

AEROSPACE INDUSTRIES ASSOCIATION OF AMERICA, INC.

AEROSPACE

FACTS AND

FIGURES

1968



AEROSPACE FACTS AND FIGURES • 1968

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Director • V. J. Adduci

Editor • Gerald J. McAllister

Associate Editor • Richard Balentine

Economist • Gerson Chanowitz

Senior Statistician • Teresa Smith

Consultant • Rudolf Modley

Art Director • James J. Fisher

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FOREWORD

This 16th annual edition of *Aerospace Facts and Figures* is the statistical documentation of the aerospace industry's continuing growth and contribution to the nation's progress during 1967.

The aerospace industry in 1967 experienced its greatest growth since World War II.

- Sales reached a new high of \$27.2 billion, up from \$24.6 billion in 1966, representing 3.5 percent of the gross national product.
- Net profit after taxes, on the other hand, dropped from 3.0 percent of sales in 1966 to 2.7 percent in 1967, following a declining trend which began during 1966.
- Exports for the year increased about \$500 million over 1966 to \$2.2 billion.
- Employment averaged 1,392,000 compared to 1,298,000 in 1966 which represented 7.2 percent of all manufacturing employment in the nation. The aerospace industry continues to be the largest manufacturing employer in the United States.
- Backlog of orders for major aerospace company products rose to \$30.7 billion in 1967, up from \$27.5 billion the year previous.
- Aircraft production declined slightly from 19,877 in 1966 to an estimated 18,660 in 1967, primarily attributable to the decline in production of general aviation aircraft from an all-time high of 15,747 to 13,577 in 1967. Military sales were up from 3,600 in 1966 to about 4,000 in

1967. Manufacturers of commercial jet airliners sold 480 aircraft to world airlines in 1967, an increase of 45 percent over the previous year.

- Assets of aerospace firms rose from \$11 billion in 1966 to \$14.7 billion in 1967, reflecting a \$700 million rise in the value of manufacturers' facilities as they invested increasingly in plants and equipment.

Approximately 80 percent of the industry's products and services were supplied to the federal government in 1967. Customer agencies included the Department of Defense, the National Aeronautics and Space Administration, the Atomic Energy Commission, and the Federal Aviation Administration.

A significant portion of the industry's business involved non-aerospace goods and services. During the year sales of \$2.6 billion were recorded, indicative of the growing application of aerospace technology to such civilian areas of concern as urban crime and congestion, air and water pollution control, oceanology and intra-urban surface transportation.

The 1968 edition of *Aerospace Facts and Figures* documents statistically the aerospace industry's advancement over the years. These figures and predictions of even greater growth in the immediate future testify to the industry's viability.

KARL G. HARR, JR.
*Aerospace Industries Association
President*

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AEROSPACE SUMMARY

1968

Total sales of aerospace products and services in 1967 amounted to \$27.2 billion, a new high since World War II, up from \$24.6 billion in 1966. Growth of the industry is expected to continue in 1968 with sales estimated at nearly \$30 billion.

Industry backlog, the total of orders on company books, also reached a new high level in 1967 of \$30.7 billion, up from \$27.5 in 1966. In recent years commercial backlog has risen most rapidly, increasing by 95 per cent between 1965 and 1967 from \$6.7 billion to \$13.0 billion. This increase in commercial backlog has been the result of rapidly growing requirements for transports, general aviation, and vertical lift aircraft.

The aerospace industry is a significant contributor to the economic

AEROSPACE FACTS AND FIGURES, 1968

AEROSPACE SALES AND THE NATIONAL ECONOMY Calendar Years 1960 to Date (Dollar Figures in Billions)

Year Ending December 31	Total Gross National Product	SALES OF			AEROSPACE SALES AS PER CENT OF		
		Manufac- turing Industries	Durable Goods Industry	Aero- space Industry	GNP	Manu- factur- ing In- dustries	Dur- able Goods
1960	\$503.7	\$369.6	\$189.8	\$17.3	3.4	4.7	9.1
1961	520.1	370.6	186.4	18.0	3.5	4.9	9.7
1962	560.3	399.7	206.2	19.2	3.5	4.8	9.3
1963	590.5	417.5	216.8	20.1	3.4	4.8	9.3
1964	632.4	445.6	230.8	20.6	3.3	4.6	9.0
1965	683.9 ^r	483.3	252.2	20.7	3.0 ^r	4.3 ^r	8.2 ^r
1966	743.3 ^r	527.6 ^r	276.1 ^r	24.6 ^r	3.3 ^r	4.7 ^r	8.9 ^r
1967	785.0	538.9	277.5	27.2	3.5	5.0	9.8

^r Revised.

Sources: Manufacturing and Durable Goods Industries: Department of Commerce, Bureau of the Census, "Manufacturers' Shipments, Inventories, and Orders, Series M-3" (Monthly). Gross National Product: Department of Commerce, "Survey of Current Business," (Monthly). Aerospace: Aerospace Industries Association estimates, based on latest available information.

growth of the nation. In 1967 the aerospace industry contributed \$14.5 billion to the Gross National Product, 6.5 per cent of the \$224.3 billion supplied by all manufacturing industries.

The aerospace industry is also of primary significance in helping the government to move toward achieving its goal of a balance of payments equilibrium. In 1967 the aerospace industry exported over \$2.2 billion in goods and services, 7.2 per cent of total U. S. exports of \$31.1 billion. In this same year the industry provided over 44 per cent of the total U. S. trade balance of \$4.4 billion.

The U. S. is the world's leading manufacturer of commercial aircraft. The aerospace industry has manufactured more than 72 per cent of the 3,541 aircraft in operation in the world's civil airlines in 1966.

The aerospace industry is the nation's largest manufacturing employer. It employed an average of 1,392,000 people in 1967. The significance of the industry contribution to the nation's employment is underscored by the fact that its 1,392,000 employees constituted 7.2 per cent of total U. S. manufacturing employment, and 12.3 per cent of durable goods employees.

AEROSPACE SUMMARY

Payroll earned by these aerospace employees totaled \$12.4 billion in 1967, 9.2 per cent of the total U. S. manufacturing payroll.

Net profits in the aerospace industry as a per cent of sales (after taxes) declined between 1966 and 1967, from 3.0 per cent to 2.7 per cent. This decline was coincident with a similar decline throughout the U. S. economy in profit levels. Factors for this decline include rising material costs and increasing labor costs.

Applications of aerospace technology to civilian areas has been growing. In 1967 these companies sold almost \$2.6 billion in non-aerospace goods and services.

Areas of interest in this growing market include marine sciences, air and water pollution control, urban planning, and mass transportation, and many other programs.

The growing diversification of industry programs has been coupled with a significant contribution to the space program and the defense effort. In 1967 the aerospace industry provided \$21 billion in goods and services to NASA and the Department of Defense, 25 per cent of the total level of expenditures by these agencies for national defense and space exploration programs.

AEROSPACE CONTRIBUTION TO GROSS NATIONAL PRODUCT
Calendar Years 1960 to Date
(Dollar Figures in Billions)

Year	Total Gross National Product ^r	Contribution to GNP by		Aerospace Contribution as Per Cent of	
		Manufacturing Industries ^r	Aerospace Industry ^r	GNP ^r	Manufacturing Industries ^r
1960	\$503.7	\$144.4	\$ 8.5 ^r	1.7	5.9
1961	520.1	144.2	8.8 ^r	1.7	6.1
1962	560.3	158.8	10.0 ^r	1.8	6.3
1963	590.5	167.0	10.6 ^r	1.8	6.3
1964	632.4	180.3	10.7	1.7	5.9
1965	683.9	197.7	11.0	1.6	5.6
1966	743.3	218.6	13.3	1.8	6.1
1967	785.0	224.3	14.5	1.8	6.5

^r Revised.

NOTE: The contribution of an industry to Gross National Product is composed of the value added by manufacturing with adjustments for taxes and services.

Source: U. S. Department of Commerce, "Survey of Current Business" (Monthly). Aerospace Industries Association estimates, based on latest available information.

AEROSPACE FACTS AND FIGURES, 1968

ESTIMATED SALES OF THE AEROSPACE INDUSTRY, BY PRODUCT GROUP
 Calendar Years 1948 to Date
 (Millions of Dollars)

Year Ending December 31	TOTAL SALES	Product Group			
		Aircraft	Missiles	Space Vehicles	Non- aerospace ^r
1948	\$ 1,493	\$ 1,359	—	—	\$ 134
1949	2,232	2,032	—	—	200
1950	3,116	2,731	\$ 105	—	280
1951	6,264	5,067	633	—	564
1952	10,130	8,442	776	—	912
1953	12,459	10,420	918	—	1,121
1954	12,807	10,460	1,194	—	1,153
1955	12,411	9,781	1,513	—	1,117
1956	13,946	10,485	2,206	—	1,255
1957	15,858	11,398	3,033	—	1,427
1958	16,065	10,582	4,036	\$ 1	1,446
1959	16,640	9,714	5,042	386	1,498
1960	17,326	9,126	5,762	878	1,559
1961	17,997	8,847	6,266	1,264	1,620
1962	19,162	8,944	6,311	2,182	1,725
1963	20,134	8,527	6,003	3,774	1,830
1964	20,594	8,911	5,242	4,720	1,721
1965	20,670	9,747	3,626	5,329	1,968
1966	24,610	11,951	4,053	5,969	2,637
1967 ^p	27,217	14,981	4,417	5,240	2,579
1968 ^E	29,425	16,300	5,360	5,165	2,600

NOTE: Includes military and nonmilitary sales and research, development, test and evaluation. Because of changes in source material, individual years are not always strictly comparable.

^r Revised. Nonaerospace figures exclude nonaerospace establishments.

^p Preliminary.

^E Estimate.

Source: Aerospace Industries Association estimates, based on latest available information.

AEROSPACE SUMMARY

ESTIMATED SALES OF THE AEROSPACE INDUSTRY, BY CUSTOMER
(Millions of Dollars)
(Calendar Years 1948 to Date)

Year Ending December 31	TOTAL SALES	Aerospace Products and Services			Non- aerospace Products and Services ^f
		Government		Non- govern- ment	
		Department of Defense	NASA and Other		
1948	\$ 1,493	\$ 1,182	—	\$ 177	\$ 134
1949	2,232	1,802	—	230	200
1950	3,116	2,598	—	238	280
1951	6,264	5,353	—	347	564
1952	10,130	8,568	—	650	912
1953	12,459	10,604	—	734	1,121
1954	12,807	10,832	—	822	1,153
1955	12,411	10,508	—	786	1,117
1956	13,946	11,525	—	1,166	1,255
1957	15,858	12,833	—	1,598	1,427
1958	16,065	13,246	\$ 1	1,372	1,446
1959	16,640	13,171	130	1,841	1,498
1960	17,326	13,196	363	2,208	1,559
1961	17,997	13,871	630	1,876	1,620
1962	19,162	14,331	1,334	1,772	1,725
1963	20,134	14,191	2,628	1,485	1,830
1964	20,594	13,218	3,635	2,020	1,721
1965	20,670	11,396	4,490	2,816	1,968
1966	24,610	13,284	5,026	3,663	2,637
1967 ^p	27,217	15,854	4,152	4,632	2,579
1968 ^E	29,425	16,200	4,025	6,600	2,600

NOTE: Includes military and nonmilitary sales and research, development, test and evaluation. Because of changes in source material, individual years are not always strictly comparable.

^f Revised. Nonaerospace figures exclude nonaerospace establishments.

^p Preliminary.

^E Estimate.

Source: Aerospace Industries Association estimates, based on latest available information.

AEROSPACE FACTS AND FIGURES, 1968

DEPARTMENT OF DEFENSE
 TOTAL EXPENDITURES BY APPROPRIATION GROUP
 Fiscal Years, 1961 to Date
 (Millions of Dollars)

	Year Ending June 30		
	1961	1962	1963
TOTAL.....	\$44,676	\$48,205	\$49,973
PROCUREMENT.....	13,095	14,532	16,632
AIRCRAFT.....	5,898	6,400	6,309
MISSILES.....	2,972	3,442	3,817
Ships.....	1,801	1,906	2,522
Ordnance, Vehicles, & Related Equipment.....	675	1,137	1,665
Electronics and Communications.....	1,042	1,139	1,427
Other procurement.....	707	508	892
RESEARCH, DEVELOPMENT, TEST AND EVALUATION.....	6,131	6,319	6,376
AIRCRAFT.....	547	624	544
MISSILES.....	3,025	2,777	2,241
ASTRONAUTICS.....	518	749	946
Other.....	2,041	2,169	2,645
MILITARY ASSISTANCE.....	1,449	1,390	1,721
AIRCRAFT AND MISSILES.....	419	367	445
Other.....	1,030	1,023	1,276
Military Construction.....	1,605	1,347	1,144
Family Housing.....	—	—	427
Civil Defense.....	—	90	203
Military Personnel.....	12,085	13,032	13,000
Active Forces.....	10,651	11,530	11,386
Reserve Forces.....	648	607	599
Retired Pay.....	786	894	1,015
Operations and Maintenance.....	10,611	11,594	11,874
Other.....	(300)	(99)	(1,404)

AEROSPACE SUMMARY

DEPARTMENT OF DEFENSE
TOTAL EXPENDITURES BY APPROPRIATION GROUP—*Continued*
Fiscal Years, 1961 to Date
(Millions of Dollars)

Year Ending June 30

1964	1965	1966	1967	1968 ^E	1969 ^E
\$51,245	\$47,401	\$55,377	\$68,460	\$74,400	\$77,324
15,351	11,839	14,339	19,012	21,470	23,445
6,058	5,200	6,635	8,411	9,368	8,935
3,577	2,096	2,069	1,930	2,124	2,670
2,078	1,713	1,479	1,398	1,170	1,651
1,597	1,073	1,697	3,978	5,045	6,380
1,264	896	983	1,284	1,380	1,392
782	861	1,473	2,011	2,383	2,417
7,021	6,236	6,259	7,160	7,200	7,800
939	1,017	976	1,048	1,209	1,133
2,352	1,901	1,801	2,502	2,438	2,597
1,284	921	930	983	1,017	1,129
2,446	2,397	2,552	2,627	2,536	2,941
1,485	1,229	968	873	550	525
218	358	299	182 ^a	112 ^a	112 ^a
1,276	871	1,024	691	438	413
1,026	1,007	1,334	1,536	1,565	1,450
580	619	647	482	520	570
107	93	86	100	93	89
14,195	14,771	16,753	19,787	21,800	22,793
12,312	12,662	14,407	17,055	18,850	10,623
674	725	755	902	890	905
1,209	1,384	1,591	1,830	2,060	2,265
11,932	12,349	14,710	19,000	19,800	22,260
(452)	(741)	281	510	1,402	(1,608)

^E Estimate.

^a Aerospace Industries Association estimate based on deliveries of aircraft and missiles by the Air Force and Navy.

NOTE: Data in parentheses are minus figures.

Sources: Department of Defense, Reports "FAD 397, 585", January 29, 1968, "Military Assistance Facts", March 1968, "The Budget of the United States Government" (Annually).

AEROSPACE FACTS AND FIGURES, 1968

BACKLOG OF MAJOR AEROSPACE COMPANIES, By PRODUCT GROUP 1960 to Date (Millions of Dollars)

As of December 31	GRAND TOTAL	TOTAL		Aircraft and Engines		Mis- siles & Space Incl. Propul- sion	Other Aerospace		Non- aero- space
		U.S. Govt.	Other	U.S. Govt.	Other		U.S. Govt.	Other	
1960	12,220	N.A.	N.A.	5,732	2,439	N.A.	N.A.	N.A.	4,049
1961	13,922	11,018	2,904	5,056	2,136	3,836	1,391	390	1,113
1962	13,138	10,572	2,566	4,900	1,672	4,056	992	488	1,030
1963	13,904	10,950	2,954	4,924	1,887	4,646	837	458	1,152
1964	15,188	11,651	3,537	5,282	2,515	4,556	913	492	1,430
1965	20,385	13,731	6,654	6,107	5,281	5,480	1,294	562	1,661
1966	27,547	15,711	11,836	8,761	9,718	4,510	1,588	904	2,066
1967	30,722	17,750	12,972	20,628 ^a		5,704	1,712	917	1,761

NOTE: 1948 to 1960 based on reports from about 48 companies—all companies known to be engaged in the manufacture of complete aircraft, aircraft engines, and aircraft propellers. After 1960, based on reports from about 60 aerospace companies.

^a Of this amount sales of aircraft to the U. S. Government are \$7,071 million; to other customers are \$9,306 million. Total engine sales are \$4,251 million.

N.A.—Not available.

Source: Bureau of the Census, "Current Industrial Reports," Series M37D. (Quarterly).

SALES OF MAJOR AEROSPACE COMPANIES, By PRODUCT GROUP 1960 to Date (Millions of Dollars)

Year ending December 31	GRAND TOTAL	TOTAL		Aircraft and Engines		Mis- siles & Space Incl. Propul- sion	Other Aerospace		Non- aero- space
		U.S. Govt.	Other	U.S. Govt.	Other		U.S. Govt.	Other	
1960	10,977	N.A.	N.A.	4,246	2,183	N.A.	N.A.	N.A.	4,568
1961	14,948	11,766	3,182	3,967	1,888	5,187	1,824	852	1,230
1962	15,972	12,552	3,420	4,128	1,772	6,078	1,791	762	1,441
1963	16,407	13,203	3,204	4,158	1,459	6,904	1,611	682	1,593
1964	16,686	12,815	3,871	4,568	1,863	6,381	1,418	735	1,721
1965	17,016	12,515	4,481	4,525	2,532	5,819	1,413	759	1,968
1966	20,227	14,530	5,697	5,458	3,267	6,241	1,755	869	2,637
1967	23,438	16,329	7,109	7,140	4,750	6,053	1,914	1,002	2,579

NOTE: 1948 to 1960 based on reports from about 48 companies—all companies known to be engaged in the manufacture of complete aircraft, aircraft engines, and aircraft propellers. After 1960, based on reports from about 60 aerospace companies.

N.A.—Not available.

Source: Bureau of the Census, "Current Industrial Reports," Series M37D. (Quarterly).

AEROSPACE SUMMARY

FEDERAL EXPENDITURES FOR SELECTED FUNCTIONS AND FOR AEROSPACE PRODUCTS AND SERVICES Fiscal Years, 1948 to Date

Year Ending June 30	Federal Expenditures (Millions of Dollars)			AEROSPACE as Per Cent of Total National Defense and NASA
	Total National Defense	NASA AEROSPACE	Total AEROSPACE Products and Services	
1948	\$11,983	N.A.	\$ 891	7.4%
1949	13,988	N.A.	1,474	10.5
1950	13,009	N.A.	2,130	16.4
1951	22,444	N.A.	2,878	12.8
1952	45,963	N.A.	6,075	13.2
1953	50,442	\$ 79	9,204	18.2
1954	46,986	90	11,194	23.8
1955	40,695	74	10,470	25.7
1956	40,723	71	10,544	25.8
1957	43,368	76	12,506	28.8
1958	44,234	89	13,160	29.7
1959	46,483	145	13,330	28.6
1960	45,691	401	13,269	28.8
1961	47,494	744	13,866	28.7
1962	51,103	1,257	15,295	29.2
1963	52,755	2,552	16,214	29.3
1964	54,181	4,171	17,940	30.7
1965	50,163	5,093	15,697	28.4
1966	57,718	5,933	17,771	27.9
1967	70,095	5,423	20,193	26.7
1968 ^E	76,491	4,803	20,913	25.7
1969 ^E	79,792	4,592	21,076	25.0

NOTE: "National Defense" includes the military budget of the Department of Defense and Atomic Energy Commission. "NASA Aerospace" includes research and development activities and administrative operations and construction of facilities of NASA. NASA construction is not included in "Total Aerospace Products and Services."

N.A.—Not available.

^E Estimate

Source: "The Budget of the United States Government" (Annually).

AEROSPACE FACTS AND FIGURES, 1968

DEPARTMENT OF DEFENSE
AEROSPACE EXPENDITURES
Fiscal Years 1960 to Date
(Millions of Dollars)

Year Ending June 30	DOD Aerospace Expenditures	Procurement		Research, Development, Test, and Evaluation
		Military Functions	Military Assistance ^a	
1960	\$13,013	\$ 9,299	\$511	\$3,203
1961	13,379	8,870	419	4,090
1962	14,359	9,842	367	4,150
1963	14,302	10,126	445	3,731
1964	14,423	9,630	218	4,575
1965	11,487	7,290	358	3,839
1966	12,709	8,704	298	3,707
1967	15,056	10,341	182	4,533
1968 ^E	16,268	11,492	112	4,664
1969 ^E	16,576	11,605	112	4,859

^E Estimate.

^a Data on Military Assistance are based on deliveries of aircraft and missiles by Air Force and Navy. These data are not included in most other tables on Department of Defense expenditures in this book.

Sources: Department of Defense Reports "FAD 584, 585, January 29, 1968, Department of Defense "Military Assistance Facts" (Annually), "The Budget of the United States Government", (Annually).

