		Federal Government	Industry	Colleges & Universities	Federally-Funded Research & Development Centers	Non-Profit Institutions
1994[r]						
All Sources—TOTAL	$168,554	$16,440	$119,594	$21,305	$5,305	$5,911
Federal Government	60,692	16,440	22,463	12,826	5,305	3,658
Industry	99,332	—	97,131	1,437	—	764
Colleges & Universities	5,455	—	—	5,455	—	—
Nonprofit Institutions	3,074	—	—	1,585	—	1,489
1995						
All Sources—TOTAL	$183,013	$17,231	$132,103	$22,303	$5,405	$5,971
Federal Government	63,147	17,231	23,451	13,434	5,405	3,626
Industry	110,998	—	108,652	1,516	—	830
Colleges & Universities	5,739	—	—	5,739	—	—
Nonprofit Institutions	3,129	—	—	1,613	—	1,516
1996[p]						
All Sources—TOTAL	$193,206	$16,774	$141,852	$23,134	$5,405	$6,042
Federal Government	62,811	16,774	23,204	13,855	5,405	3,573
Industry	121,156	—	118,648	1,613	—	895
Colleges & Universities	5,991	—	—	5,991	—	—
Nonprofit Institutions	3,251	—	—	1,676	—	1,575
1997[E]						
All Sources—TOTAL	$205,742	$16,450	$153,691	$24,031	$5,405	$6,164
Federal Government	62,744	16,450	23,060	14,285	5,405	3,544
Industry	133,308	—	130,631	1,710	—	967
Colleges & Universities	6,278	—	—	6,278	—	—
Nonprofit Institutions	3,412	—	—	1,759	—	1,653

Source: National Science Foundation, "Annual Survey of Industrial Research and Development" (Annually).
a Source/performer detail not available by industry.
E Estimate.
p Preliminary.
r Revised.

FEDERAL OUTLAYS FOR CONDUCT OF RESEARCH AND DEVELOPMENT

Fiscal Years 1984–1998
(Millions of Dollars)

Year	TOTAL	DoD	NASA	Energy[a]	Other[b]
CURRENT DOLLARS					
1984	$40,986	$23,850	$3,538	$5,182	$ 8,416
1985	47,216	28,165	2,969	6,954	9,128
1986	52,141	33,396	3,431	5,392	9,922
1987	53,256	34,732	3,250	5,262	10,012
1988	56,100	35,605	3,832	5,332	11,331
1989	60,760	37,819	4,975	5,681	12,285
1990	63,810	38,247	6,325	5,957	13,281
1991	62,183	35,330	7,072	5,892	13,889
1992	64,728	35,504	7,617	6,043	15,564
1993	68,378	37,666	8,088	6,036	16,588
1994	68,453	35,474	7,878	5,904	19,197
1995	68,432	35,356	8,992	6,195	17,889
1996	68,422	36,936	8,083	6,135	17,268
1997[E]	70,285	36,485	8,785	5,713	19,302
1998[E]	70,206	35,067	8,961	5,884	20,294
CONSTANT DOLLARS[c]					
1984	$54,000	$31,423	$4,661	$6,827	$11,088
1985	60,071	35,833	3,777	8,847	11,613
1986	64,691	41,434	4,257	6,690	12,310
1987	64,087	41,795	3,911	6,332	12,048
1988	65,157	41,353	4,451	6,193	13,160
1989	67,737	42,162	5,546	6,333	13,696
1990	68,173	40,862	6,757	6,364	14,189
1991	63,909	36,310	7,268	6,055	14,274
1992	64,728	35,504	7,617	6,043	15,564
1993	66,645	36,712	7,883	5,883	16,168
1994	65,193	33,785	7,503	5,623	18,283
1995	63,599	32,859	8,357	5,757	16,625
1996	62,202	33,578	7,348	5,577	15,698
1997[E]	62,254	32,316	7,781	5,060	17,097
1998[E]	60,522	30,230	7,725	5,072	17,495

Source: Office of Management and Budget, "The Budget of the United States Government" (Annually).
NOTE: Detail may not add to totals because of rounding.
a Includes defense and nondefense-related atomic energy R&D with nondefense energy R&D.
b Includes but not limited to NSF, NIH, DoT, & Agriculture.
c Based on Fiscal Year GDP deflator, (1992=100).
E Estimate. Latest year reflects Administration's budget proposal.

FUNDS FOR INDUSTRIAL RESEARCH AND DEVELOPMENT ALL INDUSTRIES AND THE AEROSPACE INDUSTRY

By Funding Source
Calendar Years 1981–1995
(Millions of Dollars)

Year	All Industries[a]			Aerospace Industry[b]		
	Total	Federal Funds	Company Funds[c]	Total	Federal Funds	Company Funds[c]
CURRENT DOLLARS						
1981	$ 51,810	$16,382	$ 35,428	$11,968	$ 8,528	$3,440
1982	58,650	18,545	40,105	14,451	10,265	4,186
1983	65,268	20,680	44,588	15,406	11,396	4,010
1984	74,800	23,396	51,404	18,858	14,094	4,764
1985	84,239	27,196	57,043	22,231	16,582	5,649
1986	87,823	27,891	59,932	21,050	14,984	6,066
1987	92,155	30,752	61,403	24,458	18,519	5,939
1988	97,015	30,343	66,672	24,168	18,402	5,766
1989	102,055	28,554	73,501	22,331	16,828	5,503
1990	109,727	28,125	81,602	20,635	15,248	5,387
1991	116,952	26,372	90,580	16,629	11,096	5,533
1992	119,110	24,722	94,388	17,158	10,287	6,871
1993	117,400	22,809	94,591	15,056	9,372	5,684
1994	119,595	22,463	97,131	14,260	8,794	5,466
1995	132,103	23,451	108,652	16,951	11,462	5,489
CONSTANT DOLLARS[d]						
1981	$ 78,381	$24,784	$ 53,598	$18,106	$12,902	$5,204
1982	83,547	26,417	57,130	20,585	14,623	5,963
1983	89,164	28,251	60,913	21,046	15,568	5,478
1984	98,551	30,825	67,726	24,846	18,569	6,277
1985	107,174	34,601	72,574	28,284	21,097	7,187
1986	108,962	34,604	74,357	26,117	18,591	7,526
1987	110,897	37,006	73,890	29,432	22,285	7,147
1988	112,677	35,242	77,436	28,070	21,373	6,697
1989	113,774	31,833	81,941	24,895	18,760	6,135
1990	117,230	30,048	87,182	22,046	16,291	5,755
1991	120,197	27,104	93,094	17,090	11,404	5,687
1992	119,110	24,722	94,388	17,158	10,287	6,871
1993	114,425	22,231	92,194	14,674	9,135	5,540
1994	113,900	21,393	92,506	13,581	8,375	5,206
1995	122,772	21,795	100,978	15,754	10,652	5,101

Source: National Science Foundation, "Annual Survey of Industrial Research and Development" (Annually).
NOTE: Detail may not add to totals because of rounding.

a Includes all manufacturing industries, plus those non-manufacturing industries known to conduct or finance research and development.

b Companies classified in SIC codes 372 and 376, having as their principal activity the manufacture of aircraft, guided missiles, space vehicles, and parts.

c Company funds include all funds for industrial R&D work performed within company facilities except funds provided by the Federal Government. Excluded are company-financed research and development contracted to outside organizations such as research institutions, universities and colleges, or other non-profit organizations.

d Based on GDP deflator, 1992=100.

RESEARCH AND DEVELOPMENT FUNDS AS PERCENT OF NET SALES ALL MANUFACTURING INDUSTRIES AND THE AEROSPACE INDUSTRY

Calendar Years 1978–1995

Year	All Manufacturing Industries[a]		Aerospace Industry[b]	
	Total Funds	Company Funds	Total Funds	Company Funds
1978	2.9%	2.0%	13.3%	3.2%
1979	2.6	1.9	12.9	3.5
1980	3.0	2.1	13.7	3.8
1981	3.1	2.2	16.0	4.6
1982	3.8	2.6	17.1	5.1
1983	3.9	2.6	15.2	4.1
1984	3.9	2.6	15.4	4.0
1985	4.4	3.0	14.9	3.9
1986	4.7	3.2	13.4	4.0
1987	4.6	3.1	14.7	3.6
1988	4.5	3.1	16.3	3.9
1989	4.3	3.1	13.5	3.3
1990	4.2	3.1	11.8	3.1
1991	4.2	3.2	12.1	4.0
1992	4.2	3.3	11.8	4.7
1993	3.8	3.1	12.5	4.7
1994	3.6	2.9	13.8	5.3
1995	3.6	2.9	12.9	4.2

Source: National Science Foundation, "Annual Survey of Industrial Research and Development" (Annually).

a Includes all manufacturing industries known to conduct or finance research and development.

b Companies classified in SIC codes 372 and 376, having as their principal activity the manufacture of aircraft, guided missiles, space vehicles, and parts.

FUNDS FOR INDUSTRIAL RESEARCH AND DEVELOPMENT IN THE AEROSPACE INDUSTRY

By Type of Research and Funding Source
Calendar Years 1964–1995
(Millions of Dollars)

Year	TOTAL AERO-SPACE	Basic Research			Applied Research			Development		
		Total	Federal Funds	Com-pany Funds	Total	Federal Funds	Com-pany Funds	Total	Federal Funds	Com-pany Funds
1964	$ 5,078	$ 67	$ 34	$ 28	$ 766	$ 607	$ 159	$ 4,244	$ 3,948	$ 296
1965	5,148	71	41	30	735	563	172	4,342	3,921	421
1966	5,526	69	36	33	773	563	210	4,685	4,162	523
1967	5,669	71	33	38	726	490	236	4,871	4,071	800
1968	5,765	68	26	42	677	426	251	5,021	4,145	876
1969	5,882	65	24	41	597	347	250	5,220	4,216	1,004
1970	5,219	63	20	43	565	352	213	4,591	3,718	873
1971	4,881	54	37	17	461	279	182	4,365	3,583	782
1972	4,950	60	44	16	451	267	184	4,438	3,722	716
1973	5,052	50	21	29	512	308	204	4,491	3,633	858
1974	5,278	51	19	32	609	360	249	4,617	3,735	882
1975	5,713	54	17	37	614	381	233	5,044	4,119	925
1976	6,339	54	21	33	666	365	301	5,619	4,521	1,098
1977	7,033	56	25	31	753	419	334	6,223	5,017	1,206
1979[a]	8,041	86	44	42	880	499	381	7,076	5,314	1,762
1981[a]	11,968	131	60	71	1,484	897	587	10,353	7,738	2,615
1983	13,853	146	NA	NA	3,466	NA	NA	10,241	7,668	2,573
1984	16,033	247	NA	NA	3,067	NA	NA	12,718	9,870	2,848
1985	17,619	304	162	142	3,785	2,776	1,009	13,530	10,483	3,047
1986	21,050	311	208	103	3,198	1,571	1,627	17,541	13,205	4,336
1987	24,488	425	335	90	2,949	1,709	1,239	21,115	16,475	4,640
1988	25,900	366	263	104	2,997	1,915	1,082	22,537	17,700	4,838
1989	25,638	668	553	116	3,081	2,113	968	21,889	16,967	4,921
1990	25,356	658	519	139	3,340	1,931	1,409	21,358	16,766	4,592
1991	16,983	364	302	62	2,091	1,105	986	14,528	10,043[b]	4,485
1992	17,158	270	235	35	1,739	976	763	15,148	9,076	6,072
1993	15,056	NA	NA	NA	1,453	825	628	NA	NA	NA
1994	14,260	NA	NA	NA	NA	NA	NA	12,787	7,978	4,809
1995	16,951	252	250	2	1,987	564	1,423	14,712	10,648	4,064

Source: National Science Foundation, "Annual Survey of Industrial Research and Development" (Annually).
NOTE: Detail may not add to totals because of rounding.
a Break-outs by Research Type and Funding Source available only for odd-numbered years between 1977 and 1983.
b Computed by AIA as difference between total and company funds. Figure withheld by NSF because of imputation of more than 50 percent.
NA Not available.

EMPLOYMENT AND COST OF R&D SCIENTISTS AND ENGINEERS ALL INDUSTRIES AND AEROSPACE INDUSTRY

Calendar Years 1979–1996

Year	Employment[a]			Cost Per R&D Scientist and Engineer[d]	
	All Industries[b] (Thousands)	Aerospace[c] (Thousands)	Aerospace as a Percent of All Industries	All Industries[b]	Aerospace[c]
1979	423.9	86.5	20.4%	$ 87,400	$ 93,300
1980	450.6	85.9	19.1	94,900	101,600
1981	487.8	95.2	19.5	103,900	128,400
1982	509.8	91.1	17.9	111,600	148,800
1983	540.9	103.1	19.1	116,000	143,600
1984	584.1	111.5	19.1	124,000	156,000
1985	622.5	130.2	20.9	130,200	161,700
1986	671.0	144.8	21.6	128,500	149,800
1987	695.8	136.3	19.6	128,800	180,400
1988	708.6	136.4	19.2	132,300	193,300
1989	722.5	134.8	18.7	134,500	207,300
1990	743.6	115.3	15.5	141,300	213,700
1991	773.4	100.2	13.0	148,600	177,000
1992	779.3	92.9	11.9	157,912	180,552
1993	764.7	97.9	12.8	153,336	176,450
1994	768.5	72.8	9.5	157,601	217,219
1995[r]	746.1	63.5	8.5	167,339	213,328
1996	832.8	95.5	11.5	NA	NA

Source: National Science Foundation.

a Employment as of January. Scientists and engineers working less than full time have been included in terms of their full time equivalent number.

b All manufacturing industries and those non-manufacturing industries known to conduct or finance research and development.

c Standard Industrial Classification codes 372 and 376.

d The arithmetic mean of the numbers of R&D scientists and engineers reported for January in two consecutive years, divided into the total R&D expenditures of each industry during the earlier year.

NA Not available.

r Revised.

FEDERAL AERONAUTICS RESEARCH AND DEVELOPMENT

Fiscal Years 1977–1996
(Millions of Dollars)

Year	TOTAL	NASA[a]	DoD[b]	DoT[c]
BUDGET AUTHORITY				
1977	$ 2,727	$ 378	$2,256	$ 93
1978	3,338	437	2,807	94
1979	2,850	519	2,240	91
1980	2,991	560	2,336	95
1981	3,286	526	2,653	106
1982	3,581	516	2,984	81
1983	3,871	547	3,221	103
1984	4,087	600	3,224	263
1985	4,335[r]	648	3,422	265
1986	6,660	601	4,927	1,132
1987	5,824	698	4,179	946
1988	6,974	723	4,989	1,262
1989	10,656	872	8,240	1,544
1990	10,690	932	7,867	1,891
1991	9,417	968	6,149	2,300
1992	11,110	1,117	7,366	2,627
1993	11,359	1,245	7,582	2,532
1994	10,703	1,546	6,848	2,309
1995	10,718	1,310	7,196	2,212
1996[E]	10,159	1,315	6,792	2,052
OUTLAYS				
1982[d]	$ 3,309	$ 563	$2,657	$ 89
1983	3,817[r]	563	2,920	334[r]
1984	4,005[r]	586	2,995	424[r]
1985	4,435[r]	643	3,101	691[r]
1986	6,073[r]	648	4,373	1,052[r]
1987	5,867[r]	622	4,182	1,063[r]
1988	6,340	679	4,448	1,213
1989	8,491	855	6,420	1,216
1990	10,009	889	7,649	1,471
1991	9,501	1,017	6,793	1,691
1992	10,011	1,122	6,790	2,099
1993	11,162	1,212	7,572	2,378
1994	11,137	1,330	7,203	2,604
1995	11,155	1,153	7,132	2,870
1996[E]	10,837	1,187	6,974	2,676

Source: NASA, "Aeronautics and Space Report of the President" (Annually).
a Research and Development, Construction of Facilities, Research and Program Management.
b Research, Development, Test, and Evaluation of aircraft and related equipment.
c Federal Aviation Administration: Research, Engineering, and Development and Facilities, Engineering, and Development.
d First year outlays data available.
E Estimate.
r Revised.

FEDERAL AERONAUTICS RESEARCH AND DEVELOPMENT IN CONSTANT DOLLARS

Fiscal Years 1982–1996
(Millions of Constant Dollars[a])

Year	TOTAL	NASA[b]	DoD[c]	DoT[d]
BUDGET AUTHORITY				
1982	$5,130	$ 739	$4,275	$ 116
1983	5,303	749	4,412	141
1984	5,392	792	4,253	347
1985	5,529	827	4,365	338
1986	8,263	746	6,113	1,404
1987	7,025	842	5,041	1,141
1988	8,128	843	5,815	1,471
1989	11,919	975	9,217	1,727
1990	11,470	1,000	8,441	2,029
1991	9,688	996	6,326	2,366
1992	11,110	1,117	7,366	2,627
1993	11,071	1,213	7,390	2,468
1994	10,193	1,472	6,522	2,199
1995	9,961	1,217	6,688	2,056
1996[E]	9,227	1,194	6,169	1,864
OUTLAYS				
1982[f]	$4,741	$ 807	$3,807	$ 128
1983	5,229	771	4,000	458
1984	5,284	773	3,951	559
1985	5,657	820	3,955	881
1986	7,535	804	5,426	1,305
1987	7,077	750	5,045	1,282
1988	7,389	791	5,184	1,414
1989	9,498	956	7,181	1,360
1990	10,739	954	8,207	1,578
1991	9,775	1,046	6,989	1,740
1992	10,011	1,122	6,790	2,099
1993	10,879	1,181	7,380	2,318
1994	10,607	1,267	6,860	2,480
1995	10,367	1,072	6,628	2,667
1996[E]	9,843	1,078	6,334	2,431

Source: AIA, derived from NASA, "Aeronautics and Space Report of the President" (Annually).
a Based on Fiscal Year GDP deflator, 1992=100.
b Research and Development, Construction of Facilities, Research and Program Management.
c Research, Development, Test, and Evaluation of aircraft and related equipment.
d Federal Aviation Administration: Research, Engineering, and Development; and Facilities, Engineering, and Development.
E Estimate.
f First year outlays data available.