DEPARTMENT OF DEFENSE
DIRECT OBLIGATIONS FOR AEROSPACE ACTIVITIES
Fiscal Years 1960 to Date
(Millions of Dollars)

Year Ending June 30	TOTAL	Aircraft	Missiles	Astronautics
1960	\$11,624	\$ 6,513	\$4,672	\$ 439
1961	11,098	5,667	4,911	520
1962	13,017	6,591	5,604	822
1963	14,112	6,499	6,415	1,198
1964	13,567	6,254	5,822	1,491
1965	11,913	6,986	4,030	897
1966	14,132	9,310	3,846	976
1967	17,270	11,703	4,427	1,140
1968 ^E	16,234	10,278	4,929	1,027
1969 ^E	16,752	9,678	5,820	1,254

^E Estimate.

Sources: Department of Defense, Reports "FAD584, 585," January 29, 1968.

AEROSPACE SUMMARY

ACTIVE MILITARY FORCES OF THE UNITED STATES 1961 to Date

	Actual		Estimated	
	June 30, 1961	June 30, 1967	June 30, 1968	June 30, 1969
Military personnel (in thousands):				
Army.....	858	1,442	1,536	1,508
Navy.....	627	752	768	795
Marine Corps.....	177	285	302	306
Air Force.....	820	897	884	868
Total, Department of Defense.....	2,482	3,376	3,490	3,477
Selected military forces:				
Strategic forces:				
Intercontinental ballistic missile squadrons:				
Minuteman.....	—	20	20	20
Titan.....	—	6	6	6
Atlas.....	4	—	—	—
Polaris submarines/missiles (in commission).....	5	41/656	41/656	41/656
Strategic bomber wings:				
B-52.....	13	12	11	10
B-58.....	1	2	2	2
B-47.....	20	—	—	—
Manned fighter interceptor squadrons.....	42	28	26	19
Bomarc interceptor missile squadrons.....	7	6	6	6
Army air defense missile battalions.....	49½	18	18	18
General purpose forces:				
Army divisions.....	11	17	19	19
Army maneuver battalions.....	—	201	212	212
Army aviation units.....	—	183	218	234
Army special forces groups.....	3	7	7	7
Warships (in commission):				
Attack carriers.....	15	15	15	15
Antisubmarine warfare carriers.....	9	8	8	8
Nuclear attack submarines.....	13	28	36	44
Other.....	328	327	320	309
Amphibious assault ships (in commission).....	110	162	157	166
Carrier air groups (attack and anti-submarine).....	28	27	27	25
Marine Corps divisions/aircraft wings.....	3	4/3	4/3	4/3
Air Force tactical forces squadrons.....	93	126	136	138
Airlift and sealift forces:				
Airlift aircraft squadrons:				
C-130 through C-141.....	16	44	44	43
C-118 and C-7.....	35	16	14	11
Troopships, cargo ships, and tankers.....	101	130	130	130
Active aircraft inventory (all programs):				
Army.....	5,564	9,490	10,671	11,464
Navy.....	8,793	8,417	8,942	8,606
Air Force ^a	16,905	15,017	15,127	15,044
Helicopters included in service aircraft, above.....	—	8,902	10,519	12,486
Commissioned ships in fleet (all programs).....	819	931	936	960

^a Includes aircraft provided for support of allies.

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

AEROSPACE FACTS AND FIGURES, 1968

EMPLOYMENT IN ALL MANUFACTURING, DURABLE GOODS, AND AEROSPACE INDUSTRIES Calendar Years 1959 to Date (Thousands of Employees)

Annual Average	All Manu- facturing Industries	Durable Goods Industries	AEROSPACE INDUSTRY		
			TOTAL	As Per Cent of	
				Manufac- turing	Durable Goods
1959	16,675	9,373	1,128	6.8%	12.0%
1960	16,796	9,459	1,074	6.1	10.8
1961	16,326	9,070	1,096	6.7	12.1
1962	16,853	9,480	1,177	7.0	12.4
1963	16,995	9,616	1,174	6.9	12.2
1964	17,274	9,816	1,117	6.5	11.4
1965	18,032	10,386	1,133	6.3	10.9
1966	19,081	11,186	1,298	6.8	11.6
1967	19,339	11,327	1,392	7.2	12.3

Sources: Manufacturing and Durable Goods: Bureau of Labor Statistics, "Employment and Earnings," (Monthly); Aerospace: Aerospace Industries Association, based on latest available information.



AEROSPACE SUMMARY

ESTIMATED EMPLOYMENT AND PAYROLL IN THE AEROSPACE INDUSTRY
Calendar Years 1959 to Date

Year Ending Decem- ber 31	Annual Average Aerospace Employment			Annual Average Aerospace Payroll			Aerospace as Per Cent of Total	
	TOTAL (Thousands of Employees)	Sala- ried	Produc- tion Worker	TOTAL (Millions of Dollars)	Sala- ried	Produc- tion Worker	Manu- factur- ing Em- plov- ment	Manu- factur- ing Pay- roll
1959	1,128	455	673	\$7,427	\$3,692	\$3,735	6.8%	8.5%
1960	1,074	467	607	7,317	3,835	3,482	6.1	8.2
1961	1,096	499	597	7,809	4,257	3,552	6.7	8.7
1962	1,177	558	619	8,889	5,045	3,844	7.0	9.2
1963	1,174	594	580	9,102	5,421	3,681	6.9	9.0
1964	1,117	565	552	8,897	5,326	3,571	6.5	8.3
1965	1,133	562	571	9,502	5,429	4,073	6.3	8.2
1966	1,298	612	686	11,235	6,061	5,174	6.8	8.8
1967	1,392	645	747	12,378	6,579	5,799	7.2	9.2

Sources: Manufacturing Employment: Bureau of Labor Statistics, "Employment and Earnings" (Monthly). Manufacturing Payroll: Bureau of Employment Security-Office of Business Economics estimates. Aerospace Employment and Payroll: Aerospace Industries Association, based on latest available information.

AEROSPACE FACTS AND FIGURES, 1968

U. S. EXPORTS AND EXPORTS OF AEROSPACE PRODUCTS
Calendar Years 1912 to 1967
(Millions of Dollars)

Year Ending December 31	TOTAL Exports of U.S. Merchandise	Exports of Aerospace Products			
		TOTAL	Commer- cial Transports	Other Aerospace Products	Percent of Total U. S. Exports
1912	\$ 2,170.3	\$ 0.1	\$ 0.1		^a
1915-18	22,176.7	31.5		31.5	0.14
1922	3,765.1	0.5		0.5	^a
1929	5,157.1	9.1		9.1	0.18
1931	2,378.0	4.9		0.2	0.2
1939	3,123.3	117.8		117.8	3.8
1944	14,161.5	2,818.2		2,818.2	19.9
1948	12,523	154	\$ 37	\$117	1.2
1950	10,142	242	40	202	2.4
1951	14,879	301	13	288	2.0
1952	15,049	603	18	585	4.0
1953	15,652	881	79	802	5.6
1954	14,981	619	93	526	4.1
1955	15,419	728	81	647	4.7
1956	18,940	1,059	133	926	5.6
1957	20,671	1,028	179	849	5.0
			Military	Civil	
1958	\$17,745	\$1,398	\$ 713	\$ 685	7.9
1959	17,461	1,095	557	538	6.3
1960	20,383	1,726	637	1,089	8.5
1961	20,754	1,653	775	878	8.0
1962	20,431	1,923	1,013	910	9.4
1963	23,062	1,627	895	732	7.1
1964	26,156	1,608	844	764	6.1
1965	27,135	1,618	764	854	6.0
1966	29,884	1,673	638	1,035	5.6
1967	31,147	2,248	868	1,380	7.2

^a Less than 0.5 per cent.

Sources: Bureau of the Census, "U. S. Exports of Domestic Merchandise, Schedule B Commodity by Country of Destination," Report FT 410 (Monthly). Bureau of the Census, "Highlights of U. S. Export and Import Trade," Report FT 990 (Monthly).

AEROSPACE SUMMARY



AIRCRAFT IN OPERATION ON WORLD CIVIL AIRLINES, NUMBER AND PERCENTAGE
MANUFACTURED IN THE UNITED STATES
Calendar Years 1958 to Date

Year Ending December 31	TOTAL AIRCRAFT IN OPERATION	Number Manufactured in the United States	Per Cent Manufactured in the United States
1958	3,402	2,819	82.9%
1959	3,479	2,868	82.4
1960	3,376	2,766	81.9
1961	3,319	2,542	76.6
1962	3,162	2,345	74.2
1963	3,086	2,266	73.4
1964	3,137	2,317	73.9
1965	3,461	2,548	73.6
1966	3,541	2,556	72.2

NOTE: Based on reports by members of the International Air Transport Association.
Source: International Air Transport Association.

AEROSPACE FACTS AND FIGURES, 1968

NET PROFIT AFTER TAXES AS A PER CENT OF SALES FOR MANUFACTURING CORPORATIONS Calendar Years 1957 to Date

Year	All Manufacturing Corporations (except Newspapers)	Non- Durable Goods	Durable Goods	Aerospace
1957	4.8%	4.9%	4.8%	2.9%
1958	4.2	4.4	3.9	2.4
1959	4.8	4.9	4.8	1.6
1960	4.4	4.8	4.0	1.4
1961	4.3	4.7	3.9	1.8
1962	4.5	4.7	4.4	2.4
1963	4.7	4.9	4.5	2.3
1964	5.2	5.4	5.1	2.6
1965	5.6	5.5	5.7	3.2
1966	5.6	5.5	5.6	3.0
1967	5.0	5.3	4.9	2.7

Source: Securities & Exchange Commission—Federal Trade Commission, "Quarterly Financial Report for Manufacturing Corporations."

DIRECT FEDERAL OBLIGATIONS FOR AEROSPACE PRODUCTS AND SERVICES 1960 to Date (Millions of Dollars)

Year Ending June 30	TOTAL	Department of Defense	National Aeronautics and Space Administration
1960	\$11,939	\$11,624	\$ 315
1961	11,751	11,098	653
1962	14,321	13,017	1,304
1963	16,628	14,112	2,516
1964	17,443	13,567	3,876
1965	16,257	11,913	4,344
1966	19,212	14,132	5,080
1967	22,166	17,270	4,896
1968 ^E	20,957	16,234	4,723
1969 ^E	21,077	16,752	4,325

^E Estimate.

Sources: Department of Defense, Reports "FAD 584, 585," January 29, 1968; National Aeronautics and Space Administration, The Budget of the United States Government (Annually). NASA excludes construction of facilities.

AEROSPACE SUMMARY

SELECTED FEDERAL PROGRAMS FOR RESOURCES MANAGEMENT Fiscal Years 1967 to 1969 (Millions of Dollars)

	Year Ending June 30		
	1967	1968	1969
Atmospheric Sciences	\$208	\$237	\$210
Marine Science & Technology	438	448	516
Water Research	114	136	143
Urban Planning	33	45	55
Transportation Research	3	6	7
Urban Mass Transportation	157	140	190
Model Cities Programs	11	212	500
Urban Research & Technology	1	10	20

NOTE: The amounts shown represent obligations or new obligational authority.
Source: "The Budget of the United States Government", (Annually).



AIRCRAFT PRODUCTION



Aircraft sales rose more rapidly in 1967 than in any year since the Korean War. Total sales by major manufacturers of complete aircraft, engines, propellers and parts—commercial and military—rose to \$11.9 billion, an increase of 36 per cent over 1966. Commercial sales contributed most heavily to this record as they jumped 45 per cent, compared to an increase of 32 per cent for the U. S. military.

Total number of aircraft produced actually fell off slightly, despite the increase in value of sales. In 1967, production was estimated at 18,660, compared to 19,877 for 1966. The major reason was a decline in general aviation aircraft from an all-time high in 1966 of 15,747, to 13,577 in 1967. Military sales rose from 3,600 in 1966 to about 4,000 in 1967.

Primary reason for the increase in value of aircraft produced was the continued expansion of the market for large jet transports. The four U. S. manufacturers of jet airliners sold 480 during 1967, an increase of 45 per cent over the previous year.

Backlog of orders for aircraft, engines, propellers and parts continued its rise and reached a post-World War II high of \$20.6 billion.

AIRCRAFT PRODUCTION

AIRCRAFT SALES AND BACKLOG, REPORTED BY MAJOR MANUFACTURERS OF
COMPLETE AIRCRAFT, AIRCRAFT ENGINES, PROPELLERS, AND PARTS
Calendar Years 1948 to Date
(Millions of Dollars)

Year Ending December 31	Aircraft, Aircraft Engines, Propellers, and Parts	
	Net Sales During Year	Backlog December 31
1948	\$ 1,061 ^a	\$ 2,983
1949	1,668	2,853
1950	2,116	4,717
1951	2,872	11,898
1952	5,654	16,692
1953	7,754	15,928
1954	7,471	13,755
1955	7,231	13,864
1956	7,689	16,000
1957	9,482	12,363
1958	8,661	10,182
1959	7,206	8,082
1960	6,429	8,171
1961	5,855	7,192
1962	5,900	6,572
1963	5,617	6,811
1964	6,431	7,797
1965	7,057	11,388
1966	8,725	18,479
1967	11,890	20,628

^a Three quarters only.

NOTE: 1948 to 1960 based on reports from about 48 companies—all companies known to be engaged in the manufacture of complete aircraft, aircraft engines, and aircraft propellers. After 1960, based on reports from about 60 aerospace companies.

Source: Bureau of the Census, "Current Industrial Reports," Series M37D (Quarterly).

AEROSPACE FACTS AND FIGURES, 1968

AIRCRAFT SALES BY MAJOR MANUFACTURERS OF COMPLETE AIRCRAFT,
AIRCRAFT ENGINES, PROPELLERS AND PARTS
Calendar Years 1948 to Date
(Millions of Dollars)

Year Ending Dec. 31	Total Aircraft Sales			Aircraft & Parts		Aircraft Engines & Parts		Aircraft Propellers & Parts	
	TOTAL	U.S. Gov- ern- ment	Other	U.S. Gov- ern- ment	Other	U.S. Gov- ern- ment	Other	U.S. Gov- ern- ment	Other
1948 ^a	\$1,061	\$ 884	\$ 177	\$ 626	\$ 122	\$ 222	\$ 43	\$ 36	\$12
1949	1,668	1,438	230	927	171	461	47	50	12
1950	2,116	1,878	238	1,255	161	561	64	62	13
1951	2,872	2,525	347	1,657	226	779	100	89	21
1952	5,654	5,004	650	3,442	455	1,440	169	122	26
1953	7,754	7,026	734	5,661	518	2,189	189	176	27
1954	7,471	6,649	822	4,626	600	1,872	190	151	32
1955	7,231	6,445	786	4,605	559	1,728	205	112	22
1956	7,689	6,523	1,166	4,704	814	1,718	317	101	35
1957	9,482	7,884	1,598	5,607	1,165	2,137	390	140	43
1958	8,661	7,289	1,372	5,305	1,014	1,858	321	126	37
1959	7,206	5,395	1,841	4,063	1,395	1,268	408	64	38
1960	6,527	4,319	2,208	3,333	1,766	913	417	73	25
1961	5,842	3,966	1,876	2,945	1,442	1,021	434	^b	^b
1962	5,898	4,126	1,772	2,998	1,389	1,130	383	^b	^b
1963	5,613	4,154	1,459	2,986	1,055	1,168	404	^b	^b
1964	6,428	4,571	1,857	3,506	1,409	1,065	448	^b	^b
1965	7,057	4,525	2,532	3,393	1,950	1,132	582	^b	^b
1966	8,725	5,458	3,267	4,086	2,544	1,372	723	^b	^b
1967	11,890	7,140	4,750	5,344	3,735	1,796	1,015	^b	^b

^a Total for the last three quarters of 1948 only.

^b Included in "Aircraft and Parts."

NOTE: 1948 to 1960 based on reports from about 48 companies—all companies known to be engaged in the manufacture of complete aircraft, aircraft engines, and aircraft propellers.

After 1960, based on reports from about 60 aerospace companies.

Source: Bureau of the Census, "Current Industrial Reports. Series M37D" (Quarterly).

AIRCRAFT PRODUCTION



DEPARTMENT OF DEFENSE
EXPENDITURES FOR AIRCRAFT PROCUREMENT, BY AGENCY
Fiscal Years 1951 to Date
(Millions of Dollars)

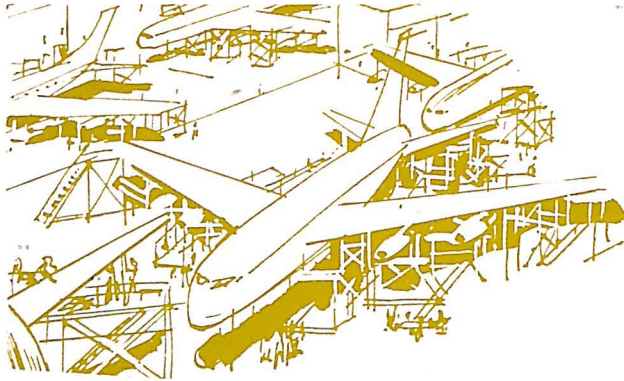
Year Ending June 30	Total Defense Department	Air Force	Navy	Army
1951	\$2,412	\$1,812	\$ 594	\$ 7
1952	4,888	3,633	1,205	51
1953	8,189	N.A.	N.A.	N.A.
1954	9,080	N.A.	N.A.	N.A.
1955	8,804	N.A.	N.A.	N.A.
1956	7,835	N.A.	N.A.	N.A.
1957	8,647	N.A.	N.A.	N.A.
1958	8,793	N.A.	N.A.	N.A.
1959	7,730	N.A.	N.A.	N.A.
1960	6,272	4,414	1,765	93
1961	5,898	3,926	1,832	141
1962	6,659	4,387	2,102	170
1963	6,309	3,746	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 ^E	9,368	5,260	2,990	1,118
1969 ^E	8,935	5,231	2,765	939

N.A.—Not available.

^E Estimate.

Source: Department of Defense, Report "FAD 581," January 29, 1968.

AEROSPACE FACTS AND FIGURES, 1968



**AIRCRAFT BACKLOG OF ORDERS REPORTED BY MAJOR MANUFACTURERS OF COMPLETE AIRCRAFT, AIRCRAFT ENGINES, PROPELLERS AND PARTS
1948 to Date
(Millions of Dollars)**

Dec. 31	Total Aircraft Backlog			Aircraft & Parts		Aircraft Engines & Parts		Aircraft Propellers & Parts	
	TOTAL	U.S. Government	Other	U.S. Government	Other	U.S. Government	Other	U.S. Government	Other
1948	\$ 2,983	\$2,817	\$ 166	\$1,962	\$ 132	\$ 759	\$ 27	\$ 96	\$ 7
1949	2,853	2,708	145	1,913	100	710	39	85	6
1950	4,717	4,287	430	2,759	343	1,399	71	129	16
1951	11,898	10,899	999	7,336	790	3,350	181	213	28
1952	16,692	15,626	1,066	10,367	855	4,992	180	267	31
1953	15,928	14,984	944	10,840	764	3,953	153	191	27
1954	13,755	12,835	920	9,868	771	2,806	123	161	26
1955	13,864	11,553	2,311	8,717	1,956	2,730	331	106	24
1956	16,000	12,299	3,701	8,837	2,907	3,316	749	146	45
1957	12,363	8,942	3,421	6,437	2,799	2,379	590	126	32
1958	10,182	6,933	3,249	5,407	2,688	1,479	539	47	22
1959	8,082	5,442	2,640	4,419	2,231	985	400	48	9
1960	7,791	5,406	2,385	4,101	2,031	1,256	348	49	6
1961	7,214	5,084	2,130	3,996	1,673	1,088	457	a	a
1962	6,528	4,864	1,664	3,687	1,301	1,177	363	a	a
1963	6,722	4,825	1,897	3,844	1,467	1,081	430	a	a
1964	7,799	5,283	2,516	4,291	1,988	992	528	a	a
1965	11,387	6,071	5,316	4,425	4,460	1,646	856	a	a
1966	18,479	10,386	8,093	8,140	6,515	2,246	1,578	a	a
1967	20,628	20,628		7,071	9,306		4,251	a	a

NOTE: 1948 to 1960 based on reports from about 48 companies—all companies known to be engaged in the manufacture of complete aircraft, aircraft engines, and aircraft propellers.

After 1960, based on reports from about 60 aerospace companies.

^a Included in "Aircraft and Parts."

Source: Bureau of the Census, "Current Industrial Reports, Series M37D" (Quarterly).

AIRCRAFT PRODUCTION

NUMBER OF MILITARY AIRCRAFT, MISSILES, AND OTHER ITEMS PROGRAMMED,
1968 AND 1969, BY SERVICE

Major Item	Year Ending June 30	
	1968	1969
<u>AIRCRAFT</u>		
Air Force.....	1,078	919
Navy and Marine Corps.....	521	720
Army.....	1,168	1,304
Total—All Services.....	2,767	2,943
Helicopters.....	1,305	1,626
Other Aircraft.....	1,462	1,317
<u>MISSILES</u>		
Air Force.....	4,093	6,523
Navy and Marine Corps.....	8,972	6,656
Army.....	14,900	29,807
Total—All Services.....	27,965	42,986
<u>SHIPS—Navy</u>		
New Construction.....	30	25
Conversions.....	19	43
Total—Ships.....	49	68
<u>TRACKED COMBAT VEHICLES</u>		
Army.....	3,584	3,156

Source: Department of Defense, OASD (Comptroller), January 29, 1968.

AEROSPACE FACTS AND FIGURES, 1968

U. S. AIRCRAFT PRODUCTION
 Calendar Years 1909 to Date
 (Number of Aircraft)

Year Ending December 31	TOTAL	Military	Civil
1909	N.A.	1	N.A.
1910	N.A.	—	N.A.
1911	N.A.	11	N.A.
1912	45	16	29
1913	43	14	29
1914	49	15	34
1915	178	26	152
1916	411	142	269
1917	2,148	2,013	135
1918	14,020	13,991	29
1919	780	682	98
1920	328	256	72
1921	437	389	48
1922	263	226	37
1923	743	687	56
1924	377	317	60
1925	789	447	342
1926	1,186	532	654
1927	1,995	621	1,374
1928	4,346	1,219	3,127
1929	6,193	677	5,516
1930	3,437	747	2,690
1931	2,800	812	1,988
1932	1,396	593	803
1933	1,324	466	858
1934	1,615	437	1,178
1935	1,710	459	1,251
1936	3,010	1,141	1,869
1937	3,773	949	2,824
1938	3,623	1,800	1,823

(Continued on next page)

AIRCRAFT PRODUCTION

AIRCRAFT PRODUCTION 1909 TO DATE (cont'd) (Number of Aircraft)

Year Ending December 31	TOTAL	Military	Civil
1939	5,856	2,195	3,661
1940	12,813	6,028	6,785
1941	26,289	19,445	6,844
1942	47,675	47,675	—
1943	85,433	85,433	—
1944	95,272	95,272	—
1945	48,912	46,865	2,047
1946	36,418	1,417	35,001
1947	17,739	2,122	15,617
1948	9,838	2,536	7,302
1949	6,137	2,592	3,545
1950	6,200	2,680	3,520
1951	7,532	5,055	2,477
1952	10,640	7,131	3,509
1953	13,112	8,978	4,134
1954	11,478	8,089	3,389
1955	11,484	6,664	4,820
1956	12,408	5,203	7,205
1957	11,943	5,198	6,745
1958	10,938	4,078	6,860
1959	11,076	2,834	8,242
1960	10,237	2,056	8,181
1961	9,054	1,582	7,472
1962	9,308	1,975	7,333
1963	10,125	1,970	8,155
1964	12,492	2,439	10,053
1965	15,349	2,806	12,543
1966	19,877 ^E	3,600 ^E	16,277
1967	18,660 ^E	4,000 ^E	14,660

NOTE: 1950 to date excludes aircraft produced for the Military Assistance Program.

^E Estimate.

N.A.—Not available.

Sources: Aerospace Industries Association, "Aerospace Facts and Figures" (Annually). Department of Commerce, Bureau of the Census, "Current Industrial Reports, Series M37G" (Monthly). Department of Defense.

AEROSPACE FACTS AND FIGURES, 1968

MILITARY AIRCRAFT PRODUCED: NUMBER, FLYAWAY VALUE, AND AIRFRAME WEIGHT Calendar Years 1950 to Date

Year Ending Decem- ber 31	TYPE OF AIRCRAFT						
	TOTAL	Bomber	Fighter	Trans- port	Trainer	Heli- copter	Other
<i>NUMBER</i>							
1950	2,680	560	1,477	176	351	60	56
1951	5,055	502	1,937	271	558	349	1,438
1952	7,131	1,193	2,117	479	1,363	961	1,018
1953	8,978	1,156	3,958	713	1,510	873	768
1954	8,089	1,806	3,511	626	1,403	373	370
1955	6,664	1,353	3,128	513	1,111	410	149
1956	5,203	1,164	1,916	362	778	644	339
1957	5,198	873	2,073	224	819	659	550
1958	4,078	676	1,482	271	560	641	448
1959	2,834	511	922	215	564	451	171
1960	2,056	471	595	142	268	488	92
1961	1,582	397	376	148	203	366	92
1962	1,975	398	437	256	211	554	119
1963	1,970	310	423	282	204	672	79
1964	2,439	362	586	254	191	1,007	39
1965	2,806	283	496	136	396	1,470	25
<i>FLYAWAY VALUE^a (Millions of Dollars)</i>							
1950	1,141.3	546.4	339.7	178.5	47.7	6.3	22.7
1951	1,684.3	690.5	559.1	278.5	78.2	29.6	48.4
1952	3,162.0	1,334.7	751.7	647.9	256.1	101.4	70.2
1953	4,722.9	1,799.2	1,672.5	791.5	253.6	124.4	81.7
1954	5,715.0	2,405.4	2,087.0	854.4	261.3	82.0	24.9
1955	4,927.9	2,013.8	1,907.4	652.7	166.4	169.2	18.4
1956	5,075.3	2,202.9	1,987.4	537.0	115.5	184.6	47.9
1957	5,284.9	2,163.4	2,086.5	676.2	169.5	156.6	32.7
1958	5,365.3	2,157.2	2,106.6	781.9	139.4	156.0	24.2
1959	5,101.0	2,066.1	1,829.5	759.4	216.1	163.1	66.8
1960	3,384.4	1,560.7	1,109.1	415.5	130.0	172.9	50.2
1961	4,497.4	2,570.0	1,054.6	385.2	199.7	228.2	54.7
1962	3,816.1	1,629.5	1,005.2	674.3	193.7	109.6	63.8
1963	2,876.1	798.3	931.0	587.2	181.5	337.3	40.8
1964	3,080.2	801.7	1,156.6	623.6	121.5	356.1	20.7
1965	2,875.1	638.8	960.2	655.2	108.0	490.1	22.8

(Continued on next page)

AIRCRAFT PRODUCTION

MILITARY AIRCRAFT PRODUCED: NUMBER, FLYAWAY VALUE, AND AIRFRAME WEIGHT—*Continued* Calendar Years 1950 to Date

Year Ending Decem- ber 31	TYPE OF AIRCRAFT						
	TOTAL	Bomber	Fighter	Trans- port	Trainer	Heli- copter	Other
<i>AIRFRAME WEIGHT (Millions of Pounds)</i>							
1950	35.9	16.4	10.2	6.7	1.9	b	0.7
1951	50.2	17.0	15.7	11.5	3.1	b	2.0
1952	107.3	36.7	31.7	24.6	9.5	b	4.8
1953	138.0	44.1	40.7	36.5	11.3	b	5.4
1954	130.4	51.8	35.4	31.1	9.6	b	2.5
1955	114.3	39.9	43.2	20.9	7.4	b	2.9
1956	90.0	38.6	30.6	13.1	3.3	b	4.4
1957	79.4	32.7	28.7	9.3	4.2	b	4.5
1958	66.1	25.2	18.0	15.9	3.1	b	3.9
1959	51.8	18.6	12.9	14.6	3.5	b	2.2
1960	35.8	13.6	9.1	9.7	1.1	b	2.3
1961	29.6	11.9	6.1	8.3	0.9	b	2.4
1962	35.6	10.3	7.4	13.2	1.3	b	3.4
1963	32.1	4.1	8.2	14.5	1.3	b	4.0
1964	38.7	5.6	12.4	15.1	1.1	b	4.5
1965	33.9	4.7	10.7	10.8	1.4	b	6.3

NOTE: Data exclude gliders and targets.

^a Values up to 1961, are based on unit prices in latest production contracts and do not include values of spares, spare parts, and other support equipment. Since 1961, data include spares, spare parts, and support equipment that are procured with the basic aircraft.

^b Airframe weight of helicopters is included in the "other" category.

Source: Department of Defense. Data released with a two year lag for security reasons.



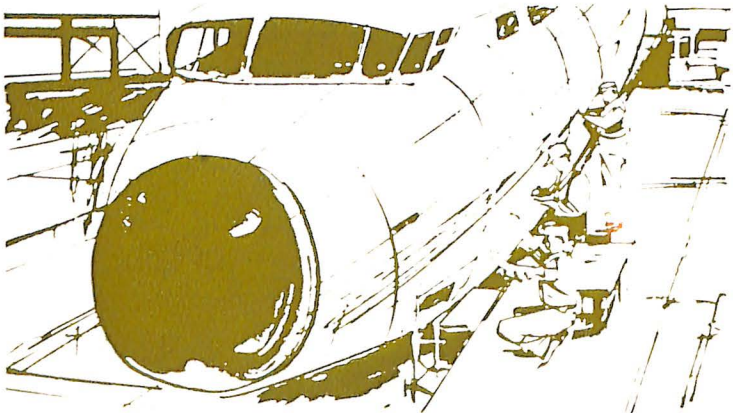
AEROSPACE FACTS AND FIGURES, 1968

PRODUCTION OF COMMERCIAL TRANSPORT AIRCRAFT 1960 to Date (Fixed Wing, Multiple Engine)

Company and Aircraft	1960	1961	1962	1963	1964	1965	1966	1967
TOTAL^a	245	198	134	100	163	233	344	480
Boeing								
707.....	68	11	38	28	32	54	77	113
720.....	24	61	30	6	6	9	6	5
727.....	—	—	—	6	95	112	135	115
737.....	—	—	—	—	—	—	—	4
Convair								
440.....	5	—	—	—	—	—	—	—
880.....	15	49	9	14	—	—	—	—
990.....	—	—	22	15	—	—	—	—
Douglas								
DC-8.....	91	42	22	19	20	31	16	41
DC-9.....	—	—	—	—	—	5	69	155
Fairchild								
F-27.....	14	8	7	6	5	12	3	3
FH-227.....	—	—	—	—	—	—	27	35
Lockheed								
Electra.....	24	21	—	—	—	—	—	—
130.....	4	6	6	6	—	10	11	9
Other.....	—	—	—	—	5	—	—	—

^a Commercial transport totals differ from FAA totals for "transports" because they exclude some executive and other transports for other than commercial use.

Source: Aerospace Industries Association, company reports.



AIRCRAFT PRODUCTION

PRODUCTION OF GENERAL AVIATION AIRCRAFT, BY FOURTEEN MANUFACTURERS, 1967

Manufacturer and Model	Complete Aircraft, Number	Manufacturers' Net Billing Price (Thousands of Dollars)
TOTAL	13,577	\$359,630 ^a
Aero Commander—TOTAL	362	\$ 31,760
100.....	132	
200.....	24	
500B/U.....	18	
560F.....	1	
680V.....	20	
680T.....	16	
680F.....	1	
680FL.....	8	
680FLP.....	5	
1121.....	21	
A-9.....	21	
A-9S.....	33	
B-1A.....	6	
B-1.....	5	
S2B Snow Commander.....	2	
S2C Snow Commander.....	1	
S2D Snow Commander.....	47	
S2A Snow Commander.....	1	
Alon		
A2 Aircoupe.....	50	401 ^E
Beech—TOTAL	1,260	91,961
King Air 90.....	119	
Queen Air 88.....	5	
Queen Air 80.....	41	
Queen Air 65.....	34	
Super 18.....	10	
Baron 56TC.....	41	
Baron D55.....	40	
Baron C55.....	167	
Baron B55.....	30	
Travelair 95.....	29	
Bonanza V35TC.....	39	
Bonanza V35.....	254	
Bonanza E33A.....	11	
Bonanza E33.....	12	
Debonair C33A.....	50	
Debonair C33.....	61	
Musketeer 24.....	118	
Musketeer 23.....	78	
Musketeer 19.....	121	

(Continued on next page)

AEROSPACE FACTS AND FIGURES, 1968

PRODUCTION OF GENERAL AVIATION AIRCRAFT,
BY FOURTEEN MANUFACTURERS, 1967—*Continued*

Manufacturer and Model	Complete Aircraft, Number	Manufacturers' Net Billing Price (Thousands of Dollars)
Bellanca—TOTAL	86	1,767
260C.....	10	
Viking 300.....	72	
Super Viking.....	4	
Cessna—TOTAL	6,233	\$116,558
150.....	2,114	
F150.....	150	
F172.....	142	
Reims Rocket.....	1	
172 Skyhawk.....	839	
177/Cardinal.....	557	
180.....	90	
182/Skylane.....	836	
185/Skywagon.....	151	
AgWagon.....	95	
Super Skylane.....	106	
Super Skywagon.....	243	
210 Centurion.....	129	
Turbo Centurion.....	97	
Super Skymaster.....	169	
Turbo Super Skymaster.....	57	
310.....	174	
Skyknight.....	68	
401.....	68	
402.....	66	
411.....	41	
421.....	40	
Champion		
Citabria.....	267	2,032
Grumman		
Ag Cat.....	52	N.A.
Lake		
LA-4.....	15	402
Lear Jet—TOTAL	34	20,159
23.....	3	
24.....	30	
25.....	1	
Lockheed		
JetStar.....	19	N.A.

(Continued on next page)

AIRCRAFT PRODUCTION

PRODUCTION OF GENERAL AVIATION AIRCRAFT, BY FOURTEEN MANUFACTURERS, 1967—*Continued*

Manufacturer and Model	Complete Aircraft, Number	Manufacturers' Net Billing Price (Thousands of Dollars)
Maule—TOTAL	43	589
M-4C.....	2	
M-4T.....	1	
M-4-210.....	1	
M-4-210C.....	32	
M-4-220C.....	7	
Mooney—TOTAL	642	14,571 ^E
Mark 21 (M20C).....	142	
Super 21 (M20E).....	69	
Executive (M20F).....	373	
Statesman (M20G).....	38	
Mustang (M22).....	6	
MU-2.....	1	
MU-2B.....	13	
North American Sabreliner.....	24	N.A.
Piper—TOTAL	4,490	79,430
PA-18-150 Super Cub.....	140	
PA-23-250 Aztec.....	264	
PA-24-180 Comanche.....	1	
PA-24-260 Comanche.....	110	
PA-25-235 Pawnee.....	314	
PA-25-260.....	19	
PA-28-140 Cherokee.....	1,571	
PA-28-150 Cherokee.....	14	
PA-28-160 Cherokee.....	7	
PA-28-180 Cherokee.....	537	
PA-28-180C.....	9	
PA-28-180R Arrow.....	291	
PA-28-180D.....	161	
PA-28-235 Cherokee.....	201	
PA-30-160 Comanche.....	258	
PA-31-300 Navajo.....	118	
PA-32-260 Cherokee.....	162	
PA-32-300 Cherokee.....	313	

^E Estimated.

^a Total dollar figures exclude Grumman, Lockheed and North American.

NOTE: The totals here may differ from FAA figures because they are based on selected reports only.

Excludes aircraft shipped to the military, helicopters and gliders.

Source: Aerospace Industries Association, company reports.

AEROSPACE FACTS AND FIGURES, 1968

PRODUCTION OF GENERAL AVIATION AIRCRAFT BY SELECTED MANUFACTURERS

Calendar Years 1947 to Date

Year Ending December 31	TOTAL	Beech	Cessna	Champ- ion	Lear	Lock- heed	Mooney ^a	North Amer- ican Rock- well ^b	Piper	Other
NUMBER OF AIRCRAFT SHIPPED										
1947...	15,594	1,288	2,390	—	—	—	—	—	3,634	8,452
1948...	7,037	746	1,631	—	—	—	—	—	1,479	3,181
1950...	3,386	489	1,134	—	—	—	51	—	1,108	604
1952...	3,058	414	1,373	—	—	—	49	39	1,161	22
1954...	3,071	579	1,200	—	—	—	14	67	1,191	20
1956...	6,738	724	3,235	162	—	—	79	154	2,329	55
1958...	6,414	694	2,926	296	—	—	160	97	2,162	79
1960...	7,588	962	3,720	248	—	—	172	155	2,313	18
1961...	6,811	818	2,746	112	—	14	286	139	2,646	50
1962...	6,723	830	3,124	91	—	9	387	121	2,139	22
1963...	7,603	1,061	3,456	99	—	10	502	114	2,321	40
1964...	9,371	1,103	4,188	60	3	6	650	109	3,196	56
1965...	11,967	1,192	5,629	271	80	18	775	110	3,776	116
1966...	15,747	1,535	7,888	331	51	24	917	354	4,437	210
1967...	13,577	1,260	6,233	267	34	19	642	386	4,490	246
MANUFACTURER'S NET BILLING PRICE (Thousands of Dollars)^c										
1947...	57,929	13,405	5,976	—	—	—	—	—	7,697	30,851
1948...	32,469	10,126	6,768	—	—	—	—	—	3,083	12,492
1950...	19,157	6,516	5,506	—	—	—	82	—	3,092	3,961
1952...	26,159	9,848	9,220	—	—	—	100	2,011	4,891	89
1954...	43,461	20,056	10,666	—	—	—	31	4,517	8,070	121
1956...	103,791	28,770	38,570	597	—	—	741	11,183	23,474	456
1958...	101,939	27,072	36,897	1,516	—	—	1,868	6,902	26,548	1,136
1960...	151,220	43,061	56,664	1,492	—	—	2,781	11,917	35,102	203
1961...	124,323	37,072	42,266	690	—	N.A.	3,987	11,047	28,889	372
1962...	136,837	37,359	50,181	683	—	N.A.	5,525	10,846	32,142	101
1963...	153,415	38,594	55,662	1,119	—	N.A.	7,235	11,840	38,540	425
1964...	198,876	54,923	66,818	394	N.A.	N.A.	9,569	11,973	54,479	720
1965...	318,732	72,211	97,239	1,618	45,130	N.A.	12,173	27,727	62,130	504
1966...	408,219	97,284	128,150	2,269	28,555	N.A.	15,406	51,537	80,100	4,918
1967...	359,630	91,961	116,558	2,032	20,159	N.A.	14,571 ^e	31,760	79,430	3,159

^a Includes production of Imco.

^b Includes production of Aero Commanders and Sabreliners. Value figures are for Aero Commander only.

^c Excludes Grumman, Lockheed and North American Sabreliner.

^e Estimate.

Source: Aerospace Industries Association, company reports.

AIRCRAFT PRODUCTION

PRODUCTION OF MILITARY HELICOPTERS Calendar Years 1941 to Date

Year Ending December 31	TOTAL ^a	Air Force	Navy	Army
1941	7	7	—	—
1942	—	—	—	—
1943	22	19	3	—
1944	144	120	24	—
1945	275	241	34	—
1946	44	40	4	—
1947	57	36	21	—
1948	153	94	59	—
1949	73	24	43	6
1950	60	6	39	15
1951	360	14	143	192
1952	983	49	353	559
1953	943	165	245	463
1954	431	172	46	155
1955	444	82	128	200
1956	647	62	152	430
1957	689	16	193	450
1958	668	2	204	435
1959	451	28	101	322
1960	494	57	147	284
1961	366	42	187	137
1962	624	33	208	313
1963	762	45	165	462
1964	1,099	34	145	828
1965	1,488	60	195	1,215

^a The total includes helicopters bought by the Department of Defense under the Military Assistance Program and for other federal agencies.

Source: Department of Defense. Data released with a two-year lag for security reasons. For more recent data see pages 15 and 27.

AEROSPACE FACTS AND FIGURES, 1968

PRODUCTION OF COMMERCIAL HELICOPTERS
(Number of Helicopters)
Calendar Years 1959 to Date

Company and Helicopter	1959	1960	1961	1962	1963	1964	1965	1966	1967
TOTAL	253	266	378	407	504	579	598	583 ^a	455 ^{ab}
Bell									
U. S. production									
47 series.....	89	87	93	92	101	118	134	183	171
204 series.....	—	—	—	1	13	8	16	20	20
205 series.....	—	—	—	—	—	—	—	—	12
206 series.....	—	—	—	—	—	—	—	—	113
Foreign licensees									
47 series.....	107	57	70	63	81	103	123	147	N.A.
204 series.....	—	—	—	18	32	48	48	46	N.A.
102 series.....	—	1	2	—	—	—	—	—	N.A.
Boeing-Vertol									
U. S. production									
H-21.....	8	—	—	—	—	—	—	—	—
BV-44/43.....	17	12	—	1	—	—	—	—	—
BV-107.....	—	—	—	4	5	16	13	13	—
Foreign licensees									
BV-107.....	—	—	—	—	7	3	1	1	—
Brantley									
B2 series.....	—	33	77	62	36	48	25	14	13
305.....	—	—	—	—	—	—	14	23	4
Enstrom									
F-28.....	—	—	—	—	—	—	—	4	7
Fairchild Hiller									
12 series.....	25	72	99	54	34	34	73	29	9
FH-1100.....	—	—	—	—	—	—	—	8	44
Hughes									
200's.....	—	—	17	86	163	46	23	—	—
300's.....	—	—	—	—	—	121	81	62	48
Kaman									
HH-43B.....	—	—	6	11	11	11	10	1	—
HH-43F.....	—	—	—	—	—	—	—	5	—
Sikorsky									
U. S. and foreign production									
S-55.....	4	1	3	—	—	—	—	—	—
S-58.....	—	2	—	—	1	—	—	—	—
S-61.....	—	—	1	8	13	18	31	18	10
S-62.....	3	2	10	6	6	5	1	9	4
S-64.....	—	—	—	1	1	—	—	—	—

^a Excludes 3 Fairchild "Porters" in 1966 and 9 in 1967.

^b Excludes foreign licensees of Bell.

Source: Aerospace Industries Association, company reports.