DEPARTMENT OF DEFENSE APPROPRIATIONS FOR RESEARCH, DEVELOPMENT, TEST, AND EVALUATION

Fiscal Years 1996–1998
(Millions of Dollars)

	1996	1997[E]	1998[E]
TOTAL—APPROPRIATIONS FOR RDT&E	$35,204	$36,593	$35,934
BY APPROPRIATION			
Army	$ 4,757	$ 4,931	$ 4,511
Navy	8,472	7,856	7,611
Air Force	12,513	14,069	14,451
Defense Agencies	9,192	9,438	9,070
Director of Test & Evaluation, Defense	247	276	268
Director of Operational Test & Evaluation	23	24	23
RECAP OF BUDGET ACTIVITIES			
Research	$ 1,099	$ 1,080	$ 1,164
Exploratory Development	2,836	2,873	2,814
Advanced Development	3,609	3,800	3,414
Demonstration and Validation	5,197	5,669	5,567
Engineering & Manufacturing Development	8,645	8,849	8,549
RDT&E Management Support	3,654	3,164	3,085
Operational Systems Development	10,163	11,159	11,341
RECAP OF FYDP PROGRAMS			
Strategic Forces	$ 132	$ 127	$ 191
General Purpose Forces	3,206	3,022	2,904
Intelligence and Communications	6,365	7,664	8,019
Airlift/Sealift	17	80	131
Research and Development (FYDP Program 6)	25,113	25,302	24,363
Central Supply and Maintenance	191	215	108
Training Medical and Other	1	2	1
Administration and Associated Activities	15	37	41
Support of Other Nations	17	4	55
Special Operations Forces	147	142	119

Source: Department of Defense Budget, "RDT&E Programs (R-1)" (Annually).
NOTE: Detail may not add to totals because of rounding.
E Estimate. Latest year reflects Administration's budget proposal.

DEPARTMENT OF DEFENSE
OUTLAYS FOR RESEARCH, DEVELOPMENT, TEST, AND EVALUATION

Fiscal Years 1972–1998
(Millions of Dollars)

Year	TOTAL, All RDT&E Functions	Air Force	Navy	Army	Other
1972	$ 7,881	$ 3,205	$2,427	$1,779	$ 470
1973	8,157	3,362	2,404	1,912	479
1974	8,582	3,240	2,623	2,190	529
1975	8,866	3,308	3,021	1,964	573
1976	8,923	3,338	3,215	1,842	528
Tr.Qtr.	2,203	830	778	437	161
1977	9,795	3,618	3,481	2,069	627
1978	10,508	3,626	3,825	2,342	715
1979	11,152	4,080	3,826	2,409	837
1980	13,127	5,017	4,382	2,707	1,021
1981	15,278	6,341	4,783	2,958	1,196
1982	17,729	7,794	5,240	3,230	1,465
1983	20,554	9,182	5,854	3,658	1,861
1984	23,117	10,353	6,662	3,812	2,289
1985	27,103	11,573	8,054	3,950	3,527
1986	32,283	13,417	9,667	3,984	5,215
1987	33,596	13,347	9,176	4,721	6,352
1988	34,792	14,302	8,828	4,624	7,038
1989	37,002	14,912	9,291	4,966	7,833
1990	37,458	14,443	9,160	5,513	8,342
1991	34,589	13,050	7,586	5,559	8,371
1992	34,632	11,998	7,826	5,978	8,830
1993	36,967	12,338	8,944	6,218	9,467
1994	34,786	12,513	7,990	5,746	8,537
1995	34,708	12,051	9,229	5,081	8,347
1996	36,560	13,056	9,404	4,925	9,175
1997[E]	36,046	13,474	7,791	5,081	9,700
1998[E]	34,645	13,372	7,238	4,641	9,394

Source: Office of Management and Budget, "The Budget of the United States Government" (Annually).
E Estimate. Latest year reflects Administration's budget proposal.
Tr.Qtr. See Glossary.

DEPARTMENT OF DEFENSE
PRIME CONTRACT AWARDS
FOR RESEARCH, DEVELOPMENT, TEST, AND EVALUATION

Fiscal Years 1992–1996
(Millions of Dollars)

Program Categories	1992	1993	1994	1995	1996
TOTAL—RDT&E	$21,730	$22,292	$21,824	$21,549	$20,277
Research	1,195	1,377	1,052	1,621	1,603
Exploratory Development	2,159	2,203	2,181	2,331	2,297
Other Development	16,975	17,251	17,468	17,597[a]	16,376[a]
Management & Support	1,401	1,461	1,123	(a)	(a)
Aircraft—TOTAL	$ 4,022	$ 5,114	$ 5,809	$ 5,770	$ 5,419
Research	18	13	10	10	129
Exploratory Development	74	86	81	119	112
Other Development	3,873	4,942	5,615	5,641[a]	5,178[a]
Management & Support	58	73	102	(a)	(a)
Missile and Space Systems—TOTAL	5,730	5,871	5,727	5,319	5,023
Research	98	339	114	184	210
Exploratory Development	489	456	395	471	493
Other Development	5,084	5,011	5,160	4,663[a]	4,320[a]
Management & Support	59	65	58	(a)	(a)
Electronics & Communications Equipment—TOTAL	4,265	3,914	3,567	3,495	2,875
Research	147	158	108	196	221
Exploratory Development	369	337	340	350	351
Other Development	3,723	3,374	3,069	2,949[a]	2,303[a]
Management & Support	27	46	50	(a)	(a)
All Other—TOTAL[b]	7,713	7,392	6,721	6,965	6,960
Research	933	867	820	1,231	1,044
Exploratory Development	1,228	1,324	1,365	1,390	1,341
Other Development	4,295	3,924	3,624	4,344[a]	4,575[a]
Management & Support	1,258	1,277	912	(a)	(a)

Source: Department of Defense, "Prime Contract Awards by Service Category and Federal Supply Classification" (Annually).
NOTE: Detail may not add to totals because of rounding.
a "Management & Support" combined with "Other Development" beginning in FY 1995.
b "All Other" includes ships, tank-automotive, weapons, ammunition, services, and other.

DEPARTMENT OF DEFENSE
NET VALUE OF PRIME CONTRACT AWARDS OVER $25,000 FOR RESEARCH, DEVELOPMENT, TEST, AND EVALUATION

By Region and Type of Contractor
Fiscal Year 1996

REGION	TOTAL	Type of Contractor		
		Educational Institutions	Other Non-Profit Institutions[a]	Business Firms
TOTAL—Millions of Dollars	$19,803	$412	$1,812	$17,580
New England	$ 2,457	$ 35	$ 735	$ 1,687
Middle Atlantic	1,441	40	141	1,261
East North Central	767	49	55	663
West North Central	1,618	9	5	1,605
South Atlantic	5,468	84	603	4,781
East South Central	917	9	2	906
West South Central	1,358	46	18	1,294
Mountain	1,703	43	2	1,659
Pacific[b]	4,072	97	251	3,725
PERCENT OF TOTAL	100.0%	100.0%	100.0%	100.0%
New England	12.4%	8.5%	40.6%	9.6%
Middle Atlantic	7.3	9.7	7.8	7.2
East North Central	3.9	11.9	3.0	3.8
West North Central	8.2	2.1	0.3	9.1
South Atlantic	27.6	20.4	33.3	27.2
East South Central	4.6	2.3	0.1	5.2
West South Central	6.9	11.1	1.0	7.4
Mountain	8.6	10.4	0.1	9.4
Pacific[b]	20.6	23.5	13.9	21.2

Source: Department of Defense, "Prime Contract Awards by Region and State" (Annually).
NOTE: Detail may not add to totals because of rounding.
a Includes contracts with other government agencies.
b Includes Alaska and Hawaii.

MISSILE PROGRAMS
RESEARCH, DEVELOPMENT, TEST, AND EVALUATION
By Agency and Model
Fiscal Years 1996, 1997, and 1998
(Millions of Dollars[a])

Agency and Model	1996	1997 [E]	1998 [E]
AIR FORCE			
AMRAAM[b]	$ 48.5	$ 26.8	$ 56.5
*JASSM[b]	27.6	161.0	212.9
JDAM[b]	108.5	70.5	32.3
JSOW[b]	121.7	105.0	96.2
WCMD	50.0	53.6	18.1
NAVY			
AAWS-M	$ NA	$ 0.4	$ 0.2
RAM	NA	19.2	16.1
*SRAW	NA	27.4	0.8
Standard	21.4	9.2	0.5
Tomahawk	157.7	140.4	93.4
Trident II	NA	26.7	28.7
ARMY			
AAWS-M	$ 2.2	$ 6.0	$ 8.0
ATACMS	NA	4.8	—
BAT	190.5	161.8	202.3
Longbow Hellfire	22.0	10.6	—
MLRS	68.9	62.8	26.7
BMD ORGANIZATION			
BMD	$3,045.2	$3,373.4	$2,582.0

Source: Department of Defense Budget, "Program Acquisition Costs by Weapon System" (Annually).
NOTE: See Missile Programs Chapter for missile program procurement authorization data.
a Total Obligational Authority.
b Navy and Air Force funding.
E Estimate. Latest year reflects Administation's budget proposal.
NA Not available.
* Programs in R&D only.

Missile Program Acronyms:

AAWS-M —Advanced Anti-Tank Weapon System-Medium
AMRAAM —Advanced Medium Range Air-to-Air Missile
ATACMS —Army TACtical Missile System
BAT —Brilliant Anti-Tank submunition
BMD —Ballistic Missile Defense
JASSM —Joint Air-to-Surface Standoff Missile
JDAM —Joint Direct Attack Munition
JSOW —Joint Standoff Weapon
MLRS —Multiple Launch Rocket System
RAM —Rolling Airframe Missile
SRAW —Short-Range Assault Weapon
WCMD —Wind Corrected Munitions Dispenser

MILITARY AIRCRAFT PROGRAMS
RESEARCH, DEVELOPMENT, TEST, AND EVALUATION

By Agency and Model
Fiscal Years 1996, 1997, and 1998
(Millions of Dollars[a])

Agency and Model	1996	1997[E]	1998[E]
AIR FORCE			
B-2 Spirit	$ 587.5	$ 595.5	$ 355.8
C-17 Globemaster III	72.0	71.8	113.6
C-130J	—	—	4.0
E-8C JSTARS	154.9	215.2	119.2
F-15E Eagle	160.9	151.0	137.5
F-16 Falcon	146.1	126.2	100.2
F-22 Raptor	2,154.2	1,818.5	2,071.2
JPATS[b]	NA	54.7	63.8
NAVY			
AV-8B Harrier	$ 25.5	$ 16.1	$ 11.0
CH-60	NA	7.2	—
E-2C Hawkeye	59.6	62.0	64.9
EA-6B Prowler	NA	38.5	2.7
F/A-18 Hornet	857.3	422.7	317.0
*JSF[b]	190.2	571.0	930.9
V-22 Osprey	717.3	552.1	529.5
ARMY			
Longbow Apache	$ 22.0	$ 10.6	$ —
OH-58D Kiowa Warrior	0.7	1.1	—
*RAH-66 Comanche	284.1	331.4	282.0
DEFENSE AIRBORNE RECONNAISSANCE OFFICE			
UAVs	$ NA	$ 265.5	$ 338.7

Source: Department of Defense Budget, "Program Acquisition Costs by Weapon System" (Annually).
NOTE: See Aircraft Production Chapter for aircraft program procurement authorization data.
a Total Obligational Authority.
b Air Force and Navy funding.
E Estimate. Latest year reflects Administration's budget proposal.
NA Not Available.
* Programs in R&D only.

In 1996 the dollar value of aerospace exports took an upturn after three years of decline induced largely by an airline recession and a generally depressed global market.

Aerospace exports amounted to $40 billion, up an impressive 22% over the previous year's $33 billion. Aerospace imports (at $13.7 billion) also increased, but not as sharply as exports. The aerospace trade balance, therefore, grew by $5 billion (23%) to $26.6 billion.

Aerospace exports constituted 6.4% of all U.S. merchandise exports in 1996; the figure was well above 5.7% in 1995, but still far below the peak years (1991-92) for aerospace trade when it topped 10%. As usual civil exports accounted for most of the 1996 volume—more than 70%. The civil export total of $29 billion compares with $25 billion in the previous year.

In terms of dollar value, sales of airline transports accounted for 46% of the civil export volume; the corresponding figure for 1995 was 42%. Jetliner exports amounted to $13.6 billion, up $3 billion over the prior year's figure. The total for complete aircraft (including general aviation planes, helicopters, and used aircraft as well as jetliners) was $15.1 billion (up from $12.3 billion). Other components of the civil export volume were aircraft engines, $2 billion (up from $1.8 billion), and aircraft and engine parts, including spares, $12 billion (up from $10.6 billion).

A major factor in the 1996 export upturn was sales of

military equipment, which amounted to $10.8 billion, a 35% increase over the previous year's $8 billion. Most of the increase was in the export of complete aircraft, particularly fighters and fighter bombers; the latter category zoomed from $228 million in 1995 to $3.1 billion in 1996, and the complete military aircraft category climbed from $1.3 billion to $3.9 billion. Other components of military export sales included aircraft/engine parts, including spares, $5.2 billion (up from $4.6 billion); missiles, rockets, and parts, $1.2 billion (down from $1.5 billion); and aircraft engines, $274 million (up from $191 million).

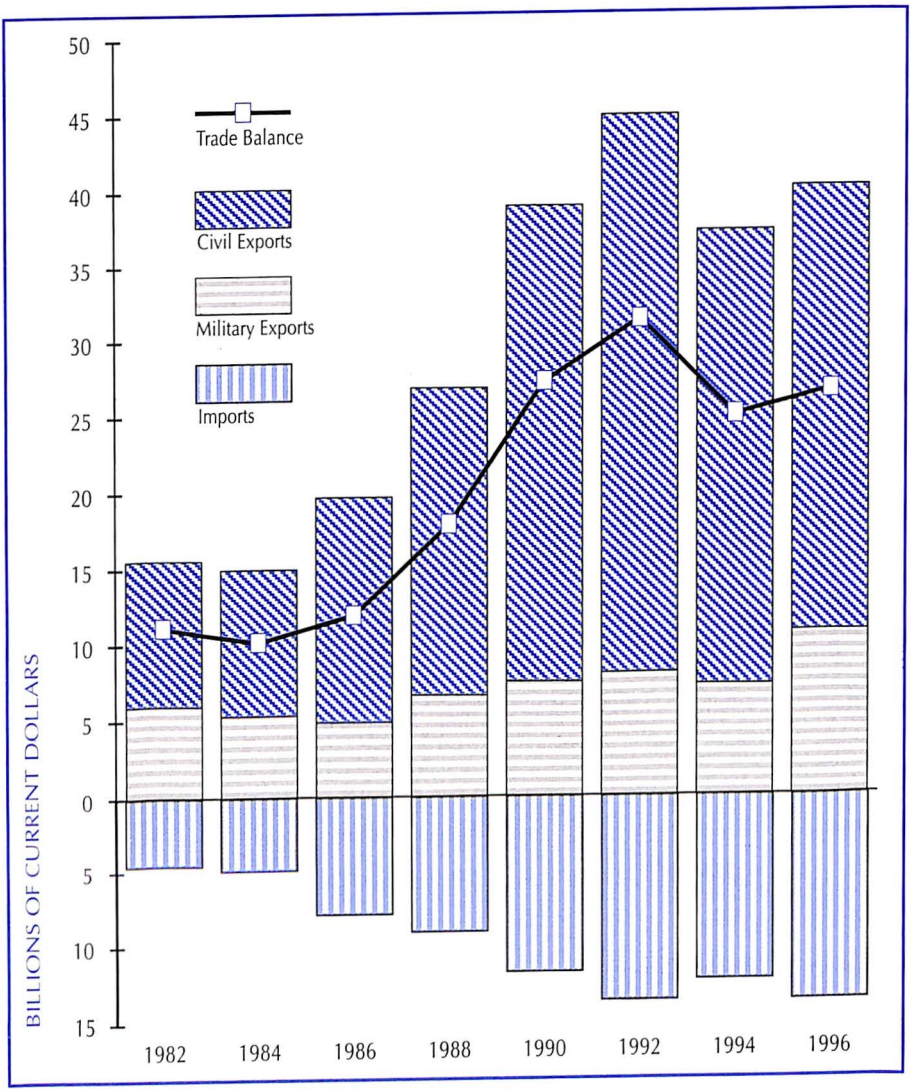
The principal customers for U.S. aerospace exports in 1996 were Japan ($3.8 billion), the United Kingdom ($3.4 billion), Canada ($2.7 billion), and South Korea ($2.3 billion). The rest of the top 10 included France ($2 billion), Germany ($1.9 billion), China ($1.7 billion), Singapore ($1.6 billion), Taiwan ($1.5 billion), and The Netherlands ($1.4 billion).

Aerospace imports, which declined in 1995, bounced back to the highest level on record, $13.7 billion (up from $11.5 billion). Civil imports, at $9.9 billion, constituted more than 72% of the total. The breakdown: complete aircraft, $3.9 billion (up from $3.5 billion); aircraft and engine parts, $4.9 billion (up from $3.9 billion); and aircraft engines, $1 billion (up from $931 million).

Military imports totaled $3.8 billion, up from $3.2 billion. The components of that total were $2.8 billion (up from $2.2 billion) in aircraft and engine parts and $1 billion (up from $907 million) in aircraft engines.

The principal suppliers of aerospace imports were Canada ($3.2 billion), France ($3 billion), the United Kingdom ($2.6 billion), Japan ($1.1 billion), and Germany ($1 billion).

Aerospace Exports, Imports, and Trade Balance



Source: Aerospace Industries Association

U.S. TOTAL AND AEROSPACE FOREIGN TRADE[a]

Calendar Years 1964–1996
(Millions of Dollars)

Year	Total U.S. Merchandise Trade			Aerospace		
	Trade Balance	Exports	Imports	Trade Balance	Exports	Imports
1964	$ 7,006	$ 25,690	$ 18,684	$ 1,518	$ 1,608	$ 90
1965	5,334	26,699	21,366	1,459	1,618	159
1966	3,837	29,379	25,542	1,370	1,673	303
1967	4,122	30,934	26,812	1,961	2,248	287
1968	837	34,063	33,226	2,661	2,994	333
1969	1,289	37,332	36,043	2,831	3,138	307
1970	3,225	43,176	39,952	3,097	3,405	308
1971	(1,476)[b]	44,087	45,563	3,830	4,203	373
1972	(5,729)	49,854	55,583	3,230	3,795	565
1973	2,390	71,865	69,476	4,360	5,142	782
1974	(3,884)	99,437	103,321	6,350	7,095	745
1975	9,551	108,856	99,305	7,045	7,792	747
1976	(7,820)	116,794	124,614	7,267	7,843	576
1977	(28,353)	123,182	151,534	6,850	7,581	731
1978	(30,205)	145,847	176,052	9,058	10,001	943
1979	(23,922)	186,363	210,285	10,123	11,747	1,624
1980	(19,696)	225,566	245,262	11,952	15,506	3,554
1981	(22,267)	238,715	260,982	13,134	17,634	4,500
1982	(27,510)	216,442	243,952	11,035	15,603	4,568
1983	(52,409)	205,639	258,048	12,619	16,065	3,446
1984	(106,703)	223,976	330,678	10,082	15,008	4,926
1985	(117,712)	218,815	336,526	12,593	18,725	6,132
1986	(138,279)	227,159	365,438	11,826	19,728	7,902
1987	(152,119)	254,122	406,241	14,575	22,480	7,905
1988	(118,526)	322,426	440,952	17,860	26,947	9,087
1989	(109,399)	363,812	473,211	22,083	32,111	10,028
1990	(101,718)	393,592	495,311	27,282	39,083	11,801
1991	(66,723)	421,730	488,453	30,785	43,788	13,003
1992	(84,501)	448,164	532,665	31,356	45,018	13,662
1993	(115,568)	465,091	580,659	27,235	39,418	12,183
1994	(150,630)	512,626	663,256	25,010	37,373	12,363
1995	(158,703)	584,742	743,445	21,561	33,071	11,509
1996	(170,214)	625,075	795,289	26,602	40,270	13,668

Source: Bureau of the Census, Foreign Trade Division and Aerospace Industries Association, based on data from International Trade Administration.