PRODUCTION OF HELICOPTERS
TOTAL, COMMERCIAL AND MILITARY
Calendar Years 1954 to Date

Year Ending December 31	TOTAL	Commercial	Military
1954	562	131	431
1955	590	146	444
1956	915	268	647
1957	1,003	314	689
1958	908	240	668
1959	704	253	451
1960	760	266	494
1961	744	378	366
1962	1,031	407	624
1963	1,266	504	762
1964	1,678	579	1,099
1965	2,086	598	1,488
1966	N.A.	586	N.A.
1967	N.A.	455 ^a	N.A.

N.A.—Not available. See pages 15 and 27 for military production and inventory.

^a Excludes foreign licensees of Bell.

Source: Aerospace Industries Association, company reports.
Department of Defense

AEROSPACE FACTS AND FIGURES, 1968

AIRCRAFT ENGINE PRODUCTION, CALENDAR YEARS 1917 TO DATE
(Number of Engines)

Year Ending December 31	TOTAL	Military		Civil	
		Recipr.	Jet	Recipr.	Jet
1917-1919	N.A.		44,453		N.A.
1928	3,252		2,620		632
1929	7,378		1,861		5,517
1930	3,766		1,841		1,925
1935	2,965		991		1,974
1940	30,167 ^E		22,667		7,500 ^E
1941	64,681 ^E		58,181		6,500 ^E
1942	138,089		138,089		—
1943	227,116		227,116		—
1944	256,911	256,789	122	—	—
1945	111,650 ^E	108,442	1,208	2,000 ^E	—
1946	43,407	1,680	905	40,822	—
1947	20,912	2,683	1,878	16,351	—
1948	14,027	2,495	2,493	9,039	—
1949	11,972	2,981	5,009	3,982	—
1950	13,675	3,122	6,239	4,314	—
1951	20,867	6,471	9,816	4,580	—
1952	31,041	8,731	16,928	5,382	—
1953	40,263	13,365	20,251	6,647	—
1954	26,959	7,868	13,572	5,519	—
1955	21,108	3,875	9,594	7,639	—
1956	21,348	2,663	7,186	11,499	—
1957	21,946	2,429	8,658	10,859	38
1958	18,354	1,452	6,669	10,233	515
1959	17,162	661	3,965	11,152	1,384
1960	16,199	756	2,917	10,891	1,625
1961	15,832	417	4,755	9,669	991
1962	15,919	241	5,200	9,921	557
1963	17,185	155	5,235	11,322	473
1964	19,585	175	5,205	13,346	859
1965	23,378	92	5,099	17,018	1,169
1966	29,337 ^E	75 ^E	6,000 ^E	21,334	1,938
1967	26,747 ^E	75 ^E	6,450 ^E	17,686	2,536

NOTE: Jet includes turboprop and turbofan.

N.A.—Not available.

^E Estimate.

Sources:

Aerospace Industries Association, "Aerospace Facts and Figures" (Annually).
Bureau of the Census, "Current Industrial Reports, Series M37G" (Monthly).
Department of Defense.

CIVIL AIRCRAFT ENGINE PRODUCTION
Calendar Years 1960 to Date
(Number of Engines)

Manufacturer and Engine Designation	1960	1961	1962	1963	1964	1965	1966	1967
TOTAL	12,159	10,660 ^r	10,478 ^r	11,795	14,205	18,187 ^r	23,262	20,222
Reciprocating Jet	10,524	9,669	9,921	11,322	13,346	17,018	21,324	17,686
	1,635	991 ^r	557 ^r	473	859	1,169 ^r	1,938	2,536
Continental	5,873	5,105	5,242	5,409	6,216	9,045	11,132	7,845
A-65	56	46	51	45	30	41	17	—
O-200/C-90	840	828	826	773	918	2,059	3,298	2,224
O-300	1,252	987	1,104	1,210	1,368	1,678	1,655	620
IO-346	—	—	—	—	92	291	64	58
TSIO-360	—	—	—	—	141	680	739	1,101
O-470	3,207	850	1,006	902	1,072	1,115	1,422	830
IO-470	—	1,888	1,974	1,595	1,281	1,295	1,038	501
TSIO-470	—	322	140	133	212	12	11	3
GIO-470	—	—	—	—	52	12	27	3
GTSIO-520	—	—	—	271	42	321	281	268
TSIO-520	—	—	—	—	—	383	702	698
IO-520	—	—	—	394	983	1,023	1,868	1,419
PE-150	—	—	—	—	—	—	—	120
Other	518	184	141	86	15	135	—	—
General								
Electric	278	324	83	14	25	32	489	260
CT-58	—	—	—	—	25	31	12	28
CJ-805	66	185	25	1	—	1	—	—
CF-700	—	—	—	—	—	—	122	150
CJ-610	—	—	—	—	—	—	355	82
Other	212	139	58	13	—	—	—	—
Lycoming	4,611	4,472	4,621	5,817	7,127	7,973	10,192	9,841
O-720	—	—	—	—	152	43	71	27
O-541	—	—	—	—	—	—	4	143
O-540	1,247	728	1,194	2,070	2,749	2,969	3,429	2,507
O-480	271	122	142	169	121	204	221	203
O-435	—	12	7	206	230	405	506	344
O-360	701	218	1,080	1,508	1,729	2,330	2,629	2,733
O-320	1,452	1,128	1,248	1,578	2,068	1,942	3,098	3,673
O-290	80	17	17	13	11	11	9	6
O-235	111	1,241	289	264	67	62	222	205
Other	749	1,006	644	9	—	7	3	—
Pratt & Whitney								
JT3D	63	357	406	251	337	491	598	874
JT12	23	97	44	38	87	151	167	157
JT8D	—	—	3	165	410	495	684	1,244
Other	701	191	21	5	—	—	—	1

NOTE: Included in the totals are: 1960, 576 by Allison and 34 by Curtiss-Wright; 1961, 22 by Allison and 92 by Curtiss-Wright; 1962, 58 by Curtiss-Wright; 1963, 96 by Curtiss-Wright; and 1964, 3 by Curtiss-Wright.

^r Revised.

Source: Aerospace Industries Association, company reports.

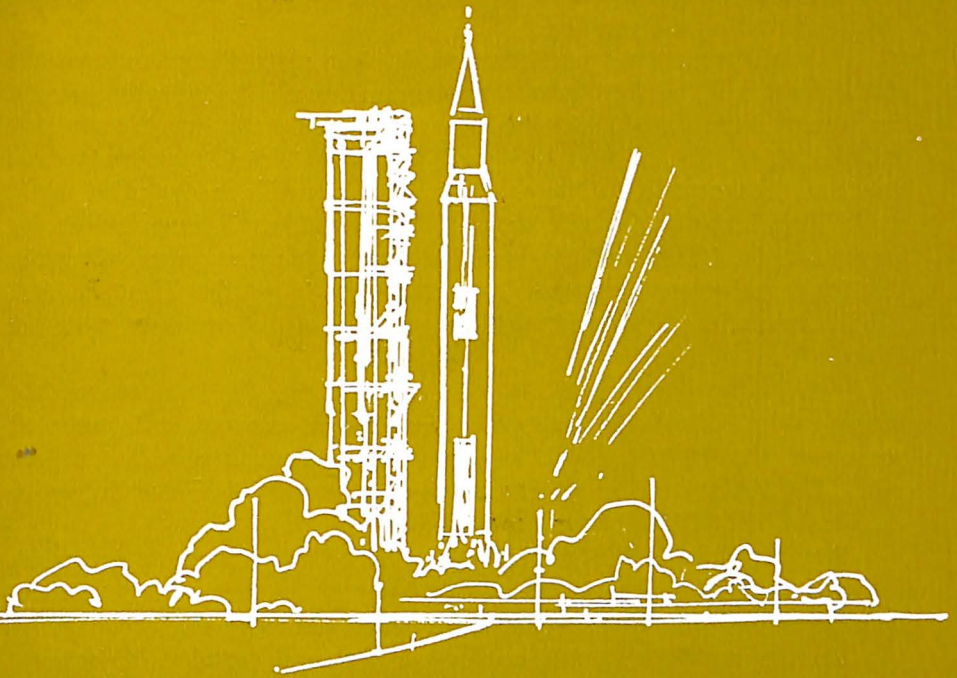
AEROSPACE FACTS AND FIGURES, 1968

MILITARY AIRCRAFT ENGINE ACCEPTANCES Calendar Years 1955 to Date (Number of Engines)

ENGINE DESIGNATION	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
TOTAL	9,849	11,087	8,121	4,626	3,674	5,172	5,441	5,390	5,380	5,191
Jet.....	6,532	8,104	6,135	3,421	2,025	2,821	3,162	2,871	2,638	2,111
J-33.....	95	106	20	—	—	—	—	—	—	—
J-34.....	40	76	99	139	80	—	—	—	—	—
J-44.....	—	181	320	55	—	—	—	—	—	—
J-48.....	318	214	60	24	—	—	—	—	—	—
J-52.....	—	—	5	36	229	305	471	318	310	202
J-57.....	3,876	5,391	4,000	1,957	565	532	562	476	133	6
J-60.....	—	—	—	1	29	184	219	207	44	48
J-69.....	235	542	652	538	487	284	435	321	335	186
J-75.....	27	70	209	293	256	229	219	174	42	—
J-79.....	102	302	460	309	174	598	752	894	1,279	1,027
J-85.....	—	2	32	69	214	688	486	471	495	642
J-93.....	—	—	—	—	—	1	—	—	—	—
J-65.....	1,135	798	137	—	—	—	—	—	—	—
J-71.....	507	422	135	—	—	—	—	—	—	—
J-83.....	—	—	6	—	—	—	—	—	—	—
J-47.....	191	—	—	—	—	—	—	—	—	—
J-73.....	6	—	—	—	—	—	—	—	—	—
JT-3D.....	—	—	—	—	—	—	18	10	—	—
Turbo-Fan.....	—	—	—	—	168	683	298	76	195	392
TF-33.....	—	—	—	—	168	683	298	76	182	343
TF-30.....	—	—	—	—	—	—	—	—	13	49
Turbo-Prop.....	654	554	534	544	724	1,251	1,740	2,288	2,372	2,596
T-33.....	—	—	—	2	—	—	—	—	—	—
T-34.....	73	52	103	63	49	—	—	—	—	—
T-50.....	—	—	—	—	—	43	68	78	131	154
T-53.....	—	—	40	165	339	358	452	759	981	1,284
T-56.....	580	481	371	260	234	522	763	1,019	719	497
T-58.....	1	21	20	54	96	298	384	348	342	370
T-YT-55.....	—	—	—	—	—	30	73	68	138	228
T-64.....	—	—	—	—	—	—	1	16	61	63
Reciprocating.....	2,663	2,429	1,452	661	756	417	241	155	175	92
O-435.....	96	217	298	327	189	—	—	—	—	—
O-480.....	30	230	285	66	57	11	—	—	—	—
O-470.....	377	143	173	—	—	—	—	—	—	—
O-335.....	137	13	—	—	—	—	—	—	—	—
O-526.....	—	4	—	—	—	—	—	—	—	—
O-525.....	—	9	—	—	—	—	—	—	—	—
R-1340.....	—	7	22	—	—	—	—	—	—	—
R-1820.....	1,160	1,191	506	155	418	282	241	155	175	92
R-3350.....	547	198	87	113	93	124	—	—	—	—
R-1300.....	77	201	11	—	—	—	—	—	—	—
R-2800.....	239	216	70	—	—	—	—	—	—	—

Source: Department of Defense. Data released with a two-year lag for security reasons.

MISSILE PROGRAMS



A five year decline in the output of major missile systems was reversed in 1967. Sales of \$3.3 billion in major missile systems, which includes engines, propulsion units and parts, were recorded in 1967, an increase of 16 per cent over 1966. Most of the increase came about as the research and development phase of several missile programs neared an end, and production began.

A steady rise in major missile system production is expected for several years as the fourth generation of long range missiles, the Minuteman III and Poseidon, now are well along in development, and the Department of Defense announced in 1967 that a "thin" Sentinel antiballistic missile defense system would be deployed in the early 1970's.

The Air Force continued to take delivery on Minuteman II which possess improved targeting capability and guidance, and can carry a larger payload than the older Minuteman I. Approximately 1,000 of the solid-fueled Minuteman intercontinental ballistic missiles are to be kept on alert in 6 wings. Eventual plans call for the entire force to be composed on the "II" or "III" configurations. First developmental flight of the

Minuteman III, which offers major improvements over the "II" model, is scheduled for the third quarter of 1968.

A retrofit program is underway on the fleet of 41 Polaris submarines that complement the land-based Minuteman force. The objective of the near-future is to have 13 of the boats equipped with the Polaris A-2 missile and 28 with the more advanced A-3 which has a longer range and improved guidance. In the early 1970's, the fleet will be upgraded again as the Poseidon is phased into service. The Poseidon will have double the payload of the Polaris, and its more advanced guidance system will make it twice as accurate. Long range plans call for 31 of the Fleet Ballistic Missile submarines to carry Poseidons with the others equipped with the Polaris A-3.

Two major missiles will be employed in the Sentinel antiballistic missile system. One is the long-range Spartan, an enlarged and improved version of the Nike-X which has been under development for several years. The Spartan will be able to provide an area-defense over the entire continental United States from approximately ten launch sites.

Second missile in the Sentinel system is the short-range Sprint which has extremely high acceleration. Its mission is to make a "terminal" intercept of warheads after they have entered the atmosphere.

Another measure of missile activity is the total Defense Department expenditure for guided missiles which includes funds for research, development, test and evaluation, as well as procurement. These total expenditures are expected to continue an upward trend which began in fiscal year 1967. The estimated FY 1969 funding is set at \$5.3 billion, an increase of about 15 per cent over FY 1968.



MISSILE PROGRAMS

SALES AND BACKLOG REPORTED BY MAJOR MANUFACTURERS OF MISSILE SYSTEMS AND PARTS Calendar Years 1961 to Date (Millions of Dollars)

Year Ending December 31	Missile Systems and Parts	
	Net Sales During Year	Backlog December 31
1961	\$3,628	\$2,873
1962	3,699	2,143
1963	3,318	2,146
1964	2,580	1,921
1965	2,082	2,394
1966	2,320	2,157
1967	2,877	3,121

NOTE: Based on data from 60 companies engaged in the manufacture of aerospace products. Data exclude sales of military engines and propulsion units.

Source: Bureau of the Census, "Current Industrial Reports," Series M37D (Quarterly).

In the air defense and tactical missile areas, considerable activity took place in 1967. Highlights in these programs included:

- The basic Lance surface-to-surface missile continued in its advanced development program, and exploratory development was initiated for an extended range Lance (XRL).
- Development was initiated for the SAM-D, an improved surface-to-air missile for field army defense against both aircraft and missiles in the 1970's.
- Field testing is underway on the Chaparral, an adaptation of the air-to-air Sidewinder, which will serve as a defense against low-level aircraft attack. The Chaparral is mounted on a tracked vehicle and fired from a turret.
- A new anti-radiation missile, the Advanced ARM, also was ordered into development by the Department of Defense. This air-to-surface missile will have an improved capacity for attacking radars, the active elements of an air defense system which track attacking aircraft.
- The short-range close support missile, Shillelagh, went into operational service with the Army in 1967.
- Field trials are underway with the TOW and dragon, both lightweight tube-launched missiles which can be fired in the field with great accuracy by a small group of soldiers.

AEROSPACE FACTS AND FIGURES, 1968

DEPARTMENT OF DEFENSE
EXPENDITURES FOR GUIDED MISSILE PROCUREMENT, BY AGENCY
Fiscal Years 1951 to Date
(Millions of Dollars)

Year Ending June 30	TOTAL DEFENSE DEPARTMENT	Air Force	Navy	Army
1951	\$ 21	\$ 16	\$ 5	—
1952	169	66	56	\$ 46
1953	245	N.A.	N.A.	N.A.
1954	417	N.A.	N.A.	N.A.
1955	604	N.A.	N.A.	N.A.
1956	1,005	N.A.	N.A.	N.A.
1957	1,855	N.A.	N.A.	N.A.
1958	2,434	N.A.	N.A.	N.A.
1959	3,337	N.A.	N.A.	N.A.
1960	3,027	2,021	423	583
1961	2,972	1,922	493	557
1962	3,442	2,385	593	464
1963	3,817	2,676	718	423
1964	3,577	2,101	981	496
1965	2,096	1,320	521	254
1966	2,069	1,313	512	244
1967	1,930	1,278	432	220
1968 ^E	2,124	1,320	390	414
1969 ^E	2,670	1,550	560	560

NOTE: For data on research and development expenditures for missiles see pages 47 and 66.

N.A. Not available.

^E Estimate.

Source: Department of Defense, Report "FAD 584," January 29, 1968.

MISSILE PROGRAMS

DEPARTMENT OF DEFENSE EXPENDITURES FOR GUIDED MISSILES Fiscal Year 1960 to Date (Millions of Dollars)

Year Ending June 30	TOTAL DEFENSE DEPARTMENT	Procurement	Research, Development, Test and Evaluation
1960.....	\$5,086	\$3,027	\$2,059
1961.....	5,997	2,972	3,025
1962.....	6,219	3,442	2,777
1963.....	6,058	3,817	2,241
1964.....	5,929	3,577	2,352
1965.....	3,997	2,096	1,901
1966.....	3,870	2,069	1,801
1967.....	4,432	1,930	2,502
1968 ^E	4,562	2,124	2,438
1969 ^E	5,267	2,670	2,597

NOTE: Does not include military assistance.

^E Estimate.

Sources: Department of Defense, Reports "FAD 584, 585," January 29, 1968.

SALES AND BACKLOG OF ENGINES AND PROPULSION UNITS FOR MISSILES AND SPACE VEHICLES Reported by Major Manufacturers 1961 to Date (Millions of Dollars)

Year Ending December 31	Net Sales During Year			Backlog as of Dec. 31		
	TOTAL	Military	Non- Military	TOTAL	Military	Non- Military
1961	N.A.	\$ 784	a	N.A.	\$367	a
1962	N.A.	1,060	a	N.A.	498	a
1963	\$1,675	1,135	\$522	\$ 888	699	\$189
1964	1,579	851	728	1,024	557	467
1965	1,288	560	728	883	513	370
1966	1,211	511	700	859	534	325
1967	978	441	537	609	405	204

NOTE: Based on data from about 60 companies engaged in the manufacture of aerospace products. The figures are inflated by the inclusion of subcontracts.

N.A.—Not available.

^a Data included in totals for space vehicles system. See page 60.

Source: Bureau of the Census, "Current Industrial Reports," Series M37D (Quarterly).