NOTE: The Commerce Department began reporting international trade using the Harmonized Tariff Schedules of the United States in 1989. Previous years based on the Tariff Schedules of the United States Annotated.

a Total U.S. and aerospace foreign trade are reported as (1) exports of domestic merchandise, including Department of Defense shipments and undocumented exports to Canada, f.a.s. (= free alongside ship) basis, (2) imports for consumption, customs value basis.

b First U.S. trade deficit since 1888.

TOTAL U.S. EXPORTS AND EXPORTS OF AEROSPACE PRODUCTS

Calendar Years 1964–1996
(Millions of Dollars)

Year	TOTAL Exports of U.S. Merchandise[a]	Exports of Aerospace Products				
		TOTAL	Percent of Total U.S. Exports	Civil		Military
				Total	Trans-ports	
1964	$ 25,690	$ 1,608	6.3%	$ 764	$ 211	$ 844
1965	26,699	1,618	6.1	854	353	764
1966	29,379	1,673	5.7	1,035	421	638
1967	30,934	2,248	7.3	1,380	611	868
1968	34,063	2,994	8.8	2,289	1,200	705
1969	37,332	3,138	8.4	2,027	947	1,111
1970	43,176	3,405	7.9	2,516	1,283	889
1971	44,087	4,203	9.5	3,080	1,567	1,123
1972	49,854	3,795	7.6	2,954	1,119	841
1973	71,865	5,142	7.2	3,788	1,664	1,394
1974	99,437	7,095	7.1	5,273	2,655	1,822
1975	108,856	7,792	7.2	5,324	2,397	2,468
1976	116,794	7,843	6.7	5,677	2,468	2,166
1977	123,182	7,581	6.2	5,049	1,936	2,532
1978	145,847	10,001	6.9	6,018	2,558	3,983
1979	186,363	11,747	6.3	9,772	4,998	1,975
1980	225,566	15,506	6.9	13,248	6,727	2,258
1981	238,715	17,634	7.4	13,312	7,180	4,322
1982	216,442	15,603	7.2	9,608	3,834	5,995
1983	205,639	16,065	7.8	10,595	4,683	5,470
1984	223,976	15,008	6.7	9,659	3,195	5,350
1985	218,815	18,725	8.6	12,942	5,518	5,783
1986	227,159	19,728	8.7	14,851	6,276	4,875
1987	254,122	22,480	8.8	15,768	6,377	6,714
1988	322,426	26,947	8.4	20,298	8,766	6,651
1989	363,812	32,111	8.8	25,619	12,313	6,492
1990	393,592	39,083	9.9	31,517	16,691	7,566
1991	421,730	43,788	10.4	35,548	20,881	8,239
1992	448,164	45,018	10.0	36,906	22,379	8,111
1993	465,091	39,418	8.5	31,823	18,146	7,596
1994	512,626	37,373	7.3	30,050	15,931	7,322
1995	584,742	33,071	5.7	25,079	10,606	7,991
1996	625,075	40,270	6.4	29,477	13,624	10,792

Source: Bureau of the Census, Foreign Trade Division and Aerospace Industries Association, based on data from International Trade Administration.
NOTE: International trade reported using Harmonized Tariff Schedules after 1988.
a Includes DoD shipments and undocumented exports to Canada, free alongside ship basis.

U.S. EXPORTS OF AEROSPACE PRODUCTS[a] BY MAJOR COUNTRIES OF DESTINATION

Calendar Years 1992–1996
(Millions of Dollars)

Major Countries of Destination	1992	1993	1994	1995	1996
Australia	$1,746	$ 543	$ 812	$ 635	$ 939
Brazil	1,032	627	483	584	715
Canada	2,254	1,872	1,827	2,259	2,704
China	2,247	2,384	2,047	1,250	1,705
France	3,912	3,339	2,857	1,846	2,013
Germany	3,044	1,764	1,612	1,701	1,907
Hong Kong	656	593	416	442	706
Israel	957	967	994	604	473
Italy	1,214	547	1,003	1,014	852
Japan	4,505	3,581	4,099	3,587	3,772
Korea, South	1,716	1,588	1,782	2,358	2,293
Malaysia	856	1,517	990	287	330
Netherlands	1,234	1,162	1,643	2,096	1,368
Saudi Arabia	746	545	378	760	1,707
Singapore	1,067	1,485	1,839	1,544	1,612
Switzerland	575	312	443	349	1,707
Taiwan	1,380	2,133	1,790	1,961	1,535
Thailand	1,008	324	336	395	1,032
Turkey	800	1,223	886	457	280
United Kingdom	3,483	3,533	3,601	2,700	3,400

Source: U.S. Department of Commerce, International Trade Administration.
a Includes all civil products, free alongside ship basis; excludes military products whose country of destination are not reported.

U.S. IMPORTS OF AEROSPACE PRODUCTS[a] BY MAJOR COUNTRIES OF ORIGIN

Calendar Years 1992–1996
(Millions of Dollars)

Major Countries of Origin	1992	1993	1994	1995	1996
Brazil	$ 164	$ 119	$ 73	$ 110	$ 154
Canada	2,432	2,072	2,443	2,461	3,233
France	4,220	4,249	4,087	3,072	3,043
Germany, West	614	478	699	826	1,039
Israel	230	203	257	354	443
Italy	585	368	274	348	405
Japan	655	538	583	671	1,081
Netherlands	915	707	505	308	142
Singapore	110	142	180	164	204
Sweden	234	135	96	185	342
United Kingdom	2,805	2,523	2,546	2,236	2,634

Source: U.S. Department of Commerce, International Trade Administration.
a Includes civil and military products, c.i.f. (Cost, Insurance, and Freight) basis.

U.S. EXPORTS OF AEROSPACE PRODUCTS

Calendar Years 1993–1996
(Millions of Dollars)

Aerospace Exports	1993	1994	1995	1996
TOTAL	$39,418	$37,373	$33,071	$40,270
TOTAL CIVIL	$31,823	$30,050	$25,079	$29,477
Complete Aircraft—TOTAL	$19,846	$17,737	$12,275	$15,111
Transports	18,146	15,931	10,606	13,624
General Aviation[a]	551	598	593	598
Helicopters	120	82	170	212
Used Aircraft	1,012	1,111	876	653
Other, Incl. Spacecraft[b]	303	314	466	429
Aircraft Engines—TOTAL	2,333	2,386	1,750	1,996
Turbine Engines	2,246	2,292	1,661	1,912
Piston Engines	87	94	89	84
Aircraft and Engine Parts Incl. Spares—TOTAL	9,358	9,628	10,618	11,965
Aircraft Parts & Accessories	6,206	6,319	7,059	8,035
Aircraft Engine Parts	3,152	3,309	3,559	3,930
TOTAL MILITARY	$ 7,596	$ 7,322	$ 7,991	$10,792
Complete Aircraft—TOTAL[c]	$ 1,460	$ 1,094	$ 1,339	$ 3,859
Fighters & Fighter Bombers	764	248	228	3,105
Transports	—	140	453	60
Helicopters	607	410	563	366
Used Aircraft	57	268	63	310
Other, Incl. Spacecraft[b]	300	303	431	315
Aircraft Engines—TOTAL	190	251	191	274
Turbine Engines	155	188	131	213
Piston Engines	35	63	60	62
Aircraft and Engine Parts Incl. Spares—TOTAL	4,448	4,692	4,582	5,164
Aircraft Parts & Accessories	3,857	4,163	3,934	4,543
Aircraft Engine Parts	591	530	648	621
Guided Missiles, Rockets, & Parts—TOTAL	1,230	1,009	1,481	1,199
Guided Missiles & Rockets	485	340	702	504
Missile & Rocket Parts	745	669	759	684
Missile & Rocket Engines	1	1	20	11
Missile & Rocket Engine Parts	—	—	—	—

Source: Aerospace Industries Association, based on data from International Trade Administration.

a All fixed-wing aircraft under 33,000 pounds.

b Products within this category are not designated civil or military by the Harmonized Tariff Schedules. Historically, aircraft herein have been predominantly civil. Also, spacecraft not included in "Complete Aircraft—Total."

c Includes aircraft exported under Military Assistance Programs and Foreign Military Sales.

U.S. IMPORTS OF AEROSPACE PRODUCTS

Calendar Years 1993–1996
(Millions of Dollars)

Aerospace Imports	1993	1994	1995	1996
TOTAL	$12,183	$12,363	$11,509	$13,668
TOTAL CIVIL	$ 8,628	$ 8,792	$ 8,296	$ 9,881
Complete Aircraft—TOTAL	$ 3,725	$ 3,787	$ 3,492	$ 3,924
Transports	2,005	1,361	972	823
General Aviation	1,238	1,711	1,449	2,136
Helicopters	231	317	300	361
Other, Including Used Aircraft, & Gliders, Balloons, & Airships[a]	251	398	771	604
Aircraft Engines—TOTAL	1,312	1,400	931	1,019
Turbine Engines[b]	1,291	1,346	887	969
Piston Engines	20	55	44	50
Aircraft & Engine Parts—TOTAL	3,590	3,605	3,873	4,939
Aircraft Parts and Accessories[b]	2,059	2,093	2,252	2,945
Turbine Engine Parts[b]	1,309	1,231	1,416	1,777
Piston Engine Parts	39	51	63	85
Spacecraft, Other Parts & Accessories[c]	183	230	142	133
TOTAL MILITARY	$ 3,555	$ 3,571	$ 3,213	$ 3,787
Complete Aircraft—TOTAL	$ 13	$ 22	$ 64	$ 24
Aircraft Engines—TOTAL	1,313	1,386	907	1,001
Turbine Engines[b]	1,291	1,346	887	969
Piston Engines Including Parts	22	40	20	33
Aircraft & Engine Parts—TOTAL	2,229	2,163	2,242	2,762
Aircraft Parts[b]	655	635	613	748
Turbine Engine Parts[b]	1,285	1,212	1,391	1,771
Spacecraft, Missiles, Rockets, Other Parts, & Accessories[bc]	289	317	238	242

Source: Aerospace Industries Association, based on data from International Trade Administration.
NOTE: International trade reported using Harmonized Tariff Schedules after 1989.
a Products within this category are not designated civil or military by the Harmonized Tariff Schedules. Historically, these products have been predominantly civil.
b Category contains products whose use (civil or military) is unspecified by the Harmonized Tariff Schedules. Figures for those products distributed equally between civil and military.
c Includes satellites, propulsion engines, and parachutes.

U.S. EXPORTS OF MILITARY AIRCRAFT[a]

Calendar Years 1992–1996

	1992	1993	1994	1995	1996
TOTAL NUMBER OF AIRCRAFT.....	428	632	437	516	429
Fighters and Fighter Bombers	65	47	14	16	78
Transports	4	—	3	7	3
Helicopters	61	93	88	47	41
New Aircraft, NEC.....	201	378	241	387	194
Used or Rebuilt Aircraft	97	114	91	59	113
TOTAL VALUE (Millions of Dollars)	$2,083	$1,460	$1,094	$1,339	$3,859
Fighters and Fighter Bombers	$1,288	$ 764	$ 248	$ 228	$3,105
Transports	149	—	140	453	60
Helicopters	422	607	410	563	366
New Aircraft, NEC.....	51	32	28	33	19
Used or Rebuilt Aircraft	174	57	268	63	310

Source: Aerospace Industries Association, based on data from the International Trade Administration.
a Includes aircraft exported under Military Assistance Programs and Foreign Military Sales.
NEC Not elsewhere classified.

U.S. EXPORTS OF CIVIL AIRCRAFT

Calendar Years 1992–1996

Civil Aircraft Exports	1992	1993	1994	1995	1996
TOTAL NUMBER OF AIRCRAFT[a] ...	1,898	1,480	1,400	1,323	1,309
Helicopters—TOTAL	212	175	154	210	214
Under 2,200 lbs	175	143	118	159	158
Over 2,200 lbs	37	32	36	51	56
General Aviation—TOTAL	358	333	385	363	383
Single-Engine	186	97	125	132	146
Multi-Engine, Under 4,400 lbs	19	104	124	95	88
Multi-Engine, 4,400-10,000 lbs ...	93	74	67	76	94
Multi-Engine, 10,000-33,000 lbs ...	60	58	69	60	55
Transports—TOTAL	387	278	222	137	172
Passenger Aircraft, Over 33,000 lbs.....	376	272	216	128	157
Cargo Aircraft, Over 33,000 lbs ...	1	2	4	7	10
Other, Over 33,000 lbs, Incl. Pass./Cargo Combi	10	4	2	2	5
Other Aircraft—TOTAL[a]	941	694	639	613	540
Used or Rebuilt Aircraft.....	941	694	639	613	540
Other Aircraft, Including Balloons, Gliders, & Kites	551	558	524	398	508
TOTAL VALUE (Millions of Dollars)	$24,336	$19,846	$17,737	$12,275	$15,111
Helicopters—TOTAL.....	$ 118	$ 120	$ 82	$ 170	$ 212
Under 2,200 lbs	35	37	24	34	27
Over 2,200 lbs	83	83	58	137	185
General Aviation—TOTAL	581	551	598	593	598
Single-Engine	61	36	46	74	66
Multi-Engine, Under 4,400 lbs	12	22	23	22	18
Multi-Engine, 4,400-10,000 lbs ...	213	169	182	176	245
Multi-Engine, 10,000-33,000 lbs ...	295	324	348	321	269
Transports—TOTAL	22,379	18,146	15,931	10,606	13,624
Passenger Aircraft, Over 33,000 lbs.....	21,252	17,237	15,063	9,354	11,949
Cargo Aircraft, Over 33,000 lbs ...	37	299	556	930	897
Other, Over 33,000 lbs, Incl. Pass./Cargo Combi	1,090	611	312	321	778
Other Aircraft—TOTAL	1,259	1,029	1,126	906	678
Used or Rebuilt Aircraft.....	1,241	1,012	1,111	876	653
Other Aircraft, Including Balloons, Gliders, & Kites	17	17	14	29	25

Source: Aerospace Industries Association, based on data from International Trade Administration.
NOTE: International trade reported using Harmonized Tariff Schedules after 1988.
a Numbers of gliders, balloons, & kites excluded from civil aircraft totals.

U.S. IMPORTS OF COMPLETE AIRCRAFT

Calendar Years 1993–1996

Aircraft Imports	1993	1994	1995	1996
TOTAL NUMBER OF AIRCRAFT	1,384	1,762	1,609	1,646
Civil Aircraft—TOTAL	1,345	1,695	1,492	1,623
New Complete Aircraft:				
Helicopters	159	216	206	183
General Aviation:				
Single-Engine	96	105	117	100
Multi-Engine, Under 4,400 lbs	—	8	5	—
Multi-Engine, 4,400-10,000 lbs	6	2	2	1
Multi-Engine, Turbojet/Turbofan, 10,000-33,000 lbs	66	82	72	96
Multi-Engine, Other, Including Turboshaft, 10,000-33,000 lbs	44	64	63	90
Transports, Multi-Engine, Over 33,000 lbs	54	38	22	19
Other Civil Aircraft:				
Gliders[a]	132	102	137	144
Balloons & Airships[a]	60	53	98	200
Others including Kites[a]	485	714	509	410
Used or Rebuilt	243	311	261	380
Military Aircraft—TOTAL	39	67	117	23
New Complete Aircraft	6	25	75	14
Used or Rebuilt	33	42	42	9

(Continued on next page)

U.S. IMPORTS OF COMPLETE AIRCRAFT
(Continued)

Aircraft Imports	1993	1994	1995	1996
VALUE (Millions of Dollars).....	$3,738.3	$3,808.8	$3,556.5	$3,947.7
Civil Aircraft—TOTAL	$3,725.4	$3,787.2	$3,492.6	$3,923.5
New Complete Aircraft:				
Helicopters	231.4	316.7	300.2	360.9
General Aviation:				
Single-Engine	28.6	65.9	48.5	57.8
Multi-Engine, under 4,400 lbs	—	2.8	0.3	—
Multi-Engine, 4,400-10,000 lbs	14.8	2.4	3.0	8.0
Multi-Engine, Turbojet/Turbofan, 10,000-33,000 lbs	792.3	1,030.4	902.4	1,286.6
Multi-Engine, Other, including Turboshaft, 10,000-33,000 lbs	402.1	609.4	494.6	783.9
Transports, Multi-Engine, over 33,000 lbs	2,005.1	1,361.3	972.1	822.5
Other Civil Aircraft:				
Gliders[a]	1.4	1.2	1.0	1.7
Balloons & Airships[a]	3.2	4.7	11.5	13.0
Others including Kites[a]	1.1	2.3	2.0	1.4
Used or Rebuilt	245.4	389.9	756.9	587.8
Military Aircraft—TOTAL	$ 12.8	$ 21.6	$ 63.9	$ 24.2
New Complete Aircraft	10.5	15.3	63.0	4.7
Used or Rebuilt	2.3	6.3	0.9	19.5

Source: Aerospace Industries Association, based on data from International Trade Administration.
a Products within this category are not designated civil or military by the Harmonized Tariff Schedules. Historically, these products have been predominantly civil.

U.S. EXPORTS OF COMMERCIAL TRANSPORT AIRCRAFT[a]

Calendar Years 1992–1996

Region of Destination	1992	1993	1994	1995	1996
TOTAL NUMBER EXPORTED ...	387	278	222	137	172
Canada & Greenland	7	2	—	3	3
Latin America & Caribbean	40	14	8	5	7
Europe	171	89	82	52	52
Middle East	17	13	13	1	5
Asia	120	146	108	71	97
Oceania	23	8	7	2	6
Africa	9	6	4	3	2
TOTAL VALUE (Millions of Dollars)	$22,379	$18,146	$15,931	$10,606	$13,624
Canada & Greenland	$ 610	$ 114	$ —	$ 280	$ 225
Latin America & Caribbean	1,904	805	420	390	566
Europe	8,105	5,130	5,451	3,502	3,628
Middle East	625	517	957	157	543
Asia	9,201	10,840	8,451	6,049	8,110
Oceania	1,461	351	510	126	398
Africa	471	389	144	102	155

Source: Aerospace Industries Association, based on data from the International Trade Administration.
a Airframe weight exceeding 33,000 pounds.