AEROSPACE FACTS AND FIGURES, 1968

MAJOR MISSILES IN DEVELOPMENT OR PRODUCTION

Project	Service	Systems Contractor	Propulsion		Guidance Mfr.	Status
			Manufacturer	Type		
SURFACE-TO-AIR						
ASMS Bomarc B Chaparral	IISN USAF Army	Boeing Philco/Ford	Marquardt NAR/Rocket- dyne	— Solid —	Westinghouse GE/Raytheon	Development Operational Operational
Hawk Nike-Hercules	Army Army	Raytheon Western Electric	Aerojet Thiokol/ Hercules	Solid Solid	Raytheon Bell Tel. Lab/West. Electric	Operational Operational
Redeye	Army	General Dynamics	Atlantic Research	Solid	Norden	Operational
Sam-D Sentinel/ Spartan	Army Army	Raytheon Bell Tel. Lab/ Western Electric	Thiokol Thiokol	Solid	— BTL/WE	Development Development
Sentinel/ Sprint	Army	Bell Tel. Lab/ Western Electric	Hercules	—	BTL/WE	Development
Standard	USN	General Dynamics	Aerojet	—	General Dynamics	Operational
Talos Tartar	USN USN	Bendix General Dynamics	Bendix Aerojet	Ramjet Solid	Bendix GD	Operational Operational
Terrier	USN	General Dynamics	Atlantic Research	Solid	GD	Operational
Typhon	USN	Bendix	Bendix	—	—	Operational
AIR-TO-AIR						
Falcon Falcon	USAF USAF	Hughes Hughes	Thiokol Lockheed Propulsion	Solid	Hughes Hughes	Operational Operational
Genie	USAF	McDonnell- Douglas	Aerojet/ Thiokol	Solid	—	Operational
Phoenix	USN	Hughes	NAR/Rocket- dyne	Solid	Hughes	Development
Sidewinder 1A	USN	Naval Weapons/ Philco/ GE	Naval Propulsion Plant	Solid	Philco/GE	Operational
Sidewinder 1C	USN	Naval Weapons/ Philco/ Raytheon	NAR/Rocket- dyne	—	Philco/ Raytheon	Operational
Sparrow 3	USN	Raytheon	NAR/Rocket- dyne	Solid	Raytheon	Operational

MISSILE PROGRAMS

MAJOR MISSILES IN DEVELOPMENT OR PRODUCTION—*Continued*

Project	Service	Systems Contractor	Propulsion		Guidance Mfr.	Status
			Manufacturer	Type		
SURFACE-TO-SURFACE						
Advanced ICBM	USAF					Research
Mace B	USAF	Martin Marietta	GM-Allison	Solid	GM/AC Electronics	Operational
Minuteman	USAF	Boeing	Thiokol/Aerojet/Hercules	Solid	NAR/Autonetics	Operational
Polaris	USN	Lockheed	Aerojet/Hercules	Solid	GE/MIT/Hughes/Raytheon	Operational
Poseidon	USN	Lockheed	Thiokol/Hercules		GE/MIT/Raytheon	Development
AIR-TO-SURFACE						
Bullpup A	USN	Maxon Electronics	Thiokol/Reaction	Solid	Maxon Electronics	Operational
Bullpup B	USN	Maxon Electronics	Thiokol/Reaction	Solid	Maxon Electronics	Operational
Nuclear Bullpup	USAF	Martin Marietta	Thiokol/Reaction		Martin Marietta	Operational
Cobra	USAF					Research
Condor	USN	Naval Systems Command/NAR	NAR/Rocketdyne		Hughes	Development
Hornet	USAF	NAR/Cal				Development
Hound Dog	USAF	NAR	P&W		NAR/Autonetics	Development
Maverick	USAF	Hughes/NAR				Development
Quail	USAF	McDonnell-Douglas	GE		McDonnell-Douglas	Operational
Shrike	USN	Naval Weapons	Tex. Instru./Sperry Rand/Bristol	Solid	Tex. Instru./Sperry/Bristol	Operational
SRAM	USAF	Boeing	Lockheed Propulsion		General Precision	Development
Standard ARM	USN	General Dynamics	Aerojet		Tex. Instru.	Operational
Teton	Army	Aerojet	Aerojet		Aerojet	Development
Walleye	USN	Martin Marietta/Hughes		Glide Bomb	Martin Marietta	Operational

MAJOR MISSILES IN DEVELOPMENT OR PRODUCTION—*Continued*

Project	Service	Systems Contractor	Propulsion		Guidance Mfr.	Status
			Manufacturer	Type		
BATTLEFIELD SUPPORT GUIDED MISSILES						
Entac	Army	Nord Aviation (France)	Direction des Poudres	Solid	DEFA	Operational
Lance	Army	LTV	LTV Aerospace		LTV Systems/Donner/Arma	Development
Dragon	Army	McDonnell-Douglas	Thiokol	Solid	Bendix	Development
Pershing	Army	Martin Marietta				
Sergeant	Army	Sperry Rand	Thiokol	Solid	Sperry Rand	Operational
Shillelagh	Army	Philco/Ford	Amoco Chem.	Solid	Philco Ford	Operational
SS-11B1	Army	Nord Aviation (France)	Nord/Hercules	Solid	Nord	Operational
TOW	Army	Hughes	Hercules			
UNGUIDED MISSILES						
Honest John	Army	McDonnell-Douglas	Hercules	Solid		Operational
Little John	Army	Emerson	Hercules	Solid		Operational
ANTI-SUBMARINE						
Asroc	USN	Honeywell	Naval Propulsion Lab	Solid	General Precision	Operational
Subroc	USN	Goodyear Aerospace	Thiokol	Solid		Operational

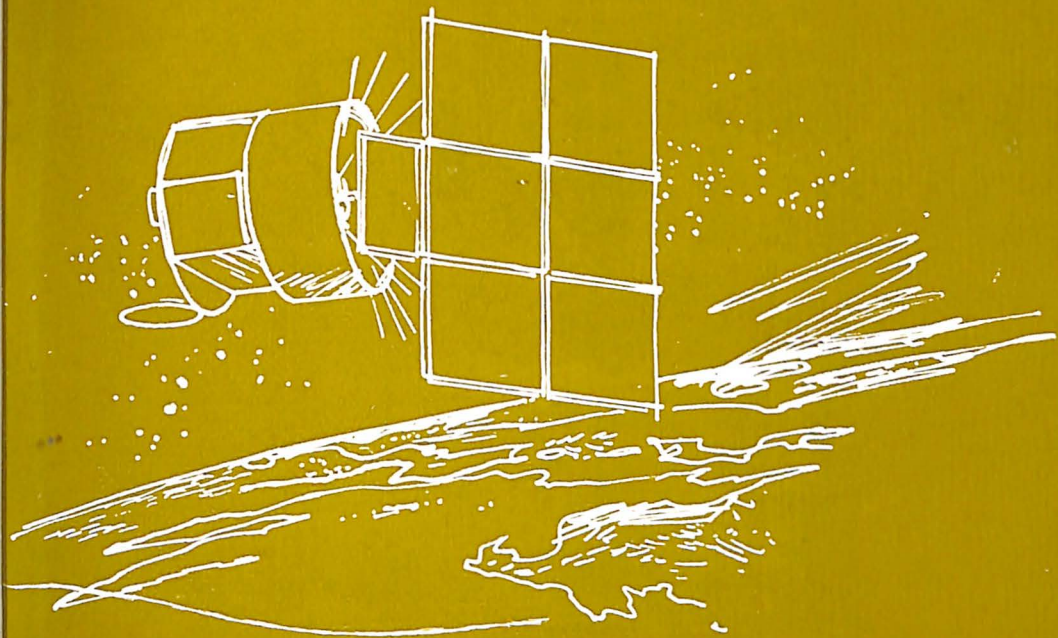
Source: Aerospace Industries Association, based on latest available information.

INTERCONTINENTAL BALLISTICS MISSILES PRODUCED FOR THE AIR FORCE
Calendar Year 1961 to Date

Year Ending December 31	Weapons Systems in Acquisition December 31	Intercontinental Ballistic Missiles Delivered
1961	4	111
1962	4	186
1963	2	486
1964	1	405
1965	1	172
1966	1	221
1967	1	216

Source: Air Force Systems Command.

SPACE PROGRAMS

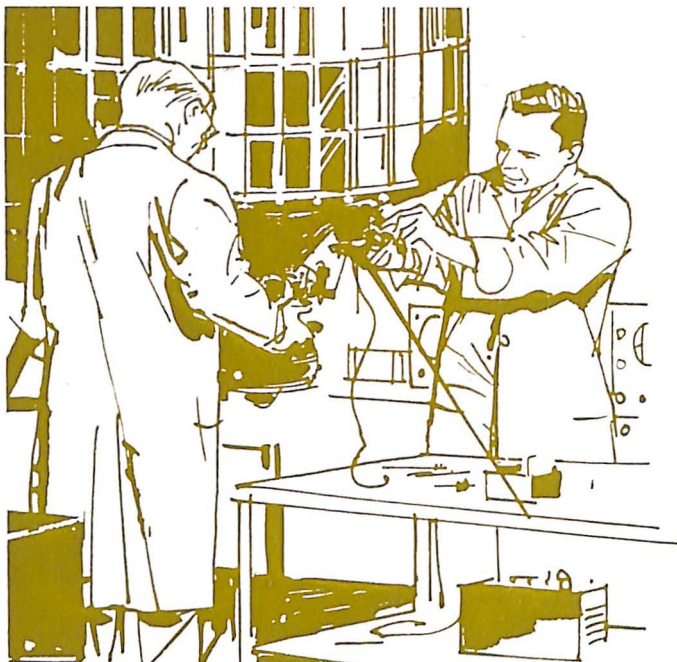


By the end of 1967, preparations were nearly complete for the most active period of manned flights in the U. S. space program. This period is scheduled to be climaxed by the Apollo lunar landing, scheduled before the end of 1969.

Most significant of the year's activities were the first flight of the Saturn V launch vehicle for the Apollo mission, and the highly successful reconnaissance of the moon conducted by the Surveyor and Orbiter vehicles. Three out of three Orbiter low altitude photo flights were successful during the year, while the Surveyor landed perfectly on the surface three out of four times.

The Saturn V was tested under an "all-up" concept, in which all of the launch vehicle's three stages and most major systems in the spacecraft were flown together on the first flight. This concept, which compresses many test phases, proved to be highly successful.

Eight candidate landing sites were surveyed early in the Orbiter and Surveyor programs and the final flights proved to be scientific bonuses, which allowed wide-ranging investigation. Orbiters made enough photo-



graphs to allow atlases and reference maps to be made of almost the entire lunar surface, the far side as well as the side seen from earth—at a greater resolution and greater detail than is possible from earth. The Surveyor vehicles provided scientists with a completely new order of information on lunar soil characteristics and on the topographic details of the landing sites.

NASA's FY 1968 budget continued to be dominated by the lunar landing effort even though the peak of the Apollo program spending has passed.

An exceptionally high rate of success was achieved during 1967 with scientific research satellites of all types. Ten out of ten payloads were accelerated to earth escape velocities. These included Explorer and Pioneer vehicles for the study of solar wind, cosmic rays and other phenomena in deep space beyond the moon, and the Mariner V which made a close fly-by of Venus. Seventy-seven satellites were put into orbit around the earth, while only four failed. These vehicles ranged from experimental solar observatories to operational weather satellites.

Prominent among them were: three new weather satellites for the Environmental Science Services Administration of the Department of

SPACE PROGRAMS

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
 RESEARCH AND DEVELOPMENT
 PROGRAM AND TYPE OF ACTIVITY
 Fiscal Years 1967 to 1969
 (Millions of Dollars)

	Actual	Estimate	
	1967	1968	1969
TOTAL, Research and Development, Budget Plan.....	\$4,908	\$4,649	\$4,370
Conduct of Research, Budget Plan, Total.....	1,334	1,486	1,587
Conduct of research:			
Basic scientific research in space:			
Spacecraft, instrumentation, conduct of experiments, and supporting costs....	436	494	575
Procurement of launch vehicles for basic research purposes.....	40	45	45
Other basic research in space science and technology.....	122	110	130
Subtotal, basic research.....	598	649	750
Other research.....	683	787	782
Procurement of launch vehicles for other research purposes.....	53	50	55
Conduct of Development, Budget Plan, Total.....	3,483	3,125	2,738
Conduct of development:			
Manned space flight and supporting devel- opment.....	3,349	3,000	2,550
Development of launch vehicles for re- search purposes.....	78	60	121
Other development.....	57	65	67
Research and development facilities:			
Facility grants to colleges and universities..	4	—	—
Manned space flight supporting facilities..	46	26	25
Other research and development facilities..	40	11	20

NOTE: Beginning with 1967 data are for "Budget Plan" not "Expenditures." Expenditures for 1967 are \$5,426 million; for 1968, \$4,805 million, and \$4,575 million for 1969. Obligations for 1967 are \$5,012 million; for 1968, \$4,818 million; and for 1969, \$4,370 million.

Source: "The Budget of the United States Government" (Annually).

Commerce, three new Intelsat communications satellites for the Communications Satellite Corporation to provide service across the Atlantic and Pacific, two of the Orbiting Solar Observatory (OSO) satellites to measure solar influence near the earth, and satellites which were launched in cooperation with foreign governments such as the Ariel with Great Britain and the San Marco II with Italy.

Development of launch vehicle technology also progressed well in programs other than the Saturn V. The tenth consecutive successful flight, out of ten attempts, was made with the Saturn I booster. The third successful static firing was conducted with the experimental 260-inch diameter solid rocket motor developing 3.5 million pounds of thrust.

The ninth Titan III was launched during 1967 and placed multiple satellites in orbit. A total of more than 50 vehicles have been put into orbit in these Titan III flights. One of its achievements is the installation of a system of multiple, low altitude military communication satellites.

A major element in the Department of Defense space effort is the development of the Manned Orbiting Laboratory, which was accelerated during 1967.



SPACE PROGRAMS

SPACECRAFT LAUNCHINGS AS OF APRIL 3, 1967

Country	TOTAL	Payloads in Earth Orbit	Payloads Decayed	Space Probes
TOTAL	851	323	500	28
United States.....	547	257	276	14
U.S.S.R.....	291	57	220	14
U.S./Canada.....	2	2	—	—
U.S./U.K.....	3	2	1	—
France.....	5	5	—	—
Italy.....	2	—	2	—
U.S./Australia.....	1	—	1	—

Source: National Aeronautics and Space Administration.

UNITED STATES SPACE LAUNCHINGS 1957 to Date

Year	Earth Satellite Attempts		Escape Payload Attempts	
	Success	Failure	Success	Failure
1957	—	1	—	—
1958	5	8	—	4
1959	9	9	1	2
1960	16	12	1	2
1961	35	12	—	2
1962	54	12	4	1
1963	60	11	—	—
1964	69	8	4	—
1965	94	8	3	—
1966	95	12	5	1 ^a
1967	77	4	10	—
TOTAL	514	97	28	12

NOTE: Information contained in this table is drawn from unclassified sources. Numbers are given in terms of separate payloads placed in earth orbit, sent to the moon, or placed in solar orbit.

^a Failed to go to escape as intended, but did attain earth orbit.

Source: National Aeronautics and Space Administration.

AEROSPACE FACTS AND FIGURES, 1968

CHRONOLOGY OF MANNED SPACE FLIGHTS

Launch Date	Project	Pilot	Nation	Duration
<i>Suborbital</i>				
May 5, 1961	Mercury-Redstone 3	Alan Shepard	USA	302 miles
July 21, 1961	Mercury-Redstone 4	Virgil Grissom	USA	303 miles
<i>Orbital</i>				
April 12, 1961	Vostok 1	Yuri Gagarin	USSR	1 Orbit
Aug 6, 1961	Vostok 2	Gherman Titov	USSR	17 Orbits
Feb 20, 1962	Mercury-Atlas 6	John Glenn	USA	3 Orbits
May 24, 1962	Mercury-Atlas 7	Scott Carpenter	USA	3 Orbits
Aug 11, 1962	Vostok 3	Andreyan Nikolayev	USSR	64 Orbits
Aug 12, 1962	Vostok 4	Pavel Popovich	USSR	48 Orbits
Oct 3, 1962	Mercury-Atlas 8	Walter Schirra	USA	6 Orbits
May 15, 1963	Mercury-Atlas 9	Gordon Cooper	USA	22 Orbits
June 14, 1963	Vostok V	Valery Byovsky	USSR	81 Orbits
June 16, 1963	Vostok VI	Valentina Tereshkova	USSR	48 Orbits
Oct 12, 1964	Voskhod I	Vladimir M. Komarov Konstantin Feoktistiv Boris B. Yegorov	USSR	16 Orbits
Mar 18, 1965	Voskhod II	Pavel Belyayev Alexei Leonov	USSR	"
Mar 23, 1965	GT-3	Virgil I. Grissom John W. Young	USA	3 Orbits
June 3, 1965	GT-4	James A. McDivitt Edward H. White II	USA	63 Orbits
Aug 21, 1965	GT-5	L. Gordon Cooper Charles Conrad	USA	120 Orbits
Dec 4, 1965	GT-7	Frank Borman James A. Lovell, Jr.	USA	206 Orbits
Dec 15, 1965	GT-6 ^b	Walter M. Schirra, Jr. Thomas P. Stafford	USA	17 Orbits
Mar 16, 1966	GT-8	Neil A. Armstrong David R. Scott	USA	7 Orbits
June 8, 1966	GT-9	Thomas P. Stafford Eugene A. Cernan	USA	44 Orbits
July 18, 1966	GT-10	John W. Young Michael Collins	USA	43 Orbits
Sept 12, 1966	GT-11	Charles Conrad, Jr. Richard F. Gordon, Jr.	USA	44 Orbits
Nov 11, 1966	GT-12	James A. Lovell, Jr. Edwin E. Aldrin, Jr.	USA	59 Orbits

^a Actual number in doubt.

^b Mission originally scheduled October 25, 1965, postponed when Agena target vehicle failed to achieve orbit.

Source: National Aeronautics and Space Administration.

CHRONOLOGY OF MAJOR UNITED STATES SPACE LAUNCHINGS

Date	Designation	Purpose
<i>1967</i>		
Feb 4	Lunar Orbiter III	Photographic Mission
Mar 8	OSO III	Solar Observation
Mar 22	Intelsat II	Communication Satellite
Apr 5	ATS II	Weather and Communication Technology Satellite
Apr 17	Surveyor III	Lunar Soft Landing, Surface Sampler, Lunar Photography
Apr 20	ESSA V	Operational Weather Satellite
May 4	Lunar Orbiter IV	Lunar Photography
May 24	Explorer XXXIV	Cosmic Ray Studies
Jun 14	Mariner V (Venus '67)	Venus Flyby
Jul 14	Surveyor IV	Lunar Surface Sampler, and Chemical Analysis
Jul 19	Explorer XXXV	Study of Solar Wind
Jul 28	OGO V	Study of Solar Effects on Earth Environment
Aug 1	Lunar Orbiter V	Lunar Photography
Sep 7	Biosatellite II	Effects of Space Environment on Cells and Tissues
Sep 8	Surveyor V	Lunar Photography and Surface Studies
Sep 27	Intelsat III D	Communications Satellite
Oct 18	OSSO IV	Solar Studies
Nov 5	ATS III	Satellite Technology, Communications and Weather
Nov 7	Surveyor VI	Lunar Photography and Surface Studies
Nov 9	Apollo IV	Initial Saturn V Flight
Nov 10	ESSA VI	Operational Weather Satellite
Dec 13	Pioneer VIII	Interplanetary Space Studies
Dec 13	ATS I	Apollo Tracking Check
<i>1968</i>		
Jan 7	Surveyor VII	Lunar Photography and Surface Studies
Jan 11	Explorer XXXVI	Geodetic Studies
Jan 22	Apollo V	Lunar Module Checkout
Mar 4	OGO V	Earth-Sun Data
Mar 5	Explorer XXXVII	Solar Radiation
Apr 4	Apollo VI	Man Rate Saturn V

NOTE: For data for earlier years, see earlier editions of "Aerospace Facts and Figures." This chronology of major U.S. space programs includes the successful, partially successful, and unsuccessful launchings of all vehicles larger than sounding rockets.

Source: National Aeronautics and Space Administration.

AEROSPACE FACTS AND FIGURES, 1968

UNITED STATES SPACE LAUNCH VEHICLES

Vehicle	Stages	Thrust (in thousands of pounds)	Payload (pounds)	
			300 NM Orbit	Escape
Scout	1. Algol (IIB)*	88	320	50
	2. Castor II*	60.5		
	3. Antares II*	22		
	4. Altair III*	5.9		
Thor Delta	1. Thor (DSV-3E-1)	169	950	150
	2. Delta (DSV-3)	7.1		
	3. FW-4D*	5.8		
Thrust Augmented Thor Delta	1. Thor (DSV-3E-1) plus three TX33-52*	169 plus 54 each	1,275	275
	2. Delta (DSV-3)	7.1		
	3. FW-4D*	5.8		
Thor Agena	1. Thor (DM-21)	170	1,600	—
	2. Agena	16		
Thrust Augmented Thor Agena	1. Thor (DM-21) plus 3 TX 33-52*	170 plus 54 each	2,200	—
	2. Agena	16		
Atlas Agena	1. Atlas Booster and Sustainer	338	6,300	1,150
	2. Agena	16		
Titan II (GLV)	1. Two LR-87	430	(8,000 @ 105 NM)	—
	2. LR-91	100		
Titan IIIA	1. Two LR-87	430	5,000	—
	2. LR-91	100		
	3. Agena	16		
Titan IIIB	1. Two LR-87	430	7,700	1,700
	2. LR-91	100		
	3. Agena	16		
Titan IIIC	1. Two 5-segment 120" diameter*	2,400	23,000	5,000
	2. Two LR-87	430		
	3. LR-91	100		
	4. Transtage	16		

(Continued on next page)

SPACE PROGRAMS

UNITED STATES SPACE LAUNCH VEHICLES—*Continued*

Vehicle	Stages	Thrust (in thousands of pounds)	Payload (pounds)	
			300 NM Orbit	Escape
Atlas Centaur	1. Atlas Booster and sustainer	388	8,500	2,300
	2. Centaur (Two RL-10)	30		
Uprated Saturn I	1. S-IB (8 H-1)	1,600	(40,000 @ 105 NM)	—
	2. S-IVB (1J-2)	200		
Saturn V	1. S-IC (5F-1)	7,570	285,000 (285,000 @ 105 NM)	98,000
	2. S-II (5J-2)	1,125		
	3. S-IVB (1 J-2)	225		

* Solid propellant, all other are liquid.
Source: National Aeronautics and Space Administration.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, EXPENDITURES BY BUDGET FUNCTION Fiscal Years, 1959 to Date (Millions of Dollars)

Year Ending June 30	TOTAL EXPENDITURES	Research and Development	Construction of Facilities	Administrative Operations
1959	\$ 145	\$ 34	\$ 25	\$ 87
1960	401	256	54	91
1961	744	487	98	159
1962	1,257	936	114	207
1963	2,552	1,912	225	417
1964	4,171	3,317	438	416
1965	5,093	3,984	531	578
1966	5,933	4,741	573	619
1967	5,426	4,487	289	650
1968 ^E	4,805	4,005	160	640
1969 ^E	4,575	3,851	76	648

^E Estimate.
Source: "The Budget of the United States Government" (Annually).

EXPENDITURES FOR SPACE ACTIVITIES
Fiscal Years 1955 to Date
(Millions of Dollars)

Year Ending June 30	TOTAL	National Aeronautics and Space Adminis- tration ^a	Department of Defense ^b	Atomic Energy Commission	Other
1955	\$ 75	\$ 74	\$ 1	N.A.	—
1956	100	71	17	N.A.	\$12
1957	150	76	48	N.A.	26
1958	249	89	136	N.A.	24
1959	521	146	341	N.A.	34
1960	960	401	518	N.A.	41
1961	1,518	744	710	N.A.	64
1962	2,418	1,257	1,029	130	2
1963	4,114	2,552	1,368	181	13
1964	5,970	4,171	1,564	220	15
1965	6,886	5,035	1,592	232	27
1966	7,719	5,858	1,638	188	35
1967	7,237	5,337	1,673	184	43
1968 ^E	6,750	4,672	1,870	151	37
1969 ^E	6,826	4,455	2,180	151	40

NOTE: Most of the activities of the National Aeronautics and Space Administration are classified as Research and Development. See chapter on Research and Development for additional tables.

^E Estimate.

^a Excludes amount for aircraft technology beginning with 1965.

^b This includes the astronautics budget activity and other activities which contribute to the space effort Source: The Budget of the United States Government" (Annually).

SALES AND BACKLOG OF SPACE VEHICLE SYSTEMS
(Excluding Engines and Propulsion Units)
Reported by Major Manufacturers
1961 to Date
(Millions of Dollars)

Year Ending Decem- ber 31	Net Sales During Year			Backlog, December 31		
	TOTAL	Military ^a	Non- military	TOTAL	Military ^a	Non- military
1961	\$ 775	\$ 551	\$ 224 ^a	\$ 596	\$ 350	\$ 236 ^a
1962	1,319	712	607 ^a	1,415	852	583 ^a
1963	1,911	1,061	850	1,612	856	756
1964	2,222	732	1,490	1,611	391	1,220
1965	2,449	602	1,847	2,203	503	1,700
1966	2,710	734	1,967	1,494	428	1,066
1967	2,198	789	1,409	1,974	1,096	878

NOTE: Based on data from about 60 companies engaged in the manufacture of aerospace products.

^a Including engines and propulsion units.

Source: Bureau of the Census, "Current Industrial Reports, "Series M37D (Quarterly).

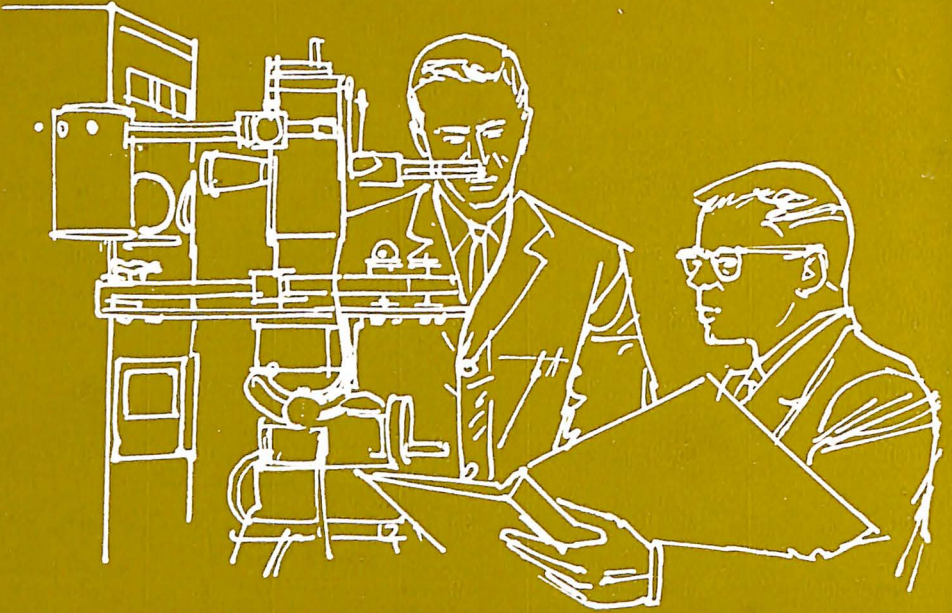
SPACE PROGRAMS

U.S. MAN HOURS SPACE FLIGHT TIME LOG

Mission	Launch Date	Man Hours In Mission		Total Cumulative Time	
		Hrs.	Min.	Hrs.	Min.
MR-3 (Shepard)	May 5, 1961	—	15	—	15
MR-4 (Grissom)	Jul 21, 1961	—	15	—	30
MA-6 (Glenn)	Feb 20, 1962	4	55	5	25
MA-7 (Carpenter)	May 24, 1962	4	56	10	21
MA-8 (Schirra)	Oct 3, 1962	9	13	19	34
MA-9 (Cooper)	May 15, 1963	34	20	53	54
Gemini 3 (Grissom, Young)	Mar 23, 1965	9	46	63	40
Gemini 4 (McDivitt, White)	Jun 3, 1965	195	53	259	33
Gemini 5 (Cooper, Conrad)	Aug 21, 1965	381	51	641	24
Gemini 6 (Schirra, Stafford)	Dec 15, 1965	51	43	693	07
Gemini 7 (Borman, Lovell)	Dec 4, 1965	661	10	1,354	17
Gemini 8 (Armstrong, Scott)	Mar 16, 1966	21	12	1,375	29
Gemini 9 (Stafford, Cernan)	Jun 3, 1966	72	21	1,447	50
Gemini 10 (Young, Collins)	Jul 18, 1966	70	46	1,518	36
Gemini 11 (Conrad, Gordon)	Sep 12, 1966	71	17	1,589	53
Gemini 12 (Lovell, Aldrin)	Nov 11, 1966	94	34	1,684	27

Source: National Aeronautics and Space Administration.

RESEARCH AND DEVELOPMENT



Expenditures by aerospace firms on industrial research and development rose between 1965 and 1966 from \$622 million to \$756 million, or 21.5 per cent. In the period 1960-1966 aerospace firms expended almost \$3.5 billion on these research and development programs.

Rising expenditures on such programs represent an investment by the government and by aerospace firms in furthering technological capability. Such expenditures are a measurement of the pace of defense, space exploration and civil aircraft programs as well as those in socio-economic fields.

In 1966 spending by the government and by aerospace firms represented 35 per cent of total research and development spending of \$15,541 million as reported by the National Science Foundation.

Of the total \$5,446 million spending in industrial research and development for aerospace programs, \$5,378 million was for applied research and development and \$68 million was for basic research.

Basic research is considered to be original investigation for the advancement of scientific knowledge which does not have immediate

RESEARCH AND DEVELOPMENT

commercial objectives. These activities may be in the field of present or potential interest to the industry and to the government.

Applied research programs are those which represent investigation directed to discovery of new scientific knowledge, and which in contrast to basic research do have immediate applications.

Although this distinction exists between basic and applied research, in actuality a variety of motives exist in both applied and basic research. Basic research may lead to applied research, and conversely applied research may point out new areas in which basic research is required.

The development part of R & D is the process of reducing research to practical application. The National Science Foundation defines development as "technical activity with non-routine problems which are encour-

FEDERAL EXPENDITURES FOR RESEARCH AND DEVELOPMENT
Fiscal Years, 1954 to Date
(Millions of Dollars)

Year Ending June 30	TOTAL	Department of Defense	National Aeronautics and Space Adminis- tration	Atomic Energy Commission	Other
1954	\$ 3,148	\$2,487	\$ 90	\$ 383	\$ 188
1955	3,308	2,630	74	385	219
1956	3,446	2,639	71	474	262
1957	4,462	3,371	76	657	358
1958	4,990	3,664	89	804	433
1959	5,803	4,183	145	877	598
1960	7,738	5,654	401	986	697
1961	9,278	6,618	744	1,111	805
1962	10,373	6,812	1,251	1,284	1,026
1963	11,988	6,849	2,540	1,335	1,264
1964	14,674	7,516	4,171	1,503	1,484
1965	13,753	6,623	4,555	1,241	1,334
1966	14,971	6,675	5,350	1,213	1,733
1967	15,938	7,599	5,130	1,256	1,953
1968 ^E	15,834	7,634	4,638	1,362	2,200
1969 ^E	16,605	8,184	4,495	1,501	2,425

NOTE: Includes military personnel, procurement, civil functions, and some other items not included in other tables in this chapter. Excludes R&D facilities.

^E Estimate.

Source: "The Budget of the United States Government" (Annually).

AEROSPACE FACTS AND FIGURES, 1968

tered in translating research findings or other general scientific knowledge into products or processes.”

Development proceeds upon completion of basic and development research. Developmental phases of aircraft, military or commercial, spacecraft, and missiles require considerable time and substantial amounts of investment both in the project itself and for appropriate facilities. However, once again the real distinction between research and development is still a relatively unclear line.

Research and development funds have had consequential economic impacts on the U. S. economy, and thus on the patterns of change in the U. S.

These impacts are:

- The development of new or better products which have substantially expanded the market for goods and services, thus creating totally new industries.
- Levels of investment on productive plant and equipment have been raised as a result of increased levels of production, thus expanding the productive base of the U. S.
- Productivity of workers has risen substantially allowing increased fringe benefits, shorter hours and higher pay.
- Growth of the nation's productive capacity has increased the rate of growth of Gross National Product.
- The level of total employment has been increased substantially in the U. S. as the result of the emergence of new industries.
- Occupational patterns and requirements for education have been modified as a result of growing technological capability.

The aerospace industry has been the leader in research and development, and has been characterized as the “cutting edge of technology.”

RESEARCH AND DEVELOPMENT

DEPARTMENT OF DEFENSE EXPENDITURES FOR RESEARCH, DEVELOPMENT, TEST AND EVALUATION Fiscal Years 1951 to Date (Millions of Dollars)

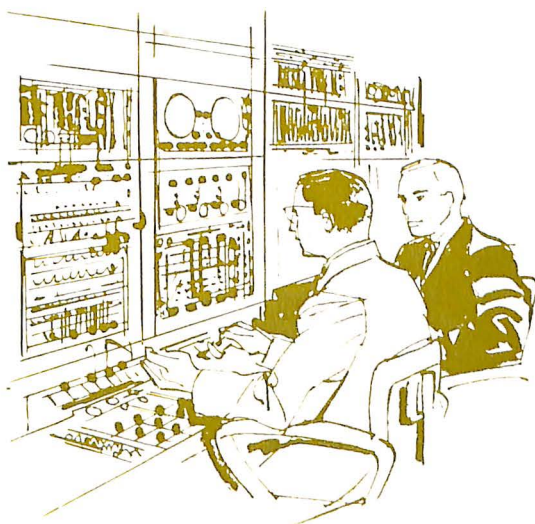
Year Ending June 30	Department of Defense	Air Force	Navy	Army	Other
1951	\$ 758	N.A.	N.A.	N.A.	N.A.
1952	1,165	N.A.	N.A.	N.A.	N.A.
1953	2,148	N.A.	N.A.	N.A.	N.A.
1954	2,187	N.A.	N.A.	N.A.	N.A.
1955	2,261	N.A.	N.A.	N.A.	N.A.
1956	2,101	N.A.	N.A.	N.A.	N.A.
1957	2,406	N.A.	N.A.	N.A.	N.A.
1958	2,504	N.A.	N.A.	N.A.	N.A.
1959	2,866	N.A.	N.A.	N.A.	N.A.
1960	4,710	N.A.	N.A.	N.A.	N.A.
1961	6,131	\$3,300	\$1,435	\$1,207	\$189
1962	6,319	3,493	1,364	1,280	181
1963	6,376	3,301	1,429	1,355	291
1964	7,021	3,722	1,578	1,338	384
1965	6,236	3,146	1,294	1,344	452
1966	6,259	2,948	1,407	1,412	492
1967	7,160	3,229	1,791	1,634	506
1968 ^E	7,200	3,397	1,905	1,430	468
1969 ^E	7,800	3,500	2,130	1,650	520

NOTE: For RDT&E for aircraft, missiles and astronautics *only*, see page 00.

N.A.—Not available.

^E Estimate.

Source: Department of Defense, Report "FAD 585," January 29, 1968.



DEPARTMENT OF DEFENSE
EXPENDITURES FOR RESEARCH, DEVELOPMENT, TEST AND
EVALUATION, BY FUNCTIONS
Fiscal Years, 1960 to Date
(Millions of Dollars)

Year Ending June 30	TOTAL, ALL RDT&E FUNC- TIONS	AEROSPACE				Other
		TOTAL	Aircraft	Missiles	Astro- nautics	
1960	\$4,710	\$3,203	\$ 632	\$2,059	\$ 512	\$1,507
1961	6,131	4,090	547	3,025	518	2,041
1962	6,319	4,150	624	2,777	749	2,169
1963	6,376	3,731	544	2,241	946	2,645
1964	7,021	4,575	939	2,352	1,284	2,446
1965	6,236	3,839	1,017	1,901	921	2,397
1966	6,259	3,707	976	1,801	930	2,552
1967	7,160	4,533	1,048	2,502	983	2,627
1968 ^E	7,200	4,664	1,209	2,438	1,017	2,536
1969 ^E	7,800	4,859	1,133	2,597	1,129	2,941

^E Estimate.

Source: Department of Defense, Report "FAD 585," January 29, 1968.

INDUSTRIAL RESEARCH AND DEVELOPMENT, ALL INDUSTRIES
AND THE AEROSPACE INDUSTRY
CALENDAR YEARS 1956 TO DATE
(Millions of Dollars)

Year Ending December 31	TOTAL, RESEARCH AND DEVELOPMENT	AEROSPACE*		
		Total	Federal Government Funds	Company Funds
1956	\$6,605	\$2,138	N.A.	N.A.
1957	7,731	2,574	\$2,275	\$299
1958	8,389	2,609	2,276	333
1959	9,618	3,090	2,754	336
1960	10,509	3,514	3,150	364
1961	10,908	3,829	3,438	392
1962	11,464	4,042	3,588	454
1963	12,630	4,712	4,261	451
1964	13,512	5,055	4,610	455
1965	14,185	5,098	4,476	622
1966	15,541	5,446	4,690	756

N.A.—Not available.

* Includes companies primarily engaged in the manufacture of aircraft and parts, SIC Code 372, and the manufacture of ordnance and accessories, including complete guided missiles and space vehicles, SIC Code 19.

^r Revised.

Sources: National Science Foundation, Aerospace Industries Association.

**INDUSTRIAL RESEARCH AND DEVELOPMENT IN AEROSPACE, BY TYPE
OF RESEARCH AND FUND SOURCE^r**
(Calendar Years 1957 to Date
(Millions of Dollars)

Year Ending Decem- ber 31	TOTAL AERO- SPACE	Applied Research and Development Funds			Basic Research Funds		
		Total	Federal Govern- ment	Com- pany	Total	Federal Govern- ment	Com- pany
1957	\$2,574	\$2,549	N.A.	N.A.	\$25	N.A.	N.A.
1958	2,609	2,583	\$2,266	\$317	26	\$10	\$16
1959	3,090	3,058	2,733	325	32	18	15
1960	3,514	3,452	3,108	344	62	32	30
1961	3,829	3,789	N.A.	N.A.	40	N.A.	N.A.
1962	4,042	3,987	N.A.	N.A.	55	N.A.	N.A.
1963	4,712	4,653	4,219	434	59	31	28
1964	5,055	4,988	4,532	456	67	34	33
1965	5,098	5,028	4,440	588 ^a	70	40 ^a	30 ^a
1966	5,446	5,378	4,654	724	68	36	32

N.A. -- Not available.

^r Revised.

^a Estimated by the National Science Foundation. Revised data not collected.

Source: National Science Foundation, Aerospace Industries Association.

RESEARCH AND DEVELOPMENT EXPENDITURES
(Other than Department of Defense, National Aeronautics and
Space Administration and Atomic Energy Commission)
FISCAL YEARS 1966 to 1968
(Millions of Dollars)

AGENCY	Actual	Estimate	
	Years ending June 30		
	1967	1968	1969
TOTAL	\$1,953	\$2,200	\$2,425
Agriculture, Department of	253	268	275
Commerce, Department of	67	75	79
Health, Education and Welfare, Department of	1,021	1,111	1,239
Interior, Department of	152	195	219
Transportation, Department of	83	105	120
National Science Foundation	207	240	257
Veterans Administration	44	45	48
Other	126	161	188

Source: "The Budget of the United States Government" (Annually).

EXPORTS



For the first time in the history of the U.S. aerospace industry, exports in 1967 climbed above the \$2 billion mark. Total exports in 1966 were \$1,673 million.

Primary cause of this substantial growth was the increase in the sale of commercial transports abroad from \$421 million in 1966 to \$611 million last year. General aviation aircraft exports amounted to \$91 million during the year compared to \$89 million in 1966 and \$25 million worth of helicopters were sold abroad during 1967 compared to \$12 million in 1966.

Military aircraft exports contributed heavily to the total growth for the year as \$324 million worth of military transports, helicopters, fighters, bombers and general aviation aircraft were sold abroad compared to \$222 million in 1966. The most significant increase was in military transport aircraft which rose from \$44 million in 1966 to \$131 million in 1967. Fighters and bombers accounted for \$115 million of 1967 exports compared to \$108 million the year previous. Helicopter sales increased from \$17 million to \$30 million during the same period.

EXPORTS

Exports of commercial aircraft engines increased in 1967 to \$101 million from \$77 million in 1966. Military aircraft engines, on the other hand, decreased to \$26 million from \$31 million in 1966.

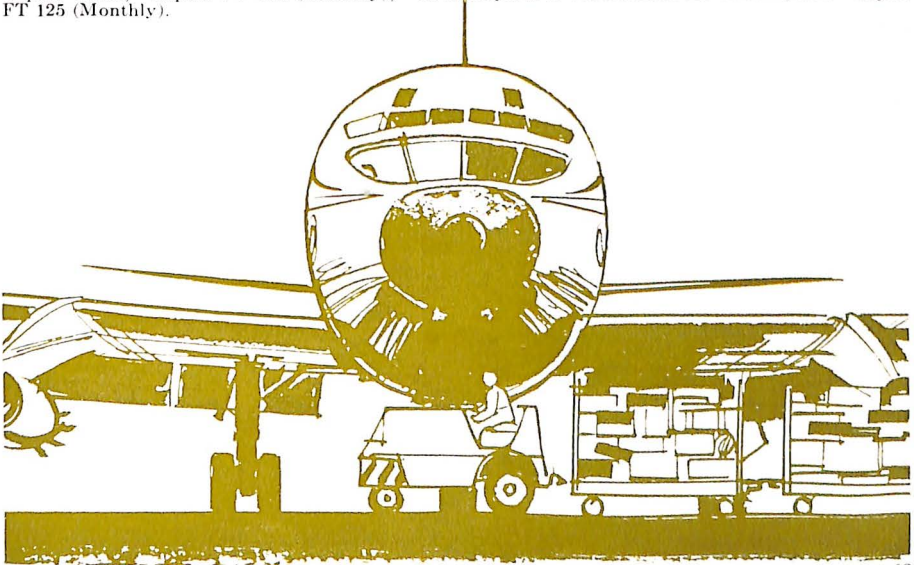
Rockets, guided missiles and parts sold abroad totalled \$208 million in 1967 compared to \$134 million the year before.

TOTAL AND AEROSPACE BALANCE OF TRADE
Calendar Years 1960 to Date
(Dollar Figures in Millions)

Year	TOTAL U.S. Trade Balance	Aerospace Trade Balance	Aerospace As Per Cent Of U.S. Total
1960	\$5,368	\$1,665	31.0
1961	6,094	1,501	24.6
1962	5,178	1,795	34.7
1963	6,060	1,532	25.3
1964	7,556	1,518	20.1
1965	5,852	1,459	24.9
1966	4,524	1,370	30.3
1967	4,415	1,961	44.4

NOTE: U. S. Balance of Trade is the difference between exports of domestic merchandise and imports for consumption.

Sources: U. S. Department of Commerce, Bureau of International Commerce, "Overseas Business Reports," February 1968. Bureau of the Census: "U. S. Exports of Domestic Merchandise, Schedule B Commodity by Country of Destination," Report FT 410 (Monthly); "Highlights of U. S. Export and Import Trade," Report FT 990 (Monthly); "U. S. Imports of Merchandise for Consumption," Report FT 125 (Monthly).