U.S. EXPORTS OF CIVIL HELICOPTERS[a]

Calendar Years 1992–1996

Region of Destination	1992	1993	1994	1995	1996
TOTAL NUMBER EXPORTED	212	175	154	210	214
Canada & Greenland	8	11	5	9	7
Latin America & Caribbean	46	67	43	36	26
Europe	91	61	62	55	64
Middle East	3	2	2	4	2
Asia	39	21	26	50	78
Oceania	19	13	11	25	25
Africa	6	—	5	31	12
TOTAL VALUE (Millions of Dollars)	$117.7	$120.1	$82.1	$170.4	$212.1
Canada & Greenland	$ 5.0	$ 6.2	$ 1.9	$ 7.9	$ 4.3
Latin America & Caribbean	26.2	24.8	20.0	21.1	6.6
Europe	38.2	62.2	18.7	24.3	24.3
Middle East	2.2	0.5	0.6	9.3	0.0
Asia	42.5	24.4	30.8	83.6	164.7
Oceania	2.3	1.9	9.0	19.0	9.4
Africa	1.3	—	1.2	5.3	2.9

Source: Aerospace Industries Association, based on data from the International Trade Administration.
a Excludes used helicopters.

U.S. IMPORTS OF CIVIL HELICOPTERS[a]

Calendar Years 1992–1996

Country of Origin	1992	1993	1994	1995	1996
TOTAL NUMBER IMPORTED	148	159	216	206	183
Canada	104	114	169	172	154
France	25	22	29	11	16
Germany	16	18	14	15	9
Italy	1	3	2	7	4
Others[b]	2	2	2	1	—
TOTAL VALUE (Millions of Dollars)	$179.2	$231.4	$316.7	$300.2	$360.9
Canada	$147.4	$176.1	$274.6	$262.9	$321.8
France	14.0	28.6	29.6	10.3	20.1
Germany	14.8	15.0	11.7	14.9	8.8
Italy	2.1	9.1	0.0	12.1	10.1
Others[b]	0.9	2.5	0.8	0.0	—

Source: Aerospace Industries Association, based on data from the International Trade Administration.
a Excludes used helicopters.
b Includes 1 from New Zealand in 1991; 2 from Japan in 1992; 1 from Japan and 1 from Russia in 1993; 2 from United Kingdom in 1994; and 1 from Israel in 1995.

U.S. EXPORTS OF GENERAL AVIATION AIRCRAFT[a]

Calendar Years 1992–1996

Region of Destination	1992	1993	1994	1995	1996
TOTAL NUMBER EXPORTED	358	333	385	363	383
Canada & Greenland	21	20	29	32	32
Latin America & Caribbean	78	59	81	70	67
Europe	142	115	94	135	123
Middle East	13	16	28	10	14
Asia	47	77	91	38	49
Oceania	22	15	25	39	40
Africa	35	31	37	39	58
TOTAL VALUE (Millions of Dollars)	$580.8	$550.5	$598.2	$593.4	$597.5
Canada & Greenland	$ 55.3	$ 27.5	$ 44.9	$ 75.8	$ 73.7
Latin America & Caribbean	191.8	117.5	203.1	123.0	98.6
Europe	169.5	163.4	128.1	122.6	160.8
Middle East	17.9	65.2	13.0	31.2	17.0
Asia	36.3	106.8	112.6	140.7	92.1
Oceania	41.0	27.2	51.7	47.0	85.5
Africa	69.0	42.9	44.9	53.1	69.7

Source: Aerospace Industries Association, based on data from the International Trade Administration.
a All fixed-wing aircraft under 33,000 pounds.

U.S. IMPORTS OF GENERAL AVIATION AIRCRAFT[a]

Calendar Years 1992–1996

Country of Origin	1992	1993	1994	1995	1996
TOTAL NUMBER IMPORTED ...	216	212	261	259	287
Brazil	21	15	7	11	24
Canada	50	33	50	32	66
France	81	66	63	40	29
Germany, West	4	14	41	52	34
Israel	5	7	5	3	8
Japan	—	2	—	—	—
Poland	4	20	23	23	14
Russia	5	20	14	18	10
United Kingdom	37	26	40	44	43
Other	9	9	18	36	59
TOTAL VALUE (Millions of Dollars)	$1,374.9	$1,237.8	$1,711.0	$1,448.8	$2,136.2
Brazil	$ 136.3	$ 94.2	$ 49.5	$ 74.7	$ 124.0
Canada	527.2	466.2	625.4	494.6	957.8
France	388.9	410.4	556.3	278.8	377.3
Germany, West	0.6	2.2	156.8	242.5	88.3
Israel	33.6	45.9	29.7	21.4	66.1
Japan	—	1.0	—	—	—
Poland	0.3	1.9	1.9	2.2	1.6
Russia	0.6	2.0	1.7	1.0	0.8
United Kingdom	235.1	201.6	277.7	276.5	260.2
Other	52.3	12.4	172.4	57.0	260.2

Source: Aerospace Industries Association, based on data from the International Trade Administration.
a All fixed-wing aircraft under 33,000 pounds.

U.S. EXPORTS OF AIRCRAFT ENGINES

Calendar Years 1994–1996
(Values in Millions of Dollars)

	1994		1995		1996	
	Number	Value	Number	Value	Number	Value
TOTAL	9,226	$2,637	11,918	$1,941	11,842	$2,270
Turbine Engines	2,428	$2,480	4,025	$1,792	4,312	$2,124
Civil	1,903	2,292	2,734	1,661	3,362	1,912
Military	525	188	1,291	131	950	213
Piston Engines	6,798	157	7,893	148	7,530	146
Civil, New, Under 500 HP	895	20	637	17	706	17
Civil, New, Over 500 HP	123	3	224	7	140	4
Civil, Used	2,462	70	2,668	66	2,605	64
Military	3,318	63	4,364	60	4,079	62

Source: Aerospace Industries Association, based on data from the International Trade Administration.

U.S. IMPORTS OF AIRCRAFT ENGINES[a]

Calendar Years 1994–1996
(Values in Millions of Dollars)

	1994		1995		1996	
	Number	Value	Number	Value	Number	Value
TOTAL	6,757	$2,775	7,523	$1,828	8,428	$2,007
Turbine Engines	2,297	$2,691	2,718	$1,774	2,693	$1,937
Piston Engines	4,460	84	4,805	55	5,735	70
Military	2,475	30	3,241	11	2,682	20
Civil, New, Small	165	1	227	1	247	1
Civil, New, Large	1,545	42	1,155	33	2,605	41
Civil, Used	275	12	182	10	201	8

Source: Aerospace Industries Association, based on data from the International Trade Administration.
a New and used.

EXPORT-IMPORT BANK LENDING AUTHORITY AND GROSS AUTHORIZATIONS SUMMARY

Fiscal Years 1984–1996
(Millions of Dollars)

LOANS

Year	Lending Authority	Authorizations Summary		
		Direct Loans[a]		
		TOTAL	Direct Credits	Other[b]
1984	$ 3,865	$ 1,465	$1,122	$ 343
1985	3,865	659	320	339
1986	1,059	578	371	207
1987	680	599	332	267
1988	693	685	465	220
1989	719	695	517	202
1990	614	614	318	296
1991	750	777	425	352
1992	(c)	817	661	156
1993	(c)	1,748	1,635	113
1994	(c)	3,016	2,980	37
1995	(c)	1,598	1,271	327
1996	(c)	1,236	1,220	16

GUARANTEES AND INSURANCE

Year	Lending Authority	Authorizations Summary		
		TOTAL	Guarantees	Insurance
1984	$10,000	$ 7,151	$1,333	$5,818
1985	10,000	7,850	1,320	6,530
1986	11,484[d]	5,508	1,128	4,380
1987	11,355	7,958	1,514	6,444
1988	13,406	5,735	601	5,134
1989	17,901	5,637	1,292	4,345
1990	10,191	8,174	3,333	4,841
1991	11,349	10,588	6,034	4,554
1992	(c)	11,521	7,301	4,220
1993	(c)	13,324	9,095	4,229
1994	(c)	11,870	7,609	4,261
1995	(c)	10,267	5,712	4,555
1996	(c)	10,280	6,412	3,868

Source: Export-Import Bank of the United States.

a The value of Direct Loans may exceed Lending Authority because of the inclusion in Direct Loans of the full amount of Certificates of Loan, portions of which are subsequently sold to commercial banks.

b Includes discount loans, medium term, and small business credits.

c No lending limit set on the value of loans or guarantees and insurance beginning with 1992. Instead the subsidy cost of these transactions limited to $603 million in 1992 and $757 million in 1993. However, in 1993, the combined value of loans, guarantees, and insurance transactions could not exceed $15.5 billion.

d Includes $1,800 million proposed I-MATCH Program which would replace direct lending and would allow an estimated $100 million in commercial loan interest buy-down.

EXPORT-IMPORT BANK
TOTAL AUTHORIZATIONS OF LOANS AND GUARANTEES AND AUTHORIZATIONS IN SUPPORT OF AIRCRAFT EXPORTS

Fiscal Years 1982–1996
(Millions of Dollars)

Year	TOTAL AUTHORIZATIONS	Authorizations in Support of Aircraft Exports			
		TOTAL	Percent of TOTAL Authorizations	Commercial Jet Aircraft[a]	Other Aircraft[b]
LOANS[c]					
1982	$3,516	$ 263.9	7.5%	$ 199.1	$ 64.8
1983	845	396.7	46.9	383.8	12.9
1984	1,465	608.0	41.5	531.8	76.2
1985	659	39.7	6.0	12.6	27.1
1986	578	54.6	9.4	46.4	8.2
1987	599	17.0	2.8	13.3	3.7
1988	685	—	—	—	—
1989	695	166.4	23.9	158.0	8.4
1990	614	5.0	0.8	—	5.0
1991	777	—	—	—	—
1992	817	—	—	—	—
1993	1,748	—	—	—	—
1994	3,016	—	—	—	—
1995	1,598	—	—	—	—
1996	1,236	—	—	—	—
GUARANTEES					
1982	$ 727	$ 104.2	14.3%	$ 78.4	$ 25.8
1983	1,741	629.6	36.2	601.3	28.3
1984	1,333	355.5	26.7	293.5	62.0
1985	1,320	322.4	24.4	288.9	33.5
1986	1,128	329.2	29.2	277.4	51.8
1987	1,514	808.3	53.4	808.3	—
1988	601	89.2	14.8	73.4	15.8
1989	1,292	496.4	38.4	390.4	106.0
1990	3,333	1,666.3	50.0	224.7	1,441.6
1991	6,034	606.0	10.1	566.9	40.0
1992	7,301	1,667.0	22.8	1,597.1	69.9
1993	9,095	3,488.6	38.4	3,488.6	—
1994	7,609	2,959.0	38.9	2,959.0	—
1995	5,712	977.0	17.1	977.0	—
1996	6,412	1,155.0	18.0	1,155.0	—

Source: Export-Import Bank of the United States.

a Includes complete aircraft, engines, parts, and retrofits.

b Includes business aircraft, general aviation aircraft, helicopters, and related goods and services.

c Loans are commitments for financing by the Eximbank to foreign buyers of U.S. equipment and services, which are made to commercial banks and may subsequently be guaranteed by the Eximbank, in which case the value of the loans is also included with Guarantees.

d Guarantees by the Export-Import Bank provide assurances of repayment of principal and interest on loans made by private lending institutions, such as commercial banks, for major export transactions. Excludes insurance.

EXPORT-IMPORT BANK
SUMMARY OF COMMERCIAL JET AIRCRAFT AUTHORIZATIONS FOR LOANS[a] AND GUARANTEES[b]

Fiscal Years 1976–1996
(Values in Millions of Dollars)

Year	No. of Jet Aircraft[c]		Export Value[c]		No. of New Commitments		Gross Authorizations	
	Loans	Guarantees	Loans	Guarantees	Loans	Guarantees	Loans	Guarantees
New Authorizations:								
1976	77	6	$1,017	$ 139	34	11	$ 398	$ 87
Tr.Qtr.	15	5	219	182	6	3	94	59
1977	31	25	330	902	16	14	138	294
1978	29	5	479	253	18	5	189	77
1979	118	7	2,938	317	35	10	1,399	239
1980	136	21	3,975	901	36	24	1,693	1,088
1981	121	18	4,568	637	26	17	2,550	533
1982	11	6	441	113	5	2	199	78
1983	21	9	779	619	3	4	384	601
1984	37	8	1,023	327	7	4	532	294
1985	—	14	19	481	1	5	13	289
1986	3	13	74	451	1	9	46	277
1987	—	27	22	1,449	1	14	13	808
1988	—	2	—	94	—	2	—	73
1989	3	5	253	459	1	2	158	390
1990	—	6	—	264	—	2	—	225
1991	—	12	—	665	—	3	—	567
1992	—	37	—	1,889	—	12	—	1,597
1993	—	70	—	4,122	—	27	—	3,489
1994	—	59	—	3,507	—	19	—	2,959
1995	—	27	—	1,205[r]	—	12	—	974[r]
1996	—	18	—	1,089	—	8	—	923

Source: Export-Import Bank of the United States.

a Loans are commitments for direct financing by the Export-Import Bank to foreign buyers of U.S. equipment and services, which are made by the Export-Import Bank to commercial banks and which subsequently may be guaranteed by the Export-Import Bank in which case the value of the loans is included with Guarantees.

b Guarantees by the Export-Import Bank provide assurances of repayment of principal and interest on loans made by private lending institutions, such as commercial banks, for major export transactions.

c For Export-Import Bank commitments including both loan and guarantee authorization, number of aircraft and export value reported under "Loans."

Tr.Qtr. See Glossary.

r Revised.

EXPORT-IMPORT BANK
AUTHORIZATIONS OF LOANS AND GUARANTEES
IN SUPPORT OF EXPORTS OF COMMERCIAL JET AIRCRAFT

Fiscal Years 1995–1996
(Values in Millions of Dollars)

Customer (Country/Airline)	Number and Aircraft Model or Related Product	Export Value	Authorizations				
			Loans (Direct Credits)				Guarantees
			Amount	Percent Coverage[a]	Interest Rate	Repayment Terms[b]	Amount
FY 1996							
TOTALS	18 aircraft	$1,089	—	—	—	—	$923
China/China Northern Airlines	3 x MD-90	$ 115	—	—	—	—	$101
China/China Southern Airlines	1 x 737, 2 x 777	218	—	—	—	—	186
China/Shandong Airlines	3 x 737	98	—	—	—	—	84
China/Yunnan Airlines	3 x 767	187	—	—	—	—	160
Korea/Asian Airlines	1 x 737, 1 x 767	125	—	—	—	—	103
Korea/Asian Airlines	1 x 737, 1 x 747	186	—	—	—	—	159
Philippines/Philippine Airlines	1 x 747	122	—	—	—	—	98
Poland/LOT Polish Airlines	1 x 737	38	—	—	—	—	32

(Continued on next page)

EXPORT-IMPORT BANK
LOAN AND GUARANTEE AUTHORIZATIONS
(Continued)

Customer (Country/Airline)	Number and Aircraft Model or Related Product	Export Value	Authorizations				
			Loans (Direct Credits)				Guarantees
			Amount	Percent Coverage[a]	Interest Rate	Repayment Terms[b]	Amount
FY 1995							
TOTALS	27 aircraft	$1,205[r]	—	—	—	—	$974[r]
Australia/Ansett Worldwide Aviation Services	3 x 767	$ 440	—	—	—	—	$348
China/China Southwest Airlines	1 x 737, 2 x 757	127	—	—	—	—	109
China/Xiamen Airlines	2 x 757	82	—	—	—	—	70
China/Yunnan Airlines	1 x 737	33	—	—	—	—	28
China/Zhongyuan Airlines	3 x 737	123	—	—	—	—	81
El Salvador/Taca International Airlines	1 x 767	74	—	—	—	—	63
Lithuania/Ministry of Finance	2 x 737	19[r]	—	—	—	—	15[r]
Morocco/Royal Air Maroc	2 x 737	64	—	—	—	—	55
Philippines/Philippine Airlines	1 x 747	121	—	—	—	—	103
Romania/TAROM-Romanian Air Transport	3 x 737	93	—	—	—	—	79
Tunisia/Society Tuniesienne de L'Air	1 x 737	29	—	—	—	—	24

Source: Aerospace Industries Assocation, based on data from the Export-Import Bank of the United States.
NOTE: For definitions of Loans and Guarantees, see Export-Import Bank tables on previous pages.
a Amount of loan as percent of export value.
b Number of payments and frequency (S=semi-annual).
r Revised.

The downward slide in aerospace industry employment that characterized the 1990-95 period came to a halt in 1996. On an annual average employment basis, the industry's labor force increased by 2,000 workers to a total of 798,000 due principally to hiring in the commercial aircraft manufacturing sector. The upturn came after six years of decline during which the industry cut almost 40% of its work force.

The 1996 employment figure represented 4.3% of the total employment in all U.S. manufacturing industries; that compares with an identical 4.3% in 1995 and 6.8% in 1989 when aerospace employment was at its peak. The aerospace work force also represented 7.4% of total employment by U.S. companies engaged in production of durable goods; the comparable figures were 7.5% in 1995 and 11.5% in the peak year 1989.

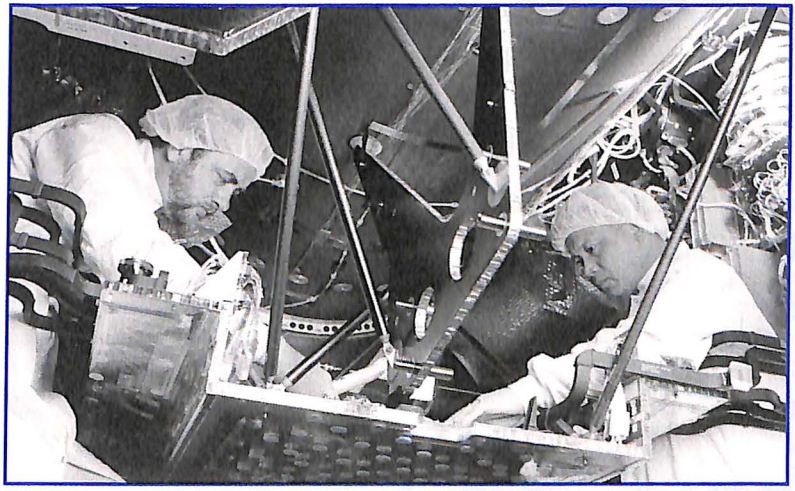
The overall employment increase was due to a gain in the segment of the industry producing aircraft, engines, and parts, while employment remained level or declined in other segments. The aircraft/engine segment rose by 9,000 workers to 460,000. Employment in the missile/space segment was 90,000 (down by 8,000); and in the catch-all "other" category (communications, navigation, flight control, displays, and related equipment) the work force level was the same (248,000) as in the previous year.

The total aerospace payroll for 1996 was $28.1 billion, up from $26.6 billion in the previous year. Both figures include lump-sum payments made by many aerospace companies in lieu of general wage increases or cost-of-living adjustments. The aerospace payroll amounted to 4.2% (up from 4.1% in 1995) of the total payroll for all U.S. manufacturing industries ($672.5 billion).

Average weekly earnings by production workers (again including lump-sum payments) came to $806, up from $759 in the previous year. The highest paying jobs among production workers were those in airframe fabrication ($871 weekly). Among other segments, engine and parts workers averaged $813; employees working on missiles and space systems, $790; and aircraft parts and equipment other than engines, $721.

Average hourly earnings amounted to $18.72, up from $18.05 in 1995. The average work week for production workers was 43.1 hours, which compares with 42.1 hours in the previous year.

In a geographic distribution of aerospace employment, California headed the list with nearly one-quarter of the work force. Second was Washington with one-sixth. After that were Connecticut, Texas, Kansas, and Missouri, each with between nearly five and six percent.



In 1996, Washington experienced the greatest absolute increase in employment, followed by Kansas and Colorado. The greatest absolute reduction in aerospace jobs occurred in Georgia, followed by Connecticut and Massachusetts. In terms of percentage gains, Colorado headed the list with an increase of 13.5%; New Hampshire (13.1%) was second; and Virginia (13%) third. Georgia had the greatest percentage loss (15.3%); Louisiana (12.7%) was second; and New York (7.3%) third.

ANNUAL AVERAGE EMPLOYMENT IN ALL MANUFACTURING, DURABLE GOODS, AND AEROSPACE INDUSTRIES

Calendar Years 1979–1996
(Thousands of Employees)

Year	All Manufacturing Industries	Durable Goods Industries	Aerospace Industry[a]		
			TOTAL	As Percent of	
				All Manufacturing	Durable Goods
1979	21,040	12,730	1,007	4.8%	7.9%
1980	20,285	12,159	1,080	5.3	8.9
1981	20,170	12,082	1,087	5.4	9.0
1982	18,780	11,014	1,038	5.5	9.4
1983	18,432	10,707	1,019	5.5	9.5
1984	19,372	11,476	1,058	5.5	9.2
1985	19,248	11,458	1,151	6.0	10.1
1986	18,947	11,195	1,241	6.6	11.1
1987	18,999	11,154	1,282	6.8	11.5
1988	19,314	11,363	1,294	6.7	11.4
1989	19,391	11,394	1,314	6.8	11.5
1990	19,076	11,109	1,302	6.8	11.7
1991	18,406	10,569	1,214	6.6	11.5
1992	18,104	10,277	1,100	6.1	10.7
1993	18,075	10,221	966	5.3	9.5
1994	18,321	10,448	855	4.7	8.2
1995[r]	18,524	10,683	796	4.3	7.5
1996	18,457	10,766	798	4.3	7.4

Source: Bureau of Labor Statistics, "Employment and Earnings" (Monthly) and Aerospace Industries Association estimates.
a See Glossary for detailed explanation of "Aerospace Employment."
r Revised.

ANNUAL PAYROLL
AEROSPACE INDUSTRY AND ALL MANUFACTURING INDUSTRIES

Calendar Years 1981–1996
(Millions of Dollars)

Year	All Manufacturing Industries[a]	Aerospace Industry[b]			Aerospace As Percent of All Manufacturing
		TOTAL	Production Workers	Other Workers	
1981	$386,700	$19,906	$ 8,152	$11,754	5.1%
1982	384,000	20,750	8,043	12,707	5.4
1983	397,400	21,644	8,071	13,573	5.4
1984	439,100	23,773	8,746	15,027	5.4
1985	460,900	26,749	9,837	16,911	5.8
1986	473,200	29,547	11,038	18,509	6.2
1987	490,300	31,101	11,700	19,401	6.3
1988	524,000	32,566	11,744	20,822	6.2
1989	541,800	34,154	12,440	21,714	6.3
1990	556,100	35,590	13,020	22,570	6.4
1991	562,500	34,520	12,536	21,984	6.1
1992	583,500	33,123	11,812	21,311	5.7
1993	593,100	30,391	10,673	19,718	5.1
1994	621,100	28,395	9,901	18,494	4.6
1995[r]	648,400	26,603	9,272	17,331	4.1
1996	672,500	28,073	10,135	17,938	4.2

AEROSPACE — INCLUDING LUMP-SUM PAYMENTS[c]

Year	TOTAL	Production Workers	Other Workers	Aerospace As Percent of All Manufacturing
1984	$ 23,813	$ 8,786	$15,027	5.4%
1985	26,782	9,871	16,911	5.8
1986	29,611	11,102	18,509	6.3
1987	31,262	11,862	19,401	6.4
1988	32,757	11,935	20,822	6.3
1989	34,396	12,682	21,714	6.3
1990	35,862	13,292	22,570	6.4
1991	34,688	12,704	21,984	6.2
1992	33,257	11,947	21,311	5.7
1993	30,548	10,830	19,718	5.2
1994	28,420	9,926	18,494	4.6
1995[r]	26,618	9,287	17,331	4.1
1996	28,133	10,195	17,938	4.2

Source: Bureau of Economic Analysis, "Survey of Current Business" (Monthly) and Aerospace Industries Association estimates based on Bureau of Labor Statistics, "Employment and Earnings" (Monthly).

a See Glossary for explanation of "Payroll, All Manufacturing."

b Based on combined annual average employment and average weekly earnings for SICs 372 and 376.

c Many aerospace manufacturers have included lump-sum payments in labor settlements since late 1983 in lieu of general wage increases and/or cost of living adjustments. These payments are reported by BLS in separate wage series for SICs 3721 & 3761 and are included by AIA in the totals for production workers and all aerospace.

r Revised.

EMPLOYMENT IN THE AEROSPACE INDUSTRY[a]

Calendar Years 1982–1996
(Annual Average, Thousands of Employees)

Year	TOTAL	Aircraft, Engines, & Parts (SIC 372)	Missiles & Space Vehicles (SIC 376)	Other[b]
TOTAL EMPLOYMENT				
1982	1,038	584	131	323
1983	1,019	562	141	317
1984	1,058	575	154	329
1985	1,151	616	177	358
1986	1,241	656	200	386
1987	1,282	678	206	399
1988	1,294	684	208	402
1989	1,314	711	194	408
1990	1,302	712	185	405
1991	1,214	669	168	378
1992	1,100	612	146	342
1993	966	542	124	300
1994	855	482	108	266
1995[r]	796	451	98	248
1996	798	460	90	248
PRODUCTION WORKERS				
1982	360	296	40	24
1983	342	274	46	23
1984	351	276	52	23
1985	382	295	62	25
1986	417	323	67	28
1987	434	339	67	29
1988	422	331	63	28
1989	432	344	60	29
1990	430	345	57	29
1991	399	324	48	27
1992	355	291	40	24
1993	308	253	35	20
1994	271	222	31	18
1995[r]	252	208	28	17
1996	261	218	25	17

Source: Bureau of Labor Statistics, "Employment and Earnings" (Monthly) and Aerospace Industries Association estimates.
a See Glossary for detailed explanation of "Aerospace Employment."
b Communications, navigation, flight control, and displays (aerospace-related portions of SICs 366, 381, & 382).
r Revised.

EMPLOYMENT IN THE AIRCRAFT, ENGINES, AND PARTS INDUSTRY[a]

Calendar Years 1982–1996
(Annual Average, Thousands of Employees)

Year	TOTAL (SIC 372)	Airframes (SIC 3721)	Engines and Parts (SIC 3724)	Other Parts & Equipment (SIC 3728)
TOTAL EMPLOYMENT				
1982	584.0	319.9	148.8	115.3
1983	561.6	304.7	140.1	116.9
1984	574.9	306.1	140.2	128.7
1985	616.2	325.6	147.5	143.2
1986	655.8	338.9	153.6	163.2
1987	678.0	356.4	158.2	163.4
1988	683.5	368.5	155.8	159.3
1989	711.0	382.2	153.5	175.2
1990	712.3	381.0	151.7	179.5
1991	669.2	355.6	143.2	170.3
1992	611.7	332.1	126.6	153.0
1993	542.0	301.4	109.2	131.4
1994	481.5	271.3	95.1	115.1
1995[r]	450.5	243.6	93.0	113.9
1996	459.5	244.1	94.8	120.7
PRODUCTION WORKERS				
1982	296.2	144.7	84.2	67.3
1983	273.9	131.5	74.7	67.1
1984	276.0	128.2	73.0	73.3
1985	294.6	135.5	74.8	82.2
1986	322.5	146.6	78.7	94.3
1987	338.5	159.1	80.5	96.3
1988	331.3	162.1	77.1	92.1
1989	343.7	167.4	76.8	99.5
1990	344.6	164.1	77.2	103.2
1991	323.6	151.6	73.1	98.8
1992	291.4	137.8	64.3	89.2
1993	252.5	122.7	53.6	76.2
1994	222.0	108.1	46.9	67.0
1995[r]	207.5	93.6	46.2	67.7
1996	218.3	96.1	48.8	73.5

Source: Bureau of Labor Statistics, "Employment and Earnings" (Monthly).
a See Glossary for detailed explanation of "Aerospace Employment."
r Revised.

AEROSPACE INDUSTRY EMPLOYMENT[a] BY OCCUPATIONAL CLASSIFICATION

As of December[b] 1982–1997
(Thousands of Employees)

Year	TOTAL	Production Workers	Scientists & Engineers	Technicians	Others
1982	765	353	134	54	224
1983	765	344	135	55	231
1984	817	365	147	60	245
1985	898	405	163	66	264
1986	948	436	168	67	277
1987	968	436	175	69	288
1988	977	431	184	66	296
1989	992	439	198	68	287
1990	946	422	205	67	252
1991	879	386	205	60	228
1992	775	335	165	57	218
1993	676	286	148	50	191
1994	616	262	133	44[r]	177
1995	586	250	129	46	161
1996[p]	601	261	132	47	161
1997[E]	616	270	134	47	165

Source: Aerospace Industries Association, company reports and Bureau of Labor Statistics, "Employment and Earnings" (Monthly).

a Totals for employment by occupational classification reflect only establishments in SICs 372, 376, 366, 381, and 382. As a result, they do not match the totals for aerospace employment by product group which include other industries with employment related to aerospace.

b End-of-year figures often differ from annual averages appearing in other tables.

E Estimate.

p Preliminary.

r Revised.

TOTAL EMPLOYMENT AND SCIENTISTS & ENGINEERS IN COMMERCIAL TRANSPORT AIRCRAFT & HELICOPTER MANUFACTURING ESTABLISHMENTS[a]

As of December 1982–1996

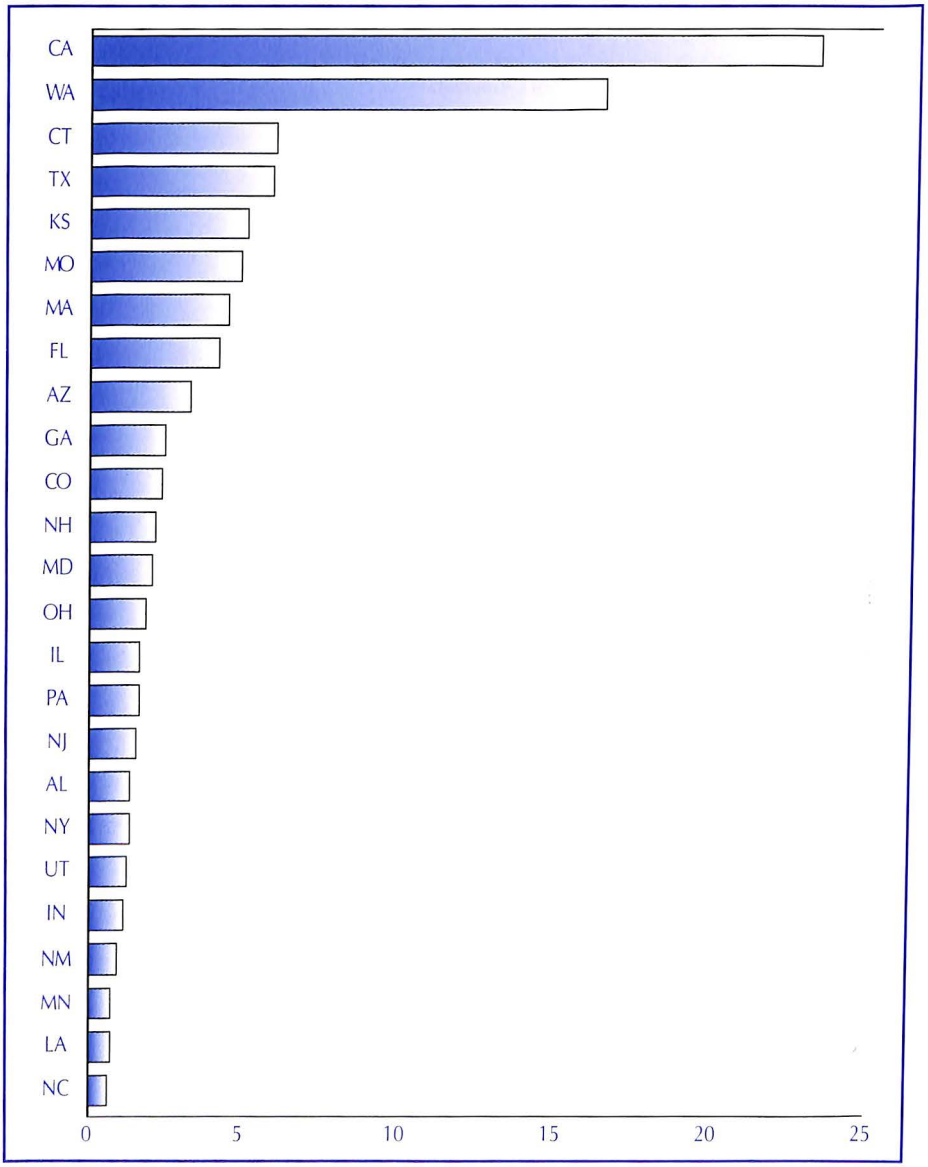
Year	Commercial Transport Aircraft		Helicopters	
	Total	Scientists & Engineers	Total	Scientists & Engineers
1982	61,800	10,200	26,500	3,100
1983	46,100	8,100	27,600	3,500
1984	54,800	8,900	31,300	3,800
1985	65,000	10,500	37,900	5,000
1986	75,300	12,500	37,400	4,000
1987	87,400	14,700	39,000	4,300
1988	98,800	16,200	36,600	4,200
1989	120,100	15,100	34,200	4,900
1990	122,400	16,700	30,600	4,500
1991	124,200	16,100	30,100	4,400
1992	111,600	14,800	28,200	4,400
1993	86,000	14,100	28,100	4,700
1994	83,300	14,700	27,300	4,600
1995	85,400	13,500	25,700	4,800
1996	100,200	14,900	24,700	5,000

Source: Aerospace Industries Association, company reports and AIA estimates.

a Includes only establishments identified as prime manufacturers of commercial transport aircraft and of civil and military helicopters. Excludes subcontractors and propulsion manufacturers.

Top Aerospace States, 12/96

% of U.S. aerospace employment



Source: Aerospace Industries Association

AVERAGE HOURLY EARNINGS IN THE AEROSPACE INDUSTRY

Production Workers Only
Calendar Years 1979–1996

Year	TOTAL[a]	Aircraft (SIC 372)				Guided Missiles, Space Vehicles & Parts (SIC 376)	Complete Guided Missiles, & Space Vehicles (SIC 3761)
		TOTAL[a]	Airframes (SIC 3721)	Engines & Parts (SIC 3724)	Other Parts & Equipment (SIC 3728)		
AVERAGE HOURLY EARNINGS[b]							
1979	$ 8.26	$ 8.26	$ 8.50	$ 8.53	$ 7.48	$ 8.25	$ 8.38
1980	9.27	9.28	9.66	9.42	8.40	9.22	9.33
1981	10.29	10.31	10.74	10.41	9.35	10.06	10.34
1982	11.20	11.23	11.85	11.16	10.17	10.95	11.21
1983	11.79	11.82	12.58	11.61	10.73	11.59	11.84
1984	12.24	12.32	12.91	12.40	11.37	11.82	12.01
1985	12.54	12.62	13.18	12.85	11.66	12.14	12.36
1986	12.75	12.86	13.48	13.08	11.90	12.20	12.48
1987	13.10	13.17	13.74	13.33	12.23	12.73	13.09
1988	13.48	13.55	14.18	13.80	12.28	13.13	13.53
1989	14.10	14.17	14.89	14.42	12.81	13.70	14.20
1990	14.73	14.79	15.66	14.84	13.37	14.39	14.82
1991	15.51	15.60	16.72	15.38	14.05	14.90	15.21
1992	16.46	16.53	17.70	16.28	14.89	15.99	16.45
1993	17.18	17.23	18.43	16.70	15.72	16.80	17.43
1994	17.89	17.95	19.50	17.31	16.01	17.48	18.29
1995[r]	17.99	18.02	19.97	17.34	15.93	17.74	18.58
1996	18.57	18.58	20.49	18.22	16.43	18.51	19.34
AVERAGE HOURLY EARNINGS INCLUDING LUMP-SUM WAGE PAYMENTS[c]							
1984	$12.37	$12.46	$13.11	$12.40	$11.37	$11.92	$12.14
1985	12.69	12.77	13.40	12.85	11.66	12.29	12.56
1986	12.94	13.06	13.80	13.08	11.90	12.33	12.66
1987	13.37	13.48	14.32	13.33	12.23	12.80	13.19
1988	13.73	13.79	14.65	13.80	12.28	13.36	13.87
1989	14.37	14.44	15.41	14.42	12.81	13.98	14.63
1990	15.04	15.10	16.32	14.84	13.37	14.67	15.26
1991	15.71	15.81	17.16	15.38	14.05	15.09	15.49
1992	16.67	16.75	18.18	16.28	14.89	16.05	16.54
1993	17.44	17.52	19.00	16.70	15.72	16.83	17.47
1994	17.96	18.02	19.57	17.31	16.01	17.53	18.37
1995[r]	18.05	18.09	20.02	17.34	15.93	17.77	18.62
1996	18.72	18.75	20.79	18.22	16.43	18.51	19.34

Source: Bureau of Labor Statistics, "Employment and Earnings" (Monthly) and Aerospace Industries Association estimates.
a TOTAL columns are employment-based weighted averages.
b Includes overtime premiums.
c Many aerospace manufacturers have included lump-sum payments in labor settlements since late 1983 in lieu of general wage increases and/or cost of living adjustments. These payments are reported by BLS in separate wage series for SICs 3721 & 3761 and are included by AIA in totals.
r Revised.