AEROSPACE FACTS AND FIGURES, 1968

EXPORTS OF U. S. AEROSPACE PRODUCTS Calendar Years 1958 to Date (Millions of Dollars)

	Years Ending Dec. 31		
	1958	1959	1960
GRAND TOTAL	1,397.7	1,095.2	1,726.1
TOTAL MILITARY	712.4	556.7	637.4
COMPLETE AIRCRAFT, TOTAL	267.4	122.7	219.4
Transports.....	32.0	9.7	20.8
General Aviation.....	6.8	4.0	3.9
Rotary.....	19.2	17.9	10.8
Fighters & Bombers.....	193.6	73.9	177.9
Trainers.....	15.8	14.1	5.5
Other, including Used.....	0.01	3.1	0.5
ENGINES, TOTAL	29.1	20.5	12.8
Jet & Gas Turbine.....	0.9	2.5	3.5
Missile Turbine.....			
Internal Combustion.....	28.2	18.0	9.3
PARTS, ACCESSORIES & EQUIPMENT			
INCLUDING SPARES, TOTAL	379.7	290.7	291.4
Engine, Spares & Accessories.....	70.2	79.1	57.6
Other Spares & Equipment.....	309.5	211.6	233.8
ROCKETS, GUIDED MISSILES & PARTS, TOTAL	36.2	122.8	113.8
Complete Rockets & Guided Missiles.....	23.9	100.3	83.4
Parts & Accessories for Rockets & Guided Missiles.....	12.3	22.5	30.4
TOTAL, CIVILIAN	685.3	538.5	1,088.7
COMPLETE AIRCRAFT, TOTAL	286.4	188.9	537.1
Transports, New.....	228.9	143.7	480.1
General Aviation, New.....	12.1	14.4	23.6
Rotary Wing, New.....	9.5	8.1	7.7
Other, including Used.....	35.9	22.7	25.7
ENGINES, TOTAL, NEW AND USED	48.3	43.7	70.7
Jet & Gas Turbine.....	8.0	18.6	47.5
Internal Combustion.....	40.3	25.1	23.2
PARTS, ACCESSORIES & EQUIPMENT FOR AIRCRAFT AND ENGINES, INCLUDING			
SPARES, TOTAL	350.6	205.9	480.9
Engine Spares & Accessories.....	70.5	69.3	101.1
Other Spares & Equipment.....	280.1	236.6	379.8

EXPORTS

EXPORTS OF U. S. AEROSPACE PRODUCTS—*Continued* 1958 to Date (Millions of Dollars)

Years Ending December 31						
1961	1962	1963	1964	1965	1966	1967
1,652.8	1,923.0	1,627.0	1,607.9	1,618.1	1,672.6	2,248.1
744.8	1,013.2	895.1	844.1	763.6	637.5	867.6
246.1	310.6	226.7	241.4	304.1	221.7	323.8
30.5	14.0	52.0	66.1	63.6	43.6	130.6
1.6	1.6	3.6	1.6	2.1	1.6	1.2
7.7	28.9	48.6	31.0	23.3	17.4	30.0
191.3	214.6	81.5	120.2	156.6	107.6	115.2
13.8	50.6	40.8	19.7	57.1	31.8	15.1
1.2	0.9	0.2	2.8	1.4	19.7	31.7
17.9	19.2	34.6	30.0	30.1	31.2	26.4
12.2	14.3	26.8	24.9	22.1	19.8	18.8
—	—	—	—	5.1	4.1	2.4
5.7	4.9	7.8	5.1	2.9	7.3	5.2
413.2	578.3	541.1	475.4	287.6	250.4	308.8
92.0	125.1	123.8	97.0	83.4	72.7	83.8
321.2	453.2	417.3	378.4	204.2	177.7	225.0
97.6	105.1	92.7	97.3	141.8	134.2	208.6
62.4	36.2	13.7	14.1	12.6	13.3	34.0
35.2	68.9	79.0	83.2	129.2	120.9	174.6
878.0	909.8	731.9	763.8	854.5	1,035.1	1,380.5
334.5	327.8	244.1	287.1	477.2	552.4	789.3
262.5	259.2	190.9	211.1	352.8	420.8	611.4
27.5	23.1	26.9	33.3	68.8	89.1	91.2
6.9	8.8	9.8	14.6	16.2	11.6	25.3
37.9	36.7	16.5	28.1	39.4	30.9	61.4
75.3	63.0	45.1	46.7	56.2	77.0	101.2
53.6	44.8	25.7	25.0	38.8	49.3	69.6
21.7	18.2	19.4	21.7	17.4	27.7	31.6
467.9	519.0	442.7	430.0	321.1	405.7	490.0
104.2	112.2	101.3	87.7	92.6	116.9	132.1
363.7	406.8	341.4	342.3	228.5	288.8	357.9

Source: Bureau of the Census, "U. S. Exports of Domestic Merchandise, Schedule B Commodity by Country of Destination", Report FT 410 (Monthly).

AEROSPACE FACTS AND FIGURES, 1968

EXPORTS OF U. S. CIVILIAN AIRCRAFT PRODUCTS Calendar Years 1958 to Date (Millions of Dollars)

Year	TOTAL	Aircraft				Engines New or Used	Engine Spares	Other Spares and Equip- ment
		New Trans- ports	New Utility	New Rotary	Used & Other			
1958	\$ 685	\$229	\$12	\$ 9	\$36	\$ 48	\$ 71	\$280
1959	539	144	14	8	23	44	69	237
1960	1,089	480	23	8	26	71	101	380
1961	878	262	28	7	38	75	104	364
1962	910	259	23	9	37	63	112	407
1963	732	191	27	10	17	45	101	241
1964	764	211	33	15	28	47	88	342
1965	855	352	69	16	39	56	93	229
1966	1,035	421	89	11	31	77	117	289
1967	1,380	611	91	25	61	101	132	359

Source: Bureau of the Census, "U. S. Exports of Domestic Merchandise, Schedule B Commodity by Country of Destination", Report FT 410 (Monthly).

U. S. EXPORTS OF COMMERCIAL TRANSPORTS Calendar Years 1958 to Date (Value in Millions of Dollars)

Year	TOTAL		33,000 Pounds and Under Airframe Weight		33,000 Pounds and Over Airframe Weight	
	Number	Value	Number	Value	Number	Value
1958	128	\$228.9	45	\$90.8	83	\$138.1
1959	65	143.7	26	40.1	39	103.6
1960	159	480.1	67	15.8	92	464.3
1961	119	262.5	68	11.2	51	251.3
1962	172	259.2	122	13.8	50	245.4
1963	181	190.9	151	18.1	30	172.8
1964	225	211.1	193	29.1	32	182.0
1965	76	352.8	16	4.9	60	346.9
1966	82	420.8	6	0.1	76	420.7
1967	134	611.4	13	4.4	121	607.0

Source: Bureau of the Census, "U. S. Exports of Domestic Merchandise, Schedule B Commodity by Country of Destination," Report FT 410 (Monthly).

EXPORTS

EXPORTS OF GENERAL AVIATION AIRCRAFT Calendar Years 1948 to Date

Year Ending Dec. 31	TOTAL Under 3000 Lbs. Airframe Weight Only		3-Places or Less		4-Places and Over	
	Number	Value (Millions)	Number	Value (Millions)	Number	Value (Millions)
1948. . . .	935	\$4.2	552	\$1.5	383	\$2.7
1949. . . .	510	2.8	235	0.7	275	2.1
1950. . . .	408	2.2	173	0.5	235	1.7
1951. . . .	540	3.7	237	1.0	303	2.7
1952. . . .	815	5.6	551	3.1	264	2.5
1953. . . .	776	5.4	370	1.5	406	3.9
1954. . . .	529	4.5	223	1.1	306	3.4
1955. . . .	748	7.4	296	1.9	453	5.5
1956. . . .	966	11.0	340	2.5	626	8.5
1957. . . .	1,086	13.1	368	2.5	718	10.6
1958. . . .	986	12.1	268	2.2	628	9.9
1959. . . .	1,033	14.5	384	3.6	639	10.9
1960. . . .	1,528	23.6	374	3.0	1,154	20.6
1961. . . .	1,646	27.5	582	4.3	1,064	23.2
1962. . . .	1,458	23.1	431	3.8	1,027	19.3
1963. . . .	1,583	26.9	484	5.7	1,099	21.2
1964. . . .	1,834	33.3	640	7.4	1,194	25.9

Year Ending Dec. 31	TOTAL		Single Engine		Multi-Engine			
	Num- ber	Value (Mil- lions)	Num- ber	Value (Mil- lions)	Under 3000 Lbs.		3000 Lbs. & Over	
					Num- ber	Value (Mil- lions)	Num- ber	Value (Mil- lions)
1965. . . .	2,457	\$68.8	2,031	\$30.6	184	\$ 8.4	242	\$29.8
1966. . . .	2,985	89.1	2,387	35.2	261	13.4	337	40.5
1967. . . .	3,125	91.2	2,554	36.9	198	9.5	373	44.8

Source: Bureau of the Census, "U. S. Exports of Domestic Merchandise, Schedule B Commodity by Country of Destination", Report FT 410 (Monthly).

AEROSPACE FACTS AND FIGURES, 1968

EXPORTS OF LIGHT TRANSPORTS AND GENERAL AVIATION AIRCRAFT UNDER 20,000 POUNDS AIRFRAME WEIGHT, BY SELECTED U. S. MANUFACTURERS Calendar Years, 1960 to Date

Year Ending December 31	Number	Value (Thousands of Dollars)
1960.....	1,481	\$27,312.6
1961.....	1,583	29,789.8
1962.....	1,458	30,938.7
1963.....	1,579	35,060.6
1964.....	1,775	44,118.4
1965.....	2,242	59,596.1
1966.....	2,903	75,373.3
1967.....	3,035	76,540.9

NOTE: Data based on exports for Aero Commander, Beech, Cessna, Lear Jet, and Piper of new civil aircraft under 20,000 pounds, empty airframe weight.
Source: Aerospace Industries Association, company reports.

EXPORTS OF LIGHT TRANSPORTS AND GENERAL AVIATION AIRCRAFT, BY SELECTED U. S. MANUFACTURERS, BY DESTINATION, CALENDAR YEAR 1966

Total and Destination	Number	Value (Thousands of Dollars)
TOTAL.....	3,035	\$76,540.9
Europe.....	923	20,992.4
Africa.....	377	9,124.8
Asia.....	141	6,046.1
Oceania.....	561	10,842.6
Canada.....	391	11,545.1
Latin America.....	642	17,989.9

NOTE: Data based on exports of new civil aircraft under 20,000 pounds, empty airframe weight.
Source: Aerospace Industries Association, company reports.

EXPORTS

U. S. EXPORTS OF ROCKETS, GUIDED MISSILES AND PARTS Calendar Year 1958 to Date (Millions of Dollars)

Year	TOTAL	Complete Rockets and Guided Missiles	Parts and Accessories
1958	\$ 36	\$ 24	\$ 12
1959	123	100	23
1960	114	84	30
1961	98	63	35
1962	105	36	69
1963	93	14	79
1964	97	14	83
1965	142	13	129
1966	134	13	121
1967	209	34	175

Source: Bureau of the Census, "U. S. Exports of Domestic Merchandise, Schedule B Commodity by Country of Destination," Report FT 410 (Monthly).

U. S. EXPORTS OF LARGE CIVIL AIRCRAFT ENGINES^a Calendar Years 1958 to Date (Value in Millions of Dollars)

Year	TOTAL		New Internal Combustion ^a		New and Used Jet and Gas Turbine	
	Number	Value	Number	Value	Number	Value
1958	661	\$36.2	600	\$28.2	61	\$ 8.0
1959	702	36.5	389	17.9	313	18.6
1960	703	56.6	223	9.1	480	47.5
1961	491	59.2	127	5.6	364	53.6
1962	501	48.0	160	3.2	341	44.8
1963	517	32.5	264	6.8	253	25.7
1964	660	30.0	413	5.0	247	25.0
1965	547	41.0	175	2.2	372	38.8
1966	918	58.4	354	9.1	564	49.3
1967	1,087	81.4	331	11.8	756	69.6

^a 500 h.p. and over.

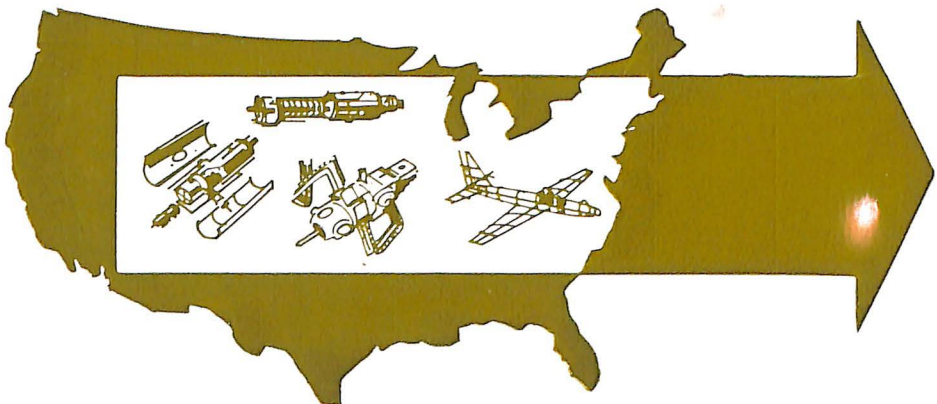
Source: Bureau of the Census, "U. S. Exports of Domestic Merchandise, Schedule B Commodity by Country of Destination," Report FT 410 (Monthly).

AEROSPACE FACTS AND FIGURES, 1968

U. S. EXPORTS OF NEW SMALL AIRCRAFT ENGINES^a FOR CIVILIAN AIRCRAFT Calendar Years 1948 to 1964

Year Ending December 31	Number	Value (Thousands of dollars)
1948	660	\$ 326
1949	107	112
1950	247	285
1951	304	509
1952	551	941
1953	347	708
1954	728	1,516
1955	897	2,016
1956	1,371	3,529
1957	1,516	3,860
1958	1,552	4,312
1959	948	2,448
1960	1,464	3,716
1961	1,575	4,399
1962	1,819	4,510
1963	1,292	3,635
1964	1,677	5,257
1965	1,491	4,815
1966	1,714	6,726
1967	1,748	6,816

^a 1948 and 1949, under 250 h.p.; 1950-1964, under 400 h.p.; 1965 to date, under 500 h.p.
Source: Bureau of the Census, "U. S. Exports of Domestic Merchandise, Schedule B Commodity by Country of Destination", Report FT 410 (Monthly).



EXPORTS

VALUE OF U. S. EXPORTS OF MILITARY AND CIVIL ENGINES^a AND PARTS Calendar Years 1958 to Date (Millions of Dollars)

Year	TOTAL	Internal Combustion			Jet and Gas Turbine			Missile Engines and Parts
		Total	Engines	Parts	Total	Engines	Parts	
1958	\$213.5	\$204.6	\$68.5	\$136.1	\$ 8.9	\$ 8.9	N.A.	N.A.
1959	208.0	186.9	43.1	143.8	21.1	21.1	N.A.	N.A.
1960	235.1	184.1	32.5	151.6	51.0	51.0	N.A.	N.A.
1961	279.8	214.0	27.4	186.6	65.8	65.8	N.A.	N.A.
1962	309.6	250.5	23.1	227.4	59.1	59.1	N.A.	N.A.
1963	293.3	240.8	27.2	213.6	52.5	52.5	N.A.	N.A.
1964	251.3	201.4	26.8	174.6	49.9	49.9	N.A.	N.A.
1965	276.4	156.8	40.6	116.2	113.8	60.9	52.9	5.8
1966	292.3	150.8	35.0	115.8	136.7	69.1	67.6	4.8
1967	335.2	158.9	36.8	122.1	173.1	88.4	84.7	3.2

^a Includes new and used.

Source: Bureau of the Census, "U. S. Exports of Domestic Merchandise, Schedule B Commodity by Country of Destination," Report FT 410 (Monthly).

U. S. EXPORTS OF ROTARY WING AIRCRAFT Calendar Years 1958 to Date (Value in Millions of Dollars)

Year	TOTAL		Military		Non-Military			
					Under 2000 Pounds		Over 2000 Pounds	
	Number	Value	Number	Value	Number	Value	Number	Value
1958	179	\$28.7	112	\$19.2	26	\$ 0.9	41	\$ 8.6
1959	151	26.0	88	17.9	38	1.9	25	6.2
1960	134	18.5	52	10.8	70	3.7	12	4.0
1961	152	14.6	33	7.7	112	5.5	7	1.4
1962	215	37.7	105	28.9	97	4.2	13	4.6
1963	260	58.4	137	48.6	109	3.9	14	5.9
1964	211	45.6	88	31.0	101	4.4	22	10.2
1965	234	39.5	57	23.3	110	4.7	67	11.5
1966	224	29.0	63	17.4	119	5.1	42	6.5
1967	359	55.3	136	30.0	166	10.0	57	15.3

Source: Bureau of the Census, "U. S. Exports of Domestic Merchandise, Schedule B Commodity by Country of Destination," Report FT 410 (Monthly).

AEROSPACE FACTS AND FIGURES, 1968

U. S. EXPORTS OF USED AIRCRAFT Calendar Years 1958 to Date (Value in Millions of Dollars)

Year Ending Dec. 31	TOTAL		Military		Non-Military	
	Number	Value	Number	Value	Number	Value
1958	595	\$35.8	—	—	595	\$35.8
1959	632	22.9	171	\$ 3.1	461	19.8
1960	634	26.2	70	0.5	564	25.7
1961	618	35.1	124	1.2	494	33.9
1962	511	37.5	129	0.9	382	36.6
1963	423	16.6	67	0.2	356	16.4
1964	589	31.7	201	2.8	288	27.9
1965	474	39.7	67	0.7	407	39.0
1966	397	45.7	33	15.0	364	30.7
1967	391	85.5	29	25.3	362	60.2

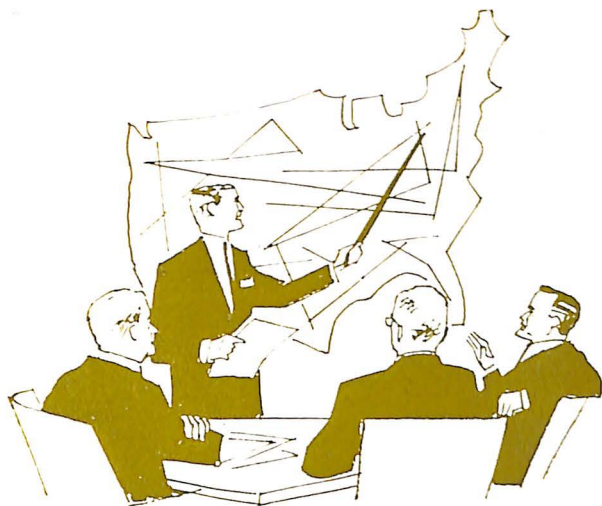
Source: Bureau of the Census, "U. S. Exports of Domestic Merchandise, Schedule B Commodity by Country of Destination," Report FT 410 (Monthly).

U. S. AEROSPACE IMPORTS Calendar Years 1955 to Date (Thousands of Dollars)

Year Ending Dec 31	TOTAL	Aircraft	Aircraft Engines	Aircraft Parts, N.E.C.
1955	\$ 32,096	\$14,415	\$ 1,265	\$ 16,416
1956	86,790	55,594	2,300	28,896
1957	52,671	15,476	1,639	35,556
1958	78,560	32,716	5,991	39,854
1959	68,066	16,273	7,510	44,283
1960	60,901	6,841	7,388	46,672
1961	151,667	82,821	17,485	51,361
1962	128,204	54,280	9,707	64,217
1963	95,290	26,831	4,675	63,784
1964	90,062	21,505	6,573	61,984
1965	158,837	73,406	20,149	65,282
1966	303,264	162,645	32,774	107,845
1967	286,968	61,136	30,750	195,082

^a Aircraft includes new and used airplanes, seaplanes, and amphibians.
Source: Bureau of the Census, "U. S. Imports of Merchandise for Consumption," Report FT 110, 125 (Monthly).

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MUTUAL SECURITY PROGRAM, SHIPMENT OF MILITARY AIRCRAFT FISCAL YEARS 1950 TO DATE

Year Ending June 30	Total	Air Force	Navy
1950	251	818	283
1951	850		
1952	1,317	1,124	193
1953	2,689	2,274	415
1954	1,170	923	247
1955	1,292	1,136	154
1956	2,659	2,580	79
1957	2,182	2,085	97
1958	1,714	1,565	149
1959	620	528	92
1960	355	317	38
1961	483	427	56
1962	358	341	17
1963	456	439	17
1964	499	409	90
1965	568	488	80
1966	387	379	8
1967	238	214	24
TOTAL ^a	18,088	16,049	2,039

^a October 6, 1949 to June 30, 1967.
Source: Department of Defense.

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Aerospace industry employment in 1967 continued an upward swing begun in 1965 to a new monthly average high of 1,392,000. This is an increase of 94,000 above the 1,298,000 employed in 1966.

Aircraft manufacturers, including engine producers, reported employment rose from 560,000 in 1966 to 610,000 in 1967, a new high since 1960. Missile and space manufacturers, including communications equipment manufacturers, recorded 602,000 total employees, an increase of 36,000 over the year previous. There were 180,000 men and women employed in associated jobs in the industry compared to 172,000 in 1966.

Of total employment, production workers averaged 747,000 an increase of 61,000 above 1966. Aircraft and engine manufacturers employed 367,000 production workers in 1967 compared to 332,000 the year before. Missiles and space manufacturers employed 284,000 production workers compared to 263,000 in 1966.

Scientists and engineers employed by the industry in 1967 numbered, as of January 1967, 371,900, an increase of 18,700 over 1966, continuing the steady increase begun five years before.

Salaries and wages for the year, including overtime, continued their

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upward climb to an average weekly rate of \$146.54 compared to \$143.89 in 1966.

The state of California continued to rank as the largest aerospace employer in 1967 with 374,100 employees representing 26.8 per cent of the total U.S. employment in the aerospace industry.