AVERAGE WEEKLY EARNINGS IN THE AEROSPACE INDUSTRY

Production Workers Only
Calendar Years 1979–1996

Year	TOTAL[a]	Aircraft (SIC 372)				Guided Missiles, Space Vehicles & Parts (SIC 376)	Complete Guided Missiles, & Space Vehicles (SIC 3761)
		TOTAL[a]	Airframes (SIC 3721)	Engines & Parts (SIC 3724)	Other Parts & Equipment (SIC 3728)		
AVERAGE WEEKLY EARNINGS[b]							
1979	$351	$351	$360	$361	$322	$347	$348
1980	389	390	404	394	358	378	383
1981	424	426	444	422	396	410	420
1982	460	462	485	454	426	447	461
1983	486	487	513	476	453	480	494
1984	513	516	532	523	486	496	508
1985	531	534	547	542	506	515	527
1986	545	550	568	561	520	517	533
1987	556	558	578	567	523	541	556
1988	573	575	596	582	529	567	585
1989	593	594	616	616	542	589	611
1990	624	626	656	637	570	612	634
1991	648	651	694	654	583	632	649
1992	685	689	736	689	615	652	666
1993	714	717	756	715	657	696	727
1994	754	756	800	753	688	738	779
1995[r]	758	757	809	770	677	765	812
1996	801	803	859	813	721	790	837
AVERAGE WEEKLY EARNINGS INCLUDING LUMP-SUM PAYMENTS[c]							
1984	$515	$518	$540	$523	$486	$501	$514
1985	532	535	556	542	506	521	535
1986	548	553	581	561	520	523	541
1987	563	567	603	567	523	544	561
1988	583	584	615	582	529	577	599
1989	605	605	638	616	542	601	629
1990	637	639	684	637	570	624	653
1991	657	659	712	654	583	640	661
1992	693	698	756	689	615	655	670
1993	725	729	779	715	657	697	728
1994	755	758	802	753	688	740	783
1995[r]	759	758	811	770	677	766	814
1996	806	808	871	813	721	790	837

Source: Bureau of Labor Statistics, "Employment and Earnings" (Monthly) and Aerospace Industries Association estimates.

a TOTAL columns are employment-based weighted averages.

b Includes overtime premiums.

c Many aerospace manufacturers have included lump-sum payments in labor settlements since late 1983 in lieu of general wage increases and/or cost of living adjustments. These payments are reported by BLS in separate wage series for SICs 3721 & 3761 and are included by AIA in totals.

r Revised.

AVERAGE HOURS IN THE AEROSPACE INDUSTRY

Production Workers Only
Calendar Years 1982–1996

Year	TOTAL[a]	Aircraft (SIC 372)				Guided Missiles, Space Vehicles & Parts (SIC 376)	Complete Guided Missiles, & Space Vehicles (SIC 3761)
		TOTAL[a]	Airframes (SIC 3721)	Engines & Parts (SIC 3724)	Other Parts & Equipment (SIC 3728)		
AVERAGE WEEKLY HOURS							
1982	41.1	41.1	40.9	40.7	41.9	40.8	41.1
1983	41.2	41.2	40.8	41.0	42.2	41.4	41.7
1984	41.9	41.9	41.2	42.2	42.7	42.0	42.3
1985	42.3	42.3	41.5	42.2	43.4	42.4	42.6
1986	42.7	42.8	42.1	42.9	43.7	42.4	42.7
1987	42.4	42.4	42.1	42.5	42.8	42.5	42.5
1988	42.5	42.4	42.0	42.2	43.1	43.2	43.2
1989	42.1	41.9	41.4	42.7	42.3	43.0	43.0
1990	42.3	42.3	41.9	42.9	42.6	42.5	42.8
1991	41.8	41.7	41.5	42.5	41.5	42.4	42.7
1992	41.6	41.7	41.6	42.3	41.3	40.8	40.5
1993	41.6	41.6	41.0	42.8	41.8	41.4	41.7
1994	42.1	42.1	41.0	43.5	43.0	42.2	42.6
1995	42.1	42.0	40.5	44.4[r]	42.5	43.1	43.7
1996	43.1	43.2	41.9	44.6	43.9	42.7	43.3
AVERAGE WEEKLY OVERTIME HOURS							
1982	3.2	3.2	2.7	3.6	3.7	3.1	3.1
1983	3.1	3.1	2.5	3.7	3.7	3.3	3.5
1984	3.9	4.0	3.0	5.1	4.6	3.3	3.4
1985	4.6	4.6	3.5	5.4	5.3	4.6	5.0
1986	4.8	4.9	4.2	5.5	5.5	4.4	4.7
1987	4.8	4.9	4.4	5.0	5.4	4.2	4.3
1988	4.6	4.6	4.3	4.6	5.1	4.5	4.6
1989	5.0	5.1	5.0	5.4	5.0	4.4	4.5
1990	4.5	4.6	4.3	5.3	4.5	3.8	4.1
1991	4.0	4.0	4.1	4.5	3.5	3.9	4.5
1992	3.6	3.7	3.6	4.4	3.3	2.8	3.1
1993	3.8	3.9	3.7	4.6	3.7	2.9	3.2
1994	4.5	4.6	4.1	5.3	4.8	3.7	3.8
1995	4.8	4.9	4.2	5.9	5.2[r]	4.2	4.6
1996	5.7	5.9	5.4	6.5	6.3	3.9	4.2

Source: Bureau of Labor Statistics, "Employment and Earnings" (Monthly) and Aerospace Industries Association estimates.
a TOTAL columns are employment-based weighted averages.
r Revised.

EMPLOYMENT IN NATIONAL AERONAUTICS AND SPACE ADMINISTRATION PROGRAMS

End of Fiscal Years 1961–1998

Year	TOTAL	NASA Employees	Contractor Employees [a]
1961	74,577	17,077	57,500
1962	137,656	22,156	115,500
1963	246,304	27,904	218,400
1964	379,084	31,984	347,100
1965	409,900	33,200	376,700
1966	393,924	33,924	360,000
1967	306,926	33,726	273,200
1968	267,871	32,471	235,400
1969	218,345	31,745	186,600
1970	160,850	31,350	129,500
1971	143,578	29,478	114,100
1972	138,800	27,500	111,300
1973	134,850	26,850	108,000
1974	125,220	25,020	100,200
1975	127,733	24,333	103,400
1976	130,739	24,039	108,000
1977	124,136	23,636	100,500
1978	124,637	23,237	101,400
1979	131,931	22,831	109,100
1980	135,613	22,613	113,000
1981	133,473	21,873	111,600
1982	128,730	22,430	106,300
1983	129,246	22,246	107,000
1984	162,080	22,080	140,000
1985	131,991	21,991	110,000
1986	154,660	21,660	133,000
1987	165,001	22,001	143,000
1988	172,326	22,326	150,000
1989	213,054	23,054	190,000
1990	221,829	23,829	198,000
1991	223,149	24,149	199,000
1992	230,513	24,513	206,000
1993	228,674	24,174	204,500
1994	217,910	23,873	194,037
1995	209,355[r]	22,355[r]	187,000
1996	198,113	21,113	177,000
1997[E]	189,500	20,500	169,000
1998[E]	183,500	19,500	164,000

Source: Office of Management and Budget, "Budget of the United States Government" (Annually) and NASA Headquarters.

a Includes estimates of manpower for hardware and related contracts, as well as actual work-years for support service contracts. Increase in FY 1984 caused by change in estimating methodology to reflect more accurately the mix of support and development contractors.

E Estimate.

r Revised.

FEDERAL CIVILIAN EMPLOYMENT[a] IN THE DEPARTMENT OF DEFENSE

Fiscal Years 1967–1998

Year	TOTAL	Civil Functions[b]	Military Functions[c]
1967	1,225,637	31,980	1,193,657
1968	1,288,130	32,062	1,256,068
1969	1,257,091	31,214	1,225,877
1970	1,159,935	30,293	1,129,642
1971	1,092,804	30,063	1,062,741
1972	1,040,147	30,585	1,009,562
1973	987,281	29,971	957,310
1974	1,002,850	29,072	973,778
1975	983,790	29,069	954,721
1976	951,034	28,648	922,386
1977	940,549	28,912	911,637
1978	933,071	28,962	904,109
1979	914,582	28,592	885,990
1980	907,700	27,700	880,000
1981	981,400	34,400	947,000
1982	1,009,192	31,111	978,081
1983	1,015,622	30,816	984,806
1984	1,040,213	28,681	1,011,532
1985	1,065,624	28,754	1,036,870
1986	1,069,863	28,511	1,041,352
1987	1,059,669	28,352	1,031,317
1988	1,053,000	28,419	1,024,581
1989	1,051,166	28,081	1,023,085
1990	1,048,814	27,651	1,021,163
1991	1,001,183	27,385	973,798
1992	1,000,453	27,584	972,869
1993	958,855	27,055	931,800
1994	896,293	28,001	868,292
1995	849,529	27,790	821,739
1996	806,122	27,180	778,942
1997[E]	787,100	27,100	760,000
1998[E]	759,600	26,400	733,200

Source: Office of Management and Budget, "The Budget of the United States Government" (Annually).

a Full-time equivalent civilian employment.

b Data are estimated for portions of Civil Functions.

c The Department of Defense is exempt from full-time equivalent controls. Data shown are estimated civilian employment for military functions and military assistance.

E Estimate.

OCCUPATIONAL INJURY AND ILLNESS INCIDENCE RATES[a] ALL MANUFACTURING AND AEROSPACE INDUSTRIES

Calendar Years 1991–1995

	1991	1992	1993	1994	1995
All Manufacturing:					
Total Cases	12.7	12.5	12.1	12.2	11.6
Lost Workday Cases	5.6	5.4	5.3	5.5	5.3
Nonfatal Cases without Lost Workdays	7.1	7.1	6.8	6.8	6.3
Lost Workdays	121.5	124.6	NA	NA	NA
Aircraft and Parts (SIC 372):					
Total Cases	10.9	11.1	10.3	9.7	8.8
Lost Workday Cases	4.3	4.5	4.1	4.0	3.6
Nonfatal Cases without Lost Workdays	6.6	6.6	6.2	5.7	5.3
Lost Workdays	114.4	125.4	NA	NA	NA
Aircraft (SIC 3721):					
Total Cases	10.2	10.7	10.2	9.4	8.7
Lost Workday Cases	4.2	4.4	4.0	3.8	3.4
Nonfatal Cases without Lost Workdays	6.0	6.3	6.2	5.7	5.3
Lost Workdays	128.2	141.8	NA	NA	NA
Aircraft Engines and Parts (SIC 3724):					
Total Cases	10.0	9.7	9.7	10.0	8.3
Lost Workday Cases	4.3	3.9	4.1	3.8	3.4
Nonfatal Cases without Lost Workdays	5.7	5.7	5.6	6.2	4.9
Lost Workdays	91.3	85.1	NA	NA	NA
Aircraft Parts (SIC 3728):					
Total Cases	2.9	13.1	11.1	10.0	9.5
Lost Workday Cases	4.4	5.0	4.3	4.6	4.1
Nonfatal Cases without Lost Workdays	8.5	8.1	6.7	5.5	5.4
Lost Workdays	105.3	122.3	NA	NA	NA
Guided Missiles, Space Vehicles & Parts (SIC 376):					
Total Cases	4.3	4.0	4.5	4.5	4.0
Lost Workday Cases	2.1	1.8	1.9	1.8	1.8
Nonfatal Cases without Lost Workdays	2.2	2.3	2.6	2.7	2.2
Lost Workdays	51.0	50.3	NA	NA	NA
Guided Missiles & Space Vehicles (SIC 3761):					
Total Cases	4.3	4.0	4.6	4.2	3.7
Lost Workday Cases	2.2	1.9	1.9	1.6	1.5
Nonfatal Cases without Lost Workdays	2.1	2.1	2.7	2.6	2.1
Lost Workdays	54.2	53.0	NA	NA	NA
Space Propulsion Units & Parts (SIC 3764):					
Total Cases	4.5	3.6	NA	4.3	NA
Lost Workday Cases	2.0	1.5	NA	1.7	NA
Nonfatal Cases without Lost Workdays	2.5	2.2	NA	2.5	NA
Lost Workdays	44.1	42.5	NA	NA	NA
Other Space Vehicle Equipment (SIC 3769):					
Total Cases	3.9	5.1	4.8	6.5	5.8
Lost Workday Cases	1.6	1.8	1.8	2.8	3.0
Nonfatal Cases without Lost Workdays	2.3	3.3	3.0	3.7	2.8
Lost Workdays	40.8	47.1	NA	NA	NA

Source: Bureau of Labor Statistics, "Survey of Occupational Injuries and Illnesses" (Annually).

a Defined as the number of injuries and illnesses per 100 full-time workers. Separate incidence rates also available for occupational injuries only.

NA Not available.

AEROSPACE INDUSTRY WORK STOPPAGES[a]

Calendar Years 1979–1996

Year	Number of Strikes[b]	Number of Workers Involved	Work-Days Idle in Year
1979	12	6,600	103,400
1980	17	4,400	92,900
1981	12	6,100	188,900
1982[c]	4	11,900	45,200
1983	2	8,700	404,100
1984	4	14,600	188,200
1985	4	19,700	289,800
1986	—	—	—
1987	—	—	—
1988	3	10,600	415,800
1989	2	58,500	1,848,000
1990	1	2,300	56,700
1991	1	1,500	—
1992	1	3,800	11,400
1993	2	27,800	34,600
1994	—	—	—
1995	1	33,000	1,551,000
1996	2	7,800	90,100

Source: Bureau of Labor Statistics, "Compensation and Working Conditions" (Monthly).

a Based on SIC 372 of the 1967 Code, which includes missile and space propulsion units and parts and missile and space vehicle equipment not elsewhere classified, but which excludes complete guided missiles and space vehicles.

b Strikes beginning during calendar year.

c Effective 1982, data not available for work stoppages involving fewer than 1,000 employees.

In 1996 the aerospace industry reported net profits of $7.2 billion. This was a substantial gain over the previous year's $4.6 billion. Expressed as a percentage of sales, the industry's profit amounted to 5.6%. This was lower than the average for all U.S. manufacturing industries of 6.0%, yet it was an improvement over the 1995 aerospace profit-to-sales ratio of 3.8%. As a percentage of assets, the 1996 aerospace figure was 5.1%, up from 3.5% in the previous year. As a percentage of equity, aerospace earnings were 17.1%, up from 11.1%.

The aerospace balance sheet for 1996 showed net working capital of $16 billion, down from $18.8 billion in 1995. Stockholders' equity dipped from $42 billion in 1995 to $40 billion in 1996, and total assets increased from $132 billion to $136 billion.

Lockheed Martin Corporation topped the list of DoD's prime contractors in terms of FY 1996 contract dollar award value with contracts totaling $12 billion. In second place was McDonnell Douglas Corporation with $9.9 billion, and General Motors Corporation, at $3.2 billion, ranked third. Rounding out the top 10 were Raytheon Company ($3 billion), General Dynamics Corporation ($2.7 billion), Northrop Grumman Corporation ($2.6 billion), United Technologies Corporation ($2.3 billion), The Boeing Company

($1.7 billion), Litton Industries, Inc. ($1.7 billion), and General Electric Company ($1.5 billion).

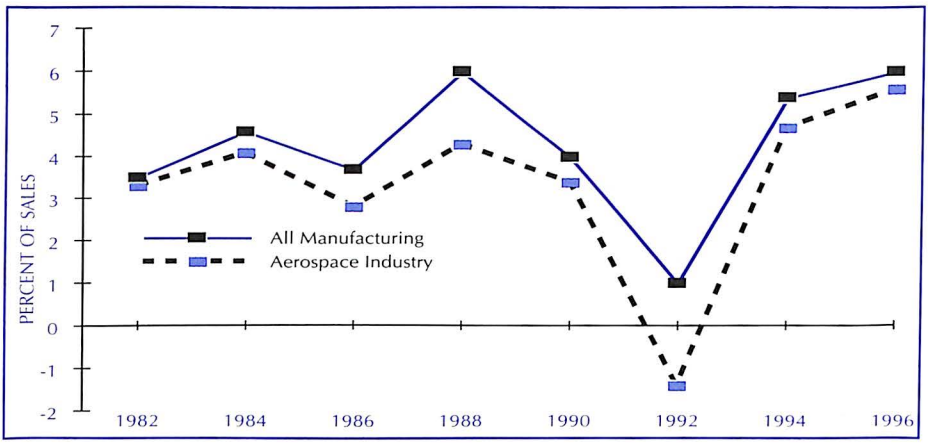
Geographically, the West North Central region of the United States once again edged out the Pacific region to lead the list of DoD prime contract awards for aircraft production. The West North Central region received contracts valued at $6.4 billion, or 24.7% of the total. The Pacific region was second with $5 billion (19.4%), and the South Atlantic region was third with $4.8 billion (18.5%).

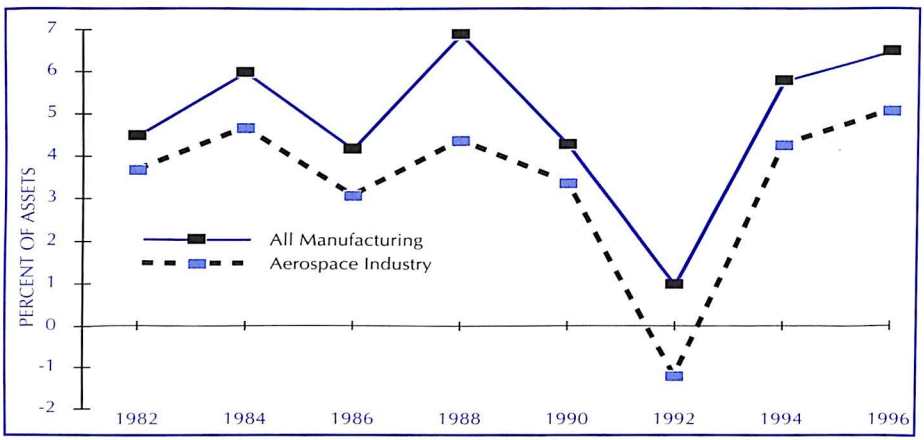
In DoD missile/space contract awards, the Pacific region was far in front with $3.9 billion (34.1%). In second place was the Mountain region, $2.1 billion (18%), and in third was the South Atlantic region, $1.5 billion (12.6%).

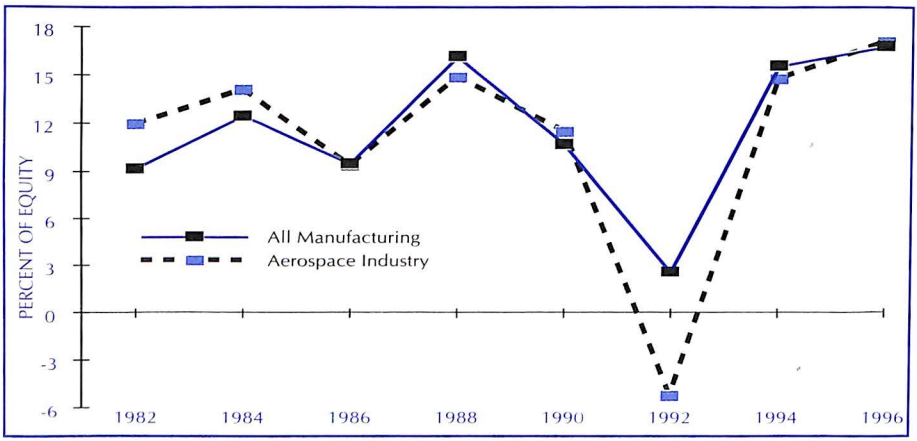
The South Atlantic region was the leader in DoD awards for electronic and communications equipment with $4.6 billion (33.9%); the Pacific region was second, $2.9 billion (21.6%); and the Middle Atlantic region third, $1.8 billion (13.1%).

The Boeing Company led all other NASA contractors by a wide margin with contracts in FY 1996 valued at $1.6 billion. The rest of the top 10 included Lockheed Martin Corporation ($833 million), Rockwell International Corporation ($756 million), United Space Alliance, a Boeing/Lockheed Martin partnership ($578 million), Thiokol Corporation ($396 million), McDonnell Douglas Corporation ($389 million), Rockwell Space Operations, Inc. ($292 million), TRW Inc. ($287 million), AlliedSignal Technical Services ($285 million), and Computer Sciences Corporation ($214 million).

Net Profit After Taxes







Source: Aerospace Industries Association

NET PROFIT AFTER TAXES AS A PERCENT OF SALES, ASSETS, AND EQUITY FOR ALL MANUFACTURING CORPORATIONS AND THE AEROSPACE INDUSTRY

Calendar Years 1982–1996

PERCENT OF SALES

Year	All Manufacturing Corporations	Non-Durable Goods	Durable Goods	Aerospace[a] Industry
1982	3.5%	4.6%	2.4%	3.3%
1983	4.1	4.9	3.1	3.5
1984	4.6	4.8	4.4	4.1
1985	3.8	4.1	3.4	3.1
1986	3.7	4.6	2.9	2.8
1987	4.9	5.2	4.5	4.1
1988	6.0	6.7	5.2	4.3
1989	5.0	5.8	4.1	3.3
1990	4.0	4.9	3.0	3.4
1991	2.5	4.2	0.6	1.8[b]
1992	1.0	3.2	(1.4)	(1.4)[b]
1993	2.8	3.7	1.9	3.6
1994	5.4	5.5	5.2	4.7
1995	5.7	6.1	5.3	3.8
1996	6.0	6.6	5.5	5.6

Year	Percent of Assets[c]		Percent of Equity[c]	
	All Manufacturing	Aerospace[a] Industry	All Manufacturing	Aerospace[a] Industry
1982	4.5%	3.7%	9.2%	12.0%
1983	5.1	4.1	10.5	12.1
1984	6.0	4.7	12.5	14.1
1985	4.6	3.6	10.1	11.1
1986	4.2	3.1	9.5	9.4
1987	5.6	4.4	12.8	14.6
1988	6.9	4.4	16.2	14.9
1989	5.6	3.3	13.7	10.7
1990	4.3	3.4	10.7	11.5
1991	2.6	1.9[b]	6.4	6.1[b]
1992	1.0	(1.2)[b]	2.6	(5.2)[b]
1993	2.9	3.5	8.1	13.2
1994	5.8	4.3	15.6	14.8
1995	6.2	3.5	16.2	11.1
1996	6.5	5.1	16.8	17.1

Source: Bureau of the Census, "Quarterly Financial Report for Manufacturing, Mining, and Trade Corporations" (Quarterly).

a Based on a sample of corporate entities classified in SIC codes 372 and 376, having as their principal activity the manufacture of aircraft, guided missiles, space vehicles, their propulsion, and parts.

b Reflects unusually large non-operating expenses totalling $3.4 and $8.7 billion in 1991 and 1992, respectively, due to restructuring changes and the implementation of a change in accounting for future retirement benefit costs.

c Average of four quarters

( ) Net loss after taxes.

INCOME STATEMENT AND OPERATING RATIOS FOR AEROSPACE COMPANIES[a]

Calendar Years 1993–1996
(Millions of Dollars)

INCOME STATEMENT	1993	1994	1995	1996
Net Sales, Receipts, Operating Revenues	$128,651	$120,521	$122,993	$127,051
Less: Depreciation, Depletion, & Amortization of Property, Plant, and Equipment	4,474	4,500	4,106	4,134
Less: All Other Operating Costs & Expenses, Including Selling Costs & General & Administrative Expenses	117,162	108,306	112,930	112,792
Income (or Loss) from Operations	$ 7,015	$ 7,714	$ 5,957	$ 10,125
Net Non-Operating Income (Expense)	(307)	372	308	8
Income (or Loss) before Income Taxes (= Total Income)	$ 6,708	$ 8,086	$ 6,264	$ 10,132
Less: Provision for Current & Deferred Domestic Income Taxes	2,086	2,432	1,631	2,982
Income (or Loss) after Income Taxes (= Net Profit)	$ 4,621	$ 5,655	$ 4,633	$ 7,150
Cash Dividends Charged to Retained Earnings	3,279	1,831	1,985	2,071
Net Income Retained in Business	$ 1,342	$ 3,823	$ 2,649	$ 5,078
Retained Earnings at Beginning of Year[b]	25,358	25,655	29,873	30,225
Adjustments to Retained Earnings[c]	(754)	(9)	89	(1,189)
Retained Earnings at End of Year[d]	$ 25,946	$ 29,470	$ 32,610	$ 34,115
OPERATING RATIOS				
Income before Taxes as Percent of Net Sales	5.2%	6.7%	5.1%	8.0%
Provision for Current & Deferred Domestic Income Taxes as Percent of Income before Taxes (Total Income)	31.1	30.1	26.0	29.4
Income after Taxes (Net Profit) as Percent of Net Sales	3.6	4.7	3.8	5.6
Income after Taxes (Net Profit) as Percent of Stockholders' Equity[e]	13.2	14.8	11.1	17.1
Income after Taxes (Net Profit) as Percent of Total Assets[e]	3.5	4.3	3.5	5.1

Source: Bureau of the Census, "Quarterly Financial Report for Manufacturing, Mining, and Trade Corporations" (Quarterly).
NOTE: Detail may not add to totals because of rounding.

a Based on sample of corporate entities classified in SIC codes 372 and 376, having as their principal activity the manufacture of aircraft, guided missiles, space vehicles, and their propulsion, and parts.
b Beginning-of-year retained earnings for any particular year do not equal end-of-year retained earnings for the previous year because of rotation of small companies in survey sample.
c Other direct credits (or charges) to retained earnings (net), including stock and other non-cash dividends, etc.
d Retained Earnings at End of Year CALCULATED AS Retained Earnings at Beginning of Year PLUS Income (Loss) after Income Taxes MINUS Cash Dividends Charged to Retained Earnings PLUS Adjustments to Retained Earnings.
e Average of four quarters.

BALANCE SHEET FOR AEROSPACE COMPANIES[a]

December 31, 1993–1996
(Millions of Dollars)

	1993	1994	1995	1996
Assets:				
Current Assets:				
Cash	$ 3,544	$ 2,766	$ 2,540	$ 4,051
Securities, Commercial Paper, & Other Short-term Financial Investments	3,316	3,576	5,271	5,025
Total Cash and U.S. Government and Other Securities	$ 6,860	$ 6,341	$ 7,811	$ 9,076
Receivables (Total)	15,991	16,809	17,303	18,130
Inventories (Gross)	42,276	39,123	38,590	30,873
Other Current Assets	4,396	4,341	5,053	5,531
Total Current Assets	$ 69,524	$ 66,615	$ 68,757	$ 63,611
Net Plant, Property, & Equipment	27,698	26,406	26,285	24,272
Other Non-Current Assets	35,526	39,245	37,275	48,054
Total Assets	$132,747	$132,266	$132,318	$135,937
Liabilities:				
Current Liabilities:				
Short Term Loans	$ 2,031	$ 1,787	$ 1,561	$ 1,951
Trade Accounts & Notes Payable	11,491	10,871	11,592	10,688
Income Taxes Accrued	1,882	1,929	1,479	2,410
Installments Due on Long Term Debts	1,260	1,137	2,014	918
Other Current Liabilities	38,697	35,159	33,318	31,683
Total Current Liabilities	$ 55,360	$ 50,882	$ 49,965	$ 47,650
Long Term Debt	20,452	19,832	19,155	28,091
Other Non-Current Liabilities	20,505	21,270	20,770	20,370
Total Liabilities	$ 96,316	$ 91,984	$ 89,889	$ 96,110
Stockholders' Equity:				
Capital Stock	$ 10,346	$ 9,706	$ 9,804	$ 10,004
Retained Earnings	26,086	30,557	32,624	29,824
Total Stockholders' Equity	$ 36,431	$ 40,282	$ 42,428	$ 39,828
Total Liabilities & Stockholders' Equity	$132,747	$132,266	$132,318	$135,937
Net Working Capital	$ 14,164	$ 15,733	$ 18,793	$ 15,961

Source: Bureau of the Census, "Quarterly Financial Report for Manufacturing, Mining, and Trade Corporations" (Quarterly).
NOTE: Detail may not add to totals because of rounding.
a Based on sample of corporate entities classified in SIC codes 372 and 376, having as their principal activity the manufacture of aircraft, guided missiles, space vehicles, their propulsion, and parts.

NEW CAPITAL EQUIPMENT EXPENDITURES

Calendar Years 1967–1995
(Millions of Dollars)

Year	All Manufacturing Industries	Aerospace Industry[a]	Aircraft, Engines, & Parts	Missiles, Space Vehicles, & Parts
1967	$ 21,503	$ 520	$ 408	$ 111
1968	20,613	399	282	117
1969	22,291	429	340	89
1970	22,164	244	181	62
1971	20,941	115	59	56
1972	24,073	261	169	92
1973	26,979	362	258	104
1974	35,696	407	283	124
1975	37,262	478	369	109
1976	40,545	557	431	126
1977	47,459	673	508	164
1978	55,209	948	775	174
1979	61,533	1,551	1,301	250
1980	70,113	1,923	1,618	306
1981	78,632	2,006	1,637	369
1982	74,562	2,142	1,680	462
1983	61,931	2,159	1,530	629
1984	75,186	3,050	2,091	960
1985	83,058	3,784	2,429	1,356
1986	76,355	4,145	2,818	1,327
1987	78,650[r]	3,612	2,536	1,075
1988	81,593	3,388	2,362	1,026
1989	98,738	3,921	2,800	1,121
1990	105,018	3,490	2,621	869
1991	103,003	3,407	2,823	584
1992	103,188	3,860	3,384	476
1993	103,133	2,725	2,307	418
1994[r]	112,784	2,363	1,969	395
1995	128,235	2,156	1,776	380

Source: Bureau of the Census, "Statistics for Industry Groups and Industries" Series M95(AS)-1 (Annually) and "Aerospace Equipment, Including Parts" Series MC92-I-37B.
a Combined total for establishments in SICs 372 or 376.
r Revised.

DEPARTMENT OF DEFENSE
PRIME CONTRACT AWARDS OVER $25,000
FOR SELECTED MAJOR MILITARY HARD GOODS

By Geographic Region
Fiscal Years 1994, 1995, and 1996

Program and Region	Millions of Dollars			Percent of Program Total		
	1994	1995	1996	1994	1995	1996
AIRCRAFT—TOTAL	$27,449	$23,647	$25,943	100.0%	100.0%	100.0%
New England	2,127	2,110	1,557	7.8	8.9	6.0
Middle Atlantic	1,713	1,703	1,497	6.2	7.2	5.8
East North Central	1,542	1,367	1,306	5.6	5.8	5.0
West North Central	5,246	5,067	6,419	19.1	21.4	24.7
South Atlantic	5,274	4,337	4,802	19.2	18.3	18.5
East South Central	350	340	274	1.3	1.4	1.1
West South Central	2,995	3,856	3,922	10.9	16.3	15.1
Mountain	524	713	1,131	1.9	3.0	4.4
Pacific[a]	7,678	4,154	5,036	28.0	17.6	19.4
MISSILE & SPACE SYSTEMS—TOTAL	$13,015	$11,437	$11,554	100.0%	100.0%	100.0%
New England	1,743	1,144	1,283	13.4	10.0	11.1
Middle Atlantic	714	715	577	5.5	6.3	5.0
East North Central	101	94	106	0.8	0.8	0.9
West North Central	438	473	346	3.4	4.1	3.0
South Atlantic	1,345	1,135	1,460	10.3	9.9	12.6
East South Central	602	588	648	4.6	5.1	5.6
West South Central	1,237	1,177	1,114	9.5	10.3	9.6
Mountain	2,337	1,991	2,079	18.0	17.4	18.0
Pacific[a]	4,498	4,120	3,940	34.6	36.0	34.1
ELECTRONICS & COMMUNICATIONS EQUIPMENT—TOTAL	$14,230	$14,483	$13,499	100.0%	100.0%	100.0%
New England	1,139	1,227	1,274	8.0	8.5	9.4
Middle Atlantic	2,001	1,810	1,769	14.1	12.5	13.1
East North Central	1,220	1,105	844	8.6	7.6	6.3
West North Central	580	686	464	4.1	4.7	3.4
South Atlantic	4,613	5,086	4,577	32.4	35.1	33.9
East South Central	437	266	252	3.1	1.8	1.9
West South Central	712	851	799	5.0	5.9	5.9
Mountain	667	671	606	4.7	4.6	4.5
Pacific[a]	2,861	2,781	2,914	20.1	19.2	21.6

Source: Department of Defense, "Prime Contract Awards by Region and State" (Annually).
NOTE: Detail may not add to totals because of rounding.
a Includes Alaska and Hawaii.

DEPARTMENT OF DEFENSE MAJOR CONTRACTORS

Fiscal Years 1992–1996
Listed by rank according to net value of prime contracts awarded during last fiscal year
(Millions of Dollars)

Company	1992	1993	1994	1995	1996
TOTAL CONTRACTS	$121,438	$123,713	$118,114	$117,552	$119,556
Lockheed Martin Corp.[b]	$ 8,821	$ 13,367	$ 11,333	$ 12,450	$ 11,998
McDonnell Douglas Corp.	5,311	7,540	9,266	8,021	9,939
General Motors Corp.	3,694	4,076	3,041	2,993	3,240
Raytheon Co.[c]	3,342	3,987	3,507	2,890	3,012
General Dynamics Corp.[d]	5,612	3,144	3,599	2,258	2,670
Northrop Grumman Corp.[e]	7,034	4,709	5,202	2,913	2,605
United Technologies Corp.	2,803	3,083	2,677	1,775	2,258
The Boeing Co.	2,495	1,664	1,195	1,780	1,724
Litton Industries Inc.	2,334	1,555	1,576	1,237	1,709
General Electric Co.	4,008	1,606	2,705	2,104	1,530
Westinghouse Electric Corp.	1,147	1,569	1,357	1,225	1,441
Boeing North American, Inc.[f]	1,233	1,317	1,062	1,210	1,288
Textron Inc.	1,161	955	1,236	1,069	1,194
Science Applications Int'l Corp.	686	786	868	931	1,065
FMC Corporation	448	508	582	486	877[g]
TRW Inc.	1,013	1,160	848	867	787
Computer Sciences Corp.	495	422	589	656	712
ITT Industries Inc.	797	614	609	648	671
GTE Corp.	724	714	788	633	599
Tracor Inc.	167	493	465	510	581
Halliburton Energy Services Inc.	186	253	278	276	574
AT&T Corp.	1,338	870	538	422	529
Texas Instruments Inc.	731	968	690	554	529
AlliedSignal Inc.	459	454	453	503	512
Rolls-Royce PLC	(a)	(a)	(a)	350	462
Alliant Techsystems Inc.	610	612	422	473	457
Black & Decker Corp.	260	382	454	434	453
Aetna Services Inc.	(a)	(a)	(a)	(a)	452
Exxon Corp.	306	419	530	472	447
BDM International Inc.	209	312	528	387	407

Source: Department of Defense, "100 Companies Receiving the Largest Dollar Volume of Prime Contract Awards" (Annually).
a Not in top 100 companies for indicated year(s).
b Includes awards previously reported separately as Martin Marietta Corp., Lockheed Corp., and Loral Corp.
c Includes awards previously reported as E-Systems Inc.
d Includes awards previously reported as Bath Holding Corp.
e Includes awards previously reported as Grumman Corporation.
f Includes awards previously reported as Rockwell International Corp.
g Listed as United Defense Limited Partnership.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION MAJOR CONTRACTORS

Fiscal Years 1993–1996
By rank according to net value of NASA prime contracts awarded during last fiscal year
(Millions of Dollars)

Company	1993	1994	1995	1996
TOTAL PROCUREMENTS	$13,160	$12,913	$13,341	$12,699
Awards to Business Firms	10,498	9,966	10,311	9,801
% of TOTAL PROCUREMENTS	80%	77%	77%	77%
The Boeing Co.	$ 502	$ 1,142	$ 1,442	$ 1,608
Lockheed Martin Corp.[b]	1,041	720	830	833
Rockwell International Corp.	1,491	1,069	1,022	756
United Space Alliance LLC[c]	590	572	558	578
Thiokol Corp.	479	431	440	396
McDonnell Douglas Corp.	997	565	468	389
Rockwell Space Operations Inc.	351	338	306	292
TRW Inc.	218	235	288	287
AlliedSignal Technical Services	231	247	231	285
Computer Sciences Corp.	195	255	311	214
EG&G Florida Inc.	221	200	183	175
Lockheed Martin Engrg. & Science	256	216	164	166
United Technologies Corp.	97	119	159	162
Lockheed Martin Aerospace Corp.[d]	137	119	164	161
USBI Booster Production Co.	177	156	172	157
Hughes Aircraft Co.	19	13	44	153
Hughes Information Tech. Corp.	(a)	(a)	87	133
Boeing Commercial Airplane Group	(a)	25	89	83
Johnson Controls World Serv. Inc.	67	70	65	69
BAMSI Inc.	57	58	65	59
General Electric Co.	286	32	51	58
Grumman Aerospace Corp.	163	111	66	58
Orbital Sciences Corp.	62	25	23	56
Sterling Software US Inc.	58	52	49	55
Santa Barbara Research Center	48	82	94	54
Space Systems Loral, Inc.	77	91	65	50
Ball Aerospace & Tech. Corp.	46	47	47	47
Hughes STX Corp.	35	54	48	47
Cortez III Service Corp.	32	29	38	46
Spacehab Inc.	50	56	38	45

Source: National Aeronautics and Space Administration, "Annual Procurement Report" (Annually).

a Not in list of major contractors for indicated year(s).

b Includes awards previously reported separately as General Electric Co., Martin Marietta Corp., and Lockheed Missiles & Space Co.

c Includes awards previously reported as Lockheed Space Operations Co.

d Includes awards previously reported as Loral Aerospace Corp.

Aeronautics: the science that treats of the operation of aircraft, also, the art or science of operating aircraft.

Aerospace Employment: annual average calculated as one-twelfth of sum of monthly estimates of total number of persons employed during a designated pay period by the aircraft, missile, and space industries (SICs 372 and 376) plus estimated aerospace-related employment in the communications equipment (SIC 3662), instruments (SICs 381 and 382), and in certain other industries (SICs 28, 35, 73, 89, etc.)

Aerospace Industry: the industry engaged in research, development, and manufacture of aerospace systems including: manned and unmanned aircraft; missiles; spacecraft; space launch vehicles; propulsion, guidance, and control units for all of the foregoing; and a variety of airborne and ground-based equipment essential to the test, operation, and maintenance of flight vehicles.

Aerospace Payroll: estimated on the basis of average weekly earnings for a given calendar year for production workers plus an estimated annual salary for other employees.

Aerospace Sales: the AIA estimate of aerospace industry sales, developed by summing: DoD expenditures for aircraft, missiles, and space-related procurement and RDT&E; NASA expenditures for research and development and space flight control and data communications; outlays for space activities by other U.S. government departments and agencies; commercial sales of space-related products; net domestic and export sales of civil aircraft, engines, and parts; Foreign Military Sales and commercial exports of military aircraft, missiles, propulsion, and related parts; sales of related products and services including: electronics, software, and ground support equipment; and sales of non-aerospace products which are produced in aerospace-manufacturing establishments and which use technology, processes, and materials derived from the aerospace industry.

AIA: Aerospace Industries Association of America, Inc., formerly Aircraft Industries Association.

Air Carriers: the commercial system of air transportation, consisting of domestic and international scheduled and charter service.

Aircraft: all airborne vehicles supported either by buoyancy or by dynamic action. Used in this volume in a restricted sense to mean an airplane–any winged aircraft including helicopters, but excluding gliders and guided missiles.

Aircraft Agreement (Agreement on Trade in Civil Aircraft): negotiated the Tokyo Round of the Multilateral Trade Negotiations and implemented January 1, 1980, providing for elimination of tariff and non-tariff trade barriers in the civil aircraft sector.

Aircraft Industry: the industry primarily engaged in the manufacture of aircraft, aircraft engines, and parts including propellers and auxiliary equipment. A sector of the Aerospace Industry.

Airframe: the structural components of an airplane, such as: fuselage, empennage, wings, landing gear, and engine mounts, but excluding such items as: engines, accessories,

electronics, and other parts that may be replaced from time to time.

Airlines: see Air Carriers.

Appropriation (Federal Budget): an act of Congress authorizing an agency to incur obligations and make payments out of funds held by the Department of the Treasury.

Assets, Net: the sum of all recorded assets after reducing such amount by allowance of reserve for bad debts, depreciation, and amortization, but before deducting any liabilities, mortgages, or other indebtedness.

Astronautics: the art and science of designing, building, and operating manned or unmanned space objects.

Average Weekly Hours: average hours for which pay was received; different from standard or scheduled hours.

Avionics: communications, navigation, flight controls, and displays.

Backlog: the sales value of orders accepted (supported by legal documents) that have not yet passed through the sales account.

Budget Authority: authority provided by the Congress; mainly in the form of Appropriations, which allows Federal agencies to incur obligations to spend or lend money.

Bureau of Economic Analysis (BEA): an agency of the Department of Commerce.

Bureau of Labor Statistics (BLS): an agency of the Department of Labor.

Bureau of the Census: an agency of the Department of Commerce.

Constant Dollars: calculated by dividing current ("then-year") dollars by appropriate price deflator and multiplying the result by 100.

Deflator: index used to convert a price level to one comparable with the price level at a different time, offsetting the effect of inflation. The base period, which equals 100, is usually specified as either a given fiscal or calendar year.

Depreciation: the general conversion of the depreciable cost of a fixed asset into expense, spread over its remaining life. There are a number of methods, all based on a periodic charge to an expense account and a corresponding credit to a reserve account.

Development: the process or activity of working out a basic design, idea, or piece of equipment. See also Research and Development.

DoD: Department of Defense.

DoE: Department of Energy.

DoT: Department of Transportation.

Durable Goods Industry: comprised of major manufacturing industry groups with SIC Codes 24, 25, and 32-39. All major manufacturing industry groups in SIC Codes 20-23 and 26-31 are considered nondurable goods manufacturing industry groups.

Earnings: the actual return to the worker for a stated period of time. Irregular bonuses, retroactive items, payments of various welfare benefits, and payroll taxes paid by employers are excluded.

> **Average Hourly Earnings:** on a "gross" basis, reflecting not only changes in basic hourly and incentive wage rates, but also such variable factors as: premium pay for overtime, late

shift work, and changes in output of workers paid for an incentive plan.

Average Weekly Earnings: derived by multiplying average weekly hours by average hourly earnings.

Establishment: the basis for reporting to the Census of Manufacturers; an operating facility in a single location.

Evaluation (Department of Defense): determination of technical suitability of material, equipment, or a system. See RDT&E.

Expenditures (Federal Budget): see Outlays.

Export-Import Bank of the United States (Eximbank): created in 1934 and established as an independent U.S. government agency in 1945, Eximbank is designed "... to aid in financing and to facilitate exports..." Eximbank receives no appropriations from the U.S. Congress. It is directed by statute to: (1) offer financing that is competitive with that offered exporters of other countries by their official export credit institutions, (2) determine that the transactions supported provide for a reasonable assurance of repayment, (3) supplement, but not compete with private sources of export financing, and (4) take into account the effect of its activities on small business, the domestic economy, and U.S. employment.

Exports: domestic merchandise including commodities which are grown, produced, or manufactured in the United States and commodities of foreign origin which have been changed in the United States from the form in which they were imported or which have been enhanced in value by further manufacture in the United States and which are traded or sold to other nations.

FAA: Federal Aviation Administration (formerly the Federal Aviation Agency), an agency of the Department of Transportation.

Facility: a physical plant or installation including: real property, building, structures, improvements, and plant equipment.

Fiscal Year (Federal Budget): beginning October 1, 1976, the fiscal years run from October 1 through September 30 and are designated by the year in which they end.

Flyaway Value: includes the cost of the airframe, engines, electronics, communications, armament, and other installed equipment.

Foreign Military Sales (FMS): export sales to foreign governments arranged through the Department of Defense, whereby DoD recovers full purchase price and administrative costs; often mistakenly used to include foreign military aid and foreign commercial sales as well.

FY: see Fiscal Year.

GDP (Gross Domestic Product): the market value of goods and services produced by labor and property located in the United States.

General Agreement on Tariffs and Trade (GATT): a multilateral treaty among over 100 governments whose primary mission is the reduction of trade barriers. A World Trade Organization will be created by 1997 to implement the agreement and provide a forum to discuss trade issues.

General Aviation: all civil flying except that of air carriers.

Helicopter: a rotary-wing aircraft which depends principally for its support and motion in the air upon the lift generated by one or more power-driven rotors, rotating on substantially vertical axes. A helicopter is a V/STOL.

Heliport: an area, either at ground level or elevated on a structure, that is used for the landing and takeoff of helicopters and includes some or all of the various facilities useful to helicopter operations such as: helicopter parking, hangar, waiting room, fueling, and maintenance equipment.

Helistop: a minimum facility heliport, either at ground level or elevated on a structure for the landing and takeoff of helicopters, but without such auxiliary facilities as: waiting room, hangar parking, etc.

ICBM: InterContinental Ballistic Missile, with a range of more than 5,000 miles.

Imports: classified as "general imports" or "imports for consumption." This volume refers generally to "imports for consumption," which are entries for immediate consumption plus merchandise withdrawn from bonded storage warehouses for consumption. Data are compiled from Import Entries filed with U.S. Customs officials and are in general based on the market value or price in the foreign country at the time of exportation of such merchandise, including the cost of containers and coverings, as well as other charges and expenses incidental to placing the merchandise in condition, packed and ready for shipment to the United States, but excluding import duties, insurance, freight, and other charges incidental to arrival of the goods in the United States. The foreign values of imported merchandise are converted into U.S. currency at the rate of exchange prevailing on the day the merchandise is shipped to the United States.

Income:

Net Operating Income: total sales less total operating costs.

Other Income and Expenses: includes interest income, royalty income, capital gains and losses, interest expense, cash discounts, etc.

Net Income (Before Income Taxes): Net Operating Income plus or minus Other Income and Expenses.

Net Income (After Income Taxes): Net Income (Before Income Taxes) less federal income taxes.

Lump-Sum Wage Payment: a one-time payment given in lieu of general wage increases and/or cost of living adjustments in labor settlements.

Manufacturing Industries: those establishments engaged in the mechanical or chemical transformation of inorganic or organic substances into new products, and usually described as plants, factories, or mills, which characteristically use power-driven machines and materials-handling equipment; also establishments engaged in assembling component parts of manufactured products if the new product is neither a structure nor other fixed improvement.

Merchandise Trade Balance: the difference between the value of U.S. goods exported to other countries and foreign goods imported into this country. The trade balance is

generally regarded as "favorable" when exports exceed imports–a trade surplus–and "unfavorable" when imports exceed exports–a trade deficit.

Missile: sometimes applied to space launch vehicles, but more properly connotes automated weapons of warfare, i.e., a weapon which has an integral system of guidance, as opposed to the unguided rocket.

Multilateral Trade Negotiations (MTN): a forum within the GATT in which countries negotiate to overcome their trade problems. Awaiting ratification by each of the 112 nations involved in the MTN, the "Uruguay Round" seeks to strengthen the GATT and expand its disciplines to new areas such as: services, agriculture, and trade-related intellectual property rights.

NASA: National Aeronautics and Space Administration.

NATO: North Atlantic Treaty Organization.

New Obligational Authority (Federal Budget): see Budget Authority.

Non-Aerospace Products and Services: products and services other than aircraft, missiles, space vehicles, and related propulsion and parts, produced or performed by establishments whose principal business is the development and/or manufacture of aerospace products.

OASD: Office of the Assistant Secretary of Defense.

Obligations (Federal Budget): commitments made by Federal agencies to pay out money for products, services, or other purposes–as distinct from the actual payments. Obligations incurred may not be larger than budget authority.

Orders, Net New: the sales value of new orders (supported by legal documents) minus cancellations during the period.

Other Aerospace Products and Services: all conversions, modifications, site activation, other aerospace products (including drones), services, plus research and development under contract, defined as: basic and applied research in the sciences and in engineering and design and development of prototype products and processes.

Other Customers: all customers other than the U.S. government to include but not limited to: air carriers, private citizens and corporations, and state, local, and foreign governments.

Outlays: checks issued, interest accrued on the public debt, or other payments made, net of refunds and reimbursements.

Overtime Hours: that portion of the gross average weekly hours which was in excess of regular hours and for which premium payments were made.

Passenger-Mile: one passenger moved one mile.

Payroll, All Manufacturing: includes the gross earnings paid in the calendar year to all employees on the payroll of operating manufacturing establishments. Includes all forms of compensation paid directly to workers such as: salaries, wages, commissions, dismissal pay, all bonuses, vacation and sick leave pay, and compensation in kind; prior to such deductions as: employees' Social Security contributions, withholding taxes, group insurance, union dues, and savings bonds. Does

not include employers' Social Security contributions or other non-payroll labor costs such as: employees' pension plans, group insurance premiums, and workmen's compensation.

Procurement: the process whereby the executive agencies of the Federal Government acquire goods and services from enterprises other than the Federal Government.

Production Workers: includes working foremen and all non-supervisory workers (including lead-men and trainees) engaged in fabricating, processing, assembling, inspection, receiving, storage, handling, janitorial services, product development, auxiliary production for plant's own use, and recordkeeping and services closely associated with the above production operations.

RDT&E (Department of Defense): Research, Development, Test, and Evaluation.

Related Products and Services: sales of electronics, software, and ground equipment in support of aerospace products, plus sales by aerospace manufacturing establishments of systems and equipment which are generally derived from the industry's aerospace technological expertise in design, materials, and processes, but which are intended for applications other than flight.

Research: see Research and Development.

Research and Development:

Research: systematic study directed toward fuller scientific knowledge or understanding of the subject studied. Research is classified as either basic or applied according to the objectives of the sponsoring agency.

Applied Research: with the objective of gaining knowledge or understanding necessary for determining the means by which a recognized and specific need may be met.

Basic Research: with the objective of gaining fuller knowledge or understanding of the fundamental aspects of phenomena and of observable facts without specific applications toward processes or products in mind.

Development: the systematic use of scientific knowledge directed toward the production of useful materials, devices, systems, or methods including design and development of prototypes and processes.

Independent Research and Development (IR&D): a term devised by the Department of Defense and used by Federal agencies to differentiate between a contractor's research and development technical effort performed under a contract, grant, or other arrangement (R&D) and that which is self-initiated and self-funded (IR&D).

Industrial Research and Development: research and development work performed within company facilities, funded by company or Federal funds, and excluding company-financed research and development contracted to outside organizations such as: research institutions, universities and colleges, or other non-profit organizations.

Rotorcraft: an aircraft which, in all its usual flight attitudes, is supported

in the air wholly or in part by a rotor or rotors (i.e. airfoils rotating or revolving about an axis). See Helicopter.

Sales: net of returns, allowances, and discounts, the dollar value of shipments, including dealer's commissions, if any, which have passed through the sales account.

Satellite: a body that revolves around a larger body, such as the Moon revolving around the Earth, or a man-made object revolving about any body such as the Sun, Earth, or Moon.

SIC (Standard Industrial Classification): a system developed by the U.S. government to define the industrial composition of the economy, facilitating comparability of statistics. See Aerospace Industry for explanation of SIC codes applicable to the aerospace industry.

Space Vehicle: an artificial body operating in outer space (beyond the Earth's atmosphere).

Stockholder's Equity: assets minus all obligations of the corporation, except those to stockholders. Annual data are average equity for the year (using four end-of-quarter figures). For details, see "Quarterly Financial Report for Manufacturing, Mining and Trade Corporations," compiled by the Bureau of the Census.

STOL: short take-off and landing aircraft.

Test (Department of Defense): an experiment designed to assess progress in attainment or accomplishment of development objectives (see RDT&E).

Thrust: the driving force exerted by an engine, particularly an aircraft or missile engine, in propelling the vehicle to which it is attached.

Ton-Mile: one ton moved one mile.

Total Obligational Authority: the sum of budget authority granted or requested from the Congress in a given year, plus unused budget authority from prior years.

Trade Balance: see Merchandise Trade Balance.

Transition Quarter (Tr. Qtr.): the three-month interval from July 1, 1976 to September 30, 1976 belonging to neither Fiscal Year 1976 nor Fiscal Year 1977. See Fiscal Year.

Turbine, Turbo: a mechanical device or engine that spins in reaction to a fluid flow that passes through or over it. Frequently used in "turboprop" or "turbojet."

UK: United Kingdom.

US: United States of America.

USA: United States Army, an agency of the U.S. Department of Defense.

USAF: United States Air Force, an agency of the U.S. Department of Defense.

USN: United States Navy, an agency of the U.S. Department of Defense.

USSR: Union of Soviet Socialist Republics. Statistics continue to exclude this region until official data from the now independent republics become available.

Utility Aircraft: an aircraft designed for general purpose flying.

V/STOL: vertical short take-off and/or landing aircraft.

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AAI Corporation
Aerojet, A Segment of GenCorp
The Aerostructures Corporation
Allegheny Teledyne Inc.
  Teledyne Controls
  Teledyne Electronic Technologies
Alliant Techsystems Inc.
AlliedSignal Aerospace
American Pacific Corporation
Argo-Tech Corporation
B.H. Aircraft Company, Inc.
The Boeing Company
Calspan SRL Corporation
CMS, Inc.
Coltec Industries Inc.
  Chandler Evans
  Delavan Gas Turbine
  Menasco Aerosystems
  Walbar
Computing Devices International
Digital Equipment Corporation
Dowty Aerospace
  Los Angeles
  Yakima
Ducommun Incorporated
DuPont Company
GEC-Marconi Hazeltine Corporation
General Dynamics Corporation
General Electric Company
The BFGoodrich Company
  Landing Systems
  Maintenance, Repair, and Overhaul
  Sensors and Integrated Systems
Gulfstream Aerospace Corporation
Harris Corporation
HEICO Aerospace Corporation
Hexcel Corporation
Honeywell Inc.
Hughes Electronics Corporation
  Delco Electronics Corporation
  Hughes Aircraft Company
  Hughes Telecommunications and Space Company
  DIRECTV, Inc.
  Hughes Network Systems, Inc.
Interturbine Corporation
ITT Defense and Electronics Inc.
Kaman Aerospace Corporation
Litton Industries, Inc.
Lockheed Martin Corporation
Loral Space and Communications Ltd.
Lord Corporation
Lucas Aerospace Inc.
MOOG Inc.
Northrop Grumman Corporation
Northrop Grumman Corporation - Electronic Sensors & Systems Division
Parker Hannifin Corporation
Raytheon Company
  Raytheon TI Systems, Inc.
Rockwell Collins, Inc.
Rohr, Inc.
Rolls-Royce North America Inc.
Science Applications International Corporation (SAIC)
Sundstrand Corporation
Teleflex, Inc./TFX Sermatech
  Mal Tool & Engineering
Textron Inc.
Thiokol Corporation
Triumph Controls, Inc.
TRW Inc.
United Defense
United Technologies Corporation
  Aerospace/Defense:
    Pratt & Whitney
    Sikorsky
    Hamilton Standard
Woodward Governor Company

Aerospace
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Association

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