ESTIMATED AEROSPACE EMPLOYMENT, TOTAL AND PRODUCTION WORKERS
Calendar Years 1959 to Date

Monthly Average for the Year	TOTAL AEROSPACE	AIRCRAFT ^a		MISSILES AND SPACE ^b		OTHER ^d
		TOTAL (Including Propulsion)	Propulsion	TOTAL Missiles and Space	Communications Equipment ^c	
TOTAL EMPLOYMENT (Thousands)						
1959	1,128	707	128	342	106	79
1960	1,074	638	124	356	118	80
1961	1,096	557	121	421	165	118
1962	1,177	458	116	562	174	157
1963	1,174	446	116	578	185	150
1964	1,117	434	109	535	166	148
1965	1,133	458	105	505	188	170
1966	1,298	560	118	566	206	172
1967	1,392	610	122	602	224	180
PRODUCTION WORKERS (Thousands)						
1959	673	443	73	183	49	47
1960	607	370	68	191	53	46
1961	587	317	67	215	80	65
1962	619	269	66	273	85	77
1963	580	244	62	260	83	76
1964	552	243	58	236	72	73
1965 ^r	571	262	57	223	80	86
1966 ^r	686	332	68	263	92	91
1967	747	367	71	284	98	96

^a "Aircraft" includes employees in the aircraft industry (SIC 372) engaged in aircraft, aircraft engine, propellers, or parts production.

^b "Missiles and Space" includes employees in the aircraft, complete missile and space, and electronic industries engaged in missile and space work.

^c "Communications equipment" includes employees in the electrical machinery industry (SIC 36) engaged in missile and space work.

^d "Other" includes employees in industry classifications (SIC 28, 35, 38, 73, 89 and others) engaged in missile and space work.

^r Revised.

Sources: Bureau of Labor Statistics "Employment and Earnings", Bureau of Employment Security "Missiles, Spacecraft and Aircraft" AIA estimates.

LABOR TURNOVER RATES IN THE AEROSPACE INDUSTRY
Calendar Years 1958 to Date
(Rates per 100 Employees per Year)

Year Ending Dec. 31	Complete Missiles and Spacecraft		Aircraft							
			TOTAL		Airframes		Engines and Parts		Other Parts and Equipment	
			Acces- sions	Sepa- ra- tions	Acces- sions	Sepa- ra- tions	Acces- sions	Sepa- ra- tions	Acces- sions	Sepa- ra- tions
1958	58.1	26.0	28.3	33.3	26.9	29.8	27.8	35.0	33.8	42.0
1959	48.9	29.2	27.4	37.9	22.4	36.5	29.1	35.0	39.4	45.0
1960	32.3	30.9	28.6	39.2	23.4	33.8	35.1	39.5	34.3	53.9
1961	37.0	27.2	32.6	30.9	31.3	29.3	28.9	24.8	43.2	44.9
1962	37.2	31.6	35.2	31.3	32.9	29.0	30.5	23.9	49.3	47.9
1963	29.9	31.5	28.9	29.4	28.6	27.9	24.3	25.0	39.5	42.9
1964	23.5	39.1	24.7	31.0	23.0	28.9	20.2	28.0	38.6	42.9
1965	32.6	28.7	38.7	26.9	38.5	22.8	32.2	28.4	51.9	20.5
1966	44.1	30.8	48.6	31.5	47.3	28.1	43.2	31.0	61.0	46.9
1967	43.5	34.0	37.4	32.2	36.6	27.9	32.5	34.1	46.6	43.9

Source: Bureau of Labor Statistics, "Employment and Earnings," (Monthly).

RESEARCH AND DEVELOPMENT—SCIENTISTS AND ENGINEERS—
TOTAL AND AEROSPACE
1957 to Date

As of January	TOTAL Scientists and Engineers	Aircraft and Missiles Scientists and Engineers	Aerospace as a Per Cent of Total
1957	229,400	58,700	25.6
1958	243,800	58,600	24.0
1959	268,400	65,900	24.6
1960	292,000	72,400	24.8
1961	312,100	78,500	25.2
1962	312,000	79,400	25.4
1963	327,300	90,700	27.7
1964	340,200	99,400	29.2
1965	343,600	97,400	28.3
1966	353,200	97,200	27.5
1967	371,900	98,700	26.5

NOTE: Scientists and engineers working less than full time have been included in terms of their full-time-equivalent number.

Source: National Science Foundation.

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EMPLOYMENT IN THE AIRCRAFT AND PARTS INDUSTRY Calendar Years 1914 to Date (Thousands of Employees)

Monthly Average for the Year	TOTAL	Aircraft (Airframes)	Aircraft Engines and Parts	Other Aircraft Parts and Equipment
1914	0.2	N.A.	N.A.	N.A.
1919	4.2	N.A.	N.A.	N.A.
1923	3.5	N.A.	N.A.	N.A.
1929	18.6	N.A.	N.A.	N.A.
1935	14.9	N.A.	N.A.	N.A.
1939	63.2	45.1	11.3	6.8 ^E
1940	148.6	101.8	31.4	15.4 ^E
1941	347.1	234.6	75.3	37.2 ^E
1942	831.7	549.6	192.0	90.1 ^E
1943	1,345.6	882.1	314.9	148.6 ^E
1944	1,296.6	815.5	339.7	141.4 ^E
1945	788.1	489.9	210.0	87.3 ^E
1946	237.3	159.0	49.9	28.4 ^E
1951	467.8	313.3	95.0	59.5 ^E
1953	795.5	472.4	191.2	131.9 ^E
1955	761.3	466.6	168.0	126.7 ^E
1957	895.8	519.0	213.2	163.6 ^E
1959	747.6	419.5	182.8	145.3
1960	645.7	350.8	173.6	121.3
1961	619.2	324.3	186.6	108.4
1962	634.6	331.4	199.4	103.9
1963	635.2	332.0	200.7	102.5
1964	605.5	318.7	189.0	98.7
1965	617.8	330.6	187.5	99.7
1966	755.6	420.9	211.1	123.6
1967	823.0	467.6	218.3	137.1
1968				
Feb.	851.5	494.1	216.1	141.3

^E Estimate.

NOTE: The above figures include substantial missile and spacecraft employment in recent years. They do not, however, represent total aerospace employment, estimates for which appear in preceding tables in this chapter. An estimated 211,000 employees in the aircraft and parts industry worked on missiles and spacecraft in December, 1967.

Source: Bureau of Labor Statistics, "Employment and Earnings." (Monthly).

AEROSPACE FACTS AND FIGURES, 1968

PRODUCTION WORKERS IN THE AIRCRAFT AND PARTS INDUSTRY
 Calendar Years 1914 to Date
 (Thousands of Production Workers)

Monthly Average for the Year	TOTAL	Aircraft (Airframes)	Aircraft Engines and Parts	Other Aircraft Parts and Equipment
1914.....	0.2	N.A.	N.A.	N.A.
1919.....	3.5	N.A.	N.A.	N.A.
1923.....	2.9	N.A.	N.A.	N.A.
1929.....	14.7	N.A.	N.A.	N.A.
1935.....	11.4	N.A.	N.A.	N.A.
1939.....	49.6	38.4	9.5	5.3 ^E
1940.....	118.0	79.2	26.5	12.3 ^E
1941.....	278.3	183.8	65.0	29.5 ^E
1942.....	674.8	433.9	168.3	72.6 ^E
1943.....	1,090.5	692.1	278.8	119.6 ^E
1944.....	1,016.0	616.3	290.3	109.4 ^E
1945.....	591.0	360.5	164.9	65.6 ^E
1946.....	167.5	113.1	34.0	20.4 ^E
1951.....	348.4	234.8	66.5	47.1 ^E
1953.....	586.2	346.8	136.1	103.3 ^E
1955.....	525.5	322.5	108.5	94.5 ^E
1957.....	591.4	342.4	132.1	116.9 ^E
1959.....	458.0	257.4	104.1	96.5
1960.....	376.8	203.8	96.6	76.4
1961.....	351.5	178.8	103.9	68.8
1962.....	350.6	175.9	108.7	65.9
1963.....	348.4	174.8	107.2	66.4
1964.....	338.4	175.0	99.1	64.3
1965.....	352.9	183.3	102.4	67.2
1966.....	448.0	241.9	121.1	85.0
1967.....	495.4	272.6	127.8	95.0
1968.....				
Feb.	515.5	290.7	126.9	97.9

^E Estimate.

NOTE: The above figures include substantial missile and spacecraft employment in recent years. They do not however, represent total aerospace employment, estimates for which appear in preceding tables in this chapter. An estimated 133,800 production workers in the aircraft and parts industry worked on missiles and spacecraft in December, 1967.

Source: Bureau of Labor Statistics. "Employment and Earnings." (Monthly).

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AVERAGE HOURLY EARNINGS IN AIRCRAFT AND PARTS PLANTS 1939 to Date (Includes Overtime Premiums)

Monthly Average for the Year	TOTAL	Aircraft (Airframes)	Aircraft Engines and Parts	Other Aircraft Parts and Equipment
1939	N.A.	N.A.	\$0.812	N.A.
1940	N.A.	N.A.	0.816	N.A.
1941	N.A.	N.A.	1.008	N.A.
1942	N.A.	N.A.	1.189	N.A.
1943	N.A.	N.A.	1.236	N.A.
1944	N.A.	N.A.	1.287	N.A.
1945	N.A.	N.A.	1.286	N.A.
1946	N.A.	N.A.	1.316	N.A.
1947	\$1.372	\$1.360	1.384	N.A.
1948	1.487	1.465	1.519	N.A.
1949	1.560	1.548	1.571	N.A.
1950	1.637	1.622	1.662	N.A.
1951	1.78	1.75	1.85	N.A.
1952	1.89	1.87	1.94	N.A.
1953	1.99	1.98	1.99	N.A.
1954	2.07	2.08	2.05	N.A.
1955	2.16	2.17	2.13	N.A.
1956	2.27	2.27	2.24	N.A.
1957	2.35	2.35	2.35	N.A.
1958	2.50	2.51	2.51	\$2.44
1959	2.62	2.64	2.64	2.55
1960	2.70	2.71	2.73	2.64
1961	2.77	2.78	2.81	2.70
1962	2.87	2.87	2.91	2.80
1963	2.95	2.95	2.99	2.90
1964	3.05	3.05	3.09	2.99
1965	3.14	2.15	3.17	3.06
1966	3.30	3.34	3.32	3.19
1967	3.44	3.49	3.42	3.33
1968 Feb.	3.56	3.59	3.59	3.45

NOTE: The production workers surveyed include substantial missile and spacecraft employment. See NOTE page 84.

N.A.—Not available.

Source: Bureau of Labor Statistics, "Employment and Earnings," (Monthly).

AEROSPACE FACTS AND FIGURES, 1968

AVERAGE WEEKLY EARNINGS IN AIRCRAFT AND PARTS PLANTS - 1939 to Date (Includes Overtime Premiums)

Monthly Average for the Year	TOTAL	Aircraft (Airframes)	Aircraft Engines and Parts	Other Aircraft Parts and Equipment
1939	N.A.	N.A.	\$ 36.05	N.A.
1940	N.A.	N.A.	37.62	N.A.
1941	N.A.	N.A.	47.78	N.A.
1942	N.A.	N.A.	58.38	N.A.
1943	N.A.	N.A.	59.33	N.A.
1944	N.A.	N.A.	60.75	N.A.
1945	N.A.	N.A.	57.48	N.A.
1946	N.A.	N.A.	54.22	N.A.
1947	\$ 54.74	\$ 54.13	54.67	N.A.
1948	60.97	60.36	61.52	N.A.
1949	63.34	62.85	63.31	N.A.
1950	68.10	67.15	69.31	N.A.
1951	77.96	75.95	80.07	N.A.
1952	81.27	79.85	84.20	N.A.
1953	83.38	81.99	84.77	N.A.
1954	84.66	85.28	82.62	N.A.
1955	89.21	89.84	86.48	N.A.
1956	95.57	95.11	94.30	N.A.
1957	96.35	95.88	95.65	N.A.
1958	101.25	101.66	99.65	\$100.53
1959	106.63	105.86	108.50	106.34
1960	110.43	110.03	112.20	109.30
1961	114.68	114.26	116.62	113.40
1962	119.97	119.97	120.77	118.72
1963	122.43	121.84	123.49	122.67
1964	125.36	123.53	127.31	126.78
1965	131.88	131.26	133.46	131.27
1966	143.89	143.95	144.09	141.96
1967	146.54	147.28	145.35	146.19
1968 Feb.	151.66	152.58	151.86	150.08

■NOTE: The production workers surveyed include substantial missile and spacecraft employment. See NOTE page 84.

N.A.—Not available.

Source: Bureau of Labor Statistics, "Employment and Earnings." (Monthly).

MANPOWER

AVERAGE EMPLOYMENT IN THE AIRCRAFT AND PARTS INDUSTRY By GEOGRAPHICAL DIVISION AND SELECTED STATES—1961 TO DATE^a

Geographical Divisions and Selected States	1961	1962	1963	1964	1965	1966
TOTAL	625,095^b	633,024^b	633,875^b	607,095^b	626,352^b	762,331^b
New England.....	75,346	76,762	77,531	75,071	80,220	93,516
Massachusetts.....	9,493	9,023	9,407	9,046	9,035	10,200
Connecticut.....	64,012	65,693	66,338	65,117	69,437	80,961
Me., N.H., Vt., R.I.....	1,841	3,046	1,786	908	1,748	2,355
Middle Atlantic.....	71,321	74,476	82,771	74,116	74,723	88,363
New York.....	44,168	44,034	50,644	46,116	46,172	54,462
New Jersey.....	14,946	16,017	14,848	10,557	11,240	11,279
Pennsylvania.....	12,207	14,425	17,279	17,433	17,311	22,622
East North Central.....	69,932	70,107	69,023	62,695	64,142	76,858
Ohio.....	41,722	39,893	39,724	34,803	34,202	43,025
Indiana.....	17,821	18,592	19,677	18,894	19,590	21,808
Illinois.....	4,896	6,100	4,110	3,916	5,358	6,251
Mich., Wisc.....	5,493	5,522	5,512	5,082	4,992	5,774
West North Central.....	57,311	60,047	63,029	70,423	69,474	85,689
Missouri.....	24,026	27,153	33,449	36,874	37,325	44,346
Kansas.....	31,177	31,805	28,840	32,542	31,095	40,036
Minn., Iowa, N.D., S.D., Neb.....	2,108	1,089	740	1,007	1,054	1,307
South Atlantic.....	31,072	34,551	36,265	37,262	42,735	52,050
Maryland.....	3,668	3,640	3,094	2,577	3,193	4,951
Del., D.C., Va., W.Va., N.C., S.C.....	4,539	1,210	1,842	1,621	2,497	3,593
Georgia.....	11,288	14,396	17,064	18,482	20,624	23,490
Florida.....	13,593	15,305	14,265	14,582	16,421	20,016
East South Central.....	5,031	7,498	8,561	6,338	8,832	13,157
Alabama.....	4,102	7,435	7,435	5,382	7,650	7,835
Ky., Tenn., Miss.....	929	1,094	1,126	956	1,182	5,322
West South Central.....	43,468	41,237	40,310	44,244	45,492	56,230
Texas.....	39,051	36,158	34,265	37,385	37,690	46,394
Ark., La., Oklahoma ^c	4,417	5,079	6,045	6,859	366 7,436	804 9,032
Mountain.....	17,664	21,956	20,926	17,198	15,447	15,984
Arizona.....	5,167	5,451	5,252	4,833	5,627	6,848
Utah.....	8,663	11,695	12,047	8,786	6,245	5,248
Mont., Idaho, Wyo., Colo., N.Mex., Nev.....	3,834	4,810	3,627	3,579	3,575	3,888
Pacific.....	253,916	246,349	235,459	218,959	225,202	280,355
California.....	191,050	172,413	170,634	165,213	167,075	193,421
Washington.....	62,252	73,326	64,204	52,591	56,940	85,415
Ore., Alaska, Hawaii.....	614	610	621	1,155	1,187	1,519

NOTE: Corresponding data for the years since 1947 may be found in "Aerospace Facts and Figures," earlier editions.

^a The difference between these totals and employment totals appearing elsewhere are due to technical differences in methodologies of B.E.S., B.L.S., and Census, and do not seriously affect the usability of the data. The definition used is the narrow "aircraft industry" definition (SIC 372) which is narrower than the definition of "aerospace" used in some other tables.

^b Includes Puerto Rico.

^c Until 1965 Oklahoma was included with Arkansas and Louisiana.

Source: Department of Labor, Bureau of Employment Security.

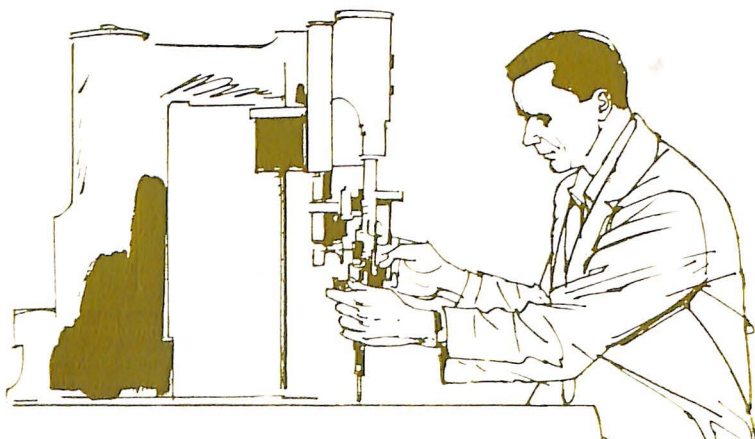
AEROSPACE FACTS AND FIGURES, 1968

THE FOURTEEN LARGEST AEROSPACE LABOR MARKET AREAS^a As of October 1967

	Aerospace Employment (Thousands)	Per Cent of Total U.S. Employment in Aerospace
TOTAL, U. S.....	1,393.4	100.0
TOTAL, Fourteen Largest Areas ^a	833.9	59.9
Los Angeles-Long Beach, Calif.....	247.2	17.7
New York, New York.....	55.8	4.0
Anaheim-Santa Ana-Garden Grove, Calif..	54.0	3.9
Hartford, Conn.....	51.0	3.7
Philadelphia, Pa.....	45.7	3.3
Boston, Mass.....	41.8	3.0
San Jose, Calif.....	41.8	3.0
Fort Worth, Tex.....	37.5	2.7
Wichita, Kans.....	36.6	2.6
San Diego, Calif.....	31.1	2.2
Minneapolis-St. Paul, Minn.....	22.1	1.6

^a Includes all areas with aerospace employment of 20,000 or more. To avoid disclosure three large labor market areas are excluded in the details below. They are (1) Seattle, Washington, (2) St. Louis, Missouri and (3) Atlanta, Georgia with 169,279 employees.

Source: Department of Labor, Bureau of Employment Security.



MANPOWER

WORK STOPPAGES IN THE AIRCRAFT AND PARTS INDUSTRY Calendar Years 1927 to Date

Year Ending December 31	Number of Strikes	Number of Workers Involved	Man-Days Idle in Year
1927-1933	4	1,153	18,965
1934	4	3,207	111,048
1935	1	1,700	6,800
1936	—	—	—
1937	6	9,390	90,964
1938	N.A.	N.A.	N.A.
1939	2	1,263	85,319
1940	3	6,270	36,402
1941	29	28,422	112,549
1942	15	6,584	12,416
1943	60	52,481	130,112
1944	103	189,801	386,371
1945	85	150,200	581,000
1946	15	21,300	557,000
1947	10	3,520	67,900
1948	8	21,400	1,100,000
1949	10	10,300	451,000
1950	18	23,900	145,000
1951	29	48,800	765,000
1952	44	81,000	927,000
1953	31	57,800	1,350,000
1954	11	6,350	171,000
1955	38	48,500	403,000
1956	21	23,100	1,040,000
1957	18	23,200	88,200
1958	20	36,700	308,000
1959	26	21,700	312,000
1960	28	82,400	1,190,000
1961	14	2,440	35,000
1962	19	23,000	555,000
1963	12	7,510	53,700
1964	19	20,300	160,000
1965	22	74,900	946,000
1966	23	38,000	204,000

N.A.—Not available.

NOTE: The "aircraft and parts industry" to which this table applies includes substantial missile and spacecraft employment. It represents approximately 60 per cent of total aerospace employment.

Source: Department of Labor, Bureau of Labor Statistics, Division of Wages and Industrial Relations.

FINANCE



Despite an 18 per cent increase in sales of the 57 aerospace firms reported on by the Securities and Exchange Commission, net profit after taxes declined between 1966 and 1967 from 3.0 to 2.7 per cent of sales. This ratio of profits after taxes compares with 5.0 per cent for all manufacturing in 1967.

In 1967 the aerospace industry supplied approximately 80 per cent of its products and services to the federal government. Federal agencies include the Department of Defense, National Aeronautics and Space Administration, the Atomic Energy Commission, the Federal Aviation Administration and others.

Total assets of these aerospace firms rose substantially between 1966 and 1967 from \$11,068 million to \$14,704 million. A substantial part of this increase in assets was the result of a \$700 million rise in the value of the industry's facilities, a reflection of increasing investment by the aerospace industry in plants and equipment.

FINANCE

Aerospace firms during 1967 supplied 2.9 per cent of total spending on plant and equipment by all manufacturing industries.

In part the expansion of activity in the aerospace industry in 1967 was financed through borrowing. Between 1966 and 1967 short term borrowing increased from \$670 million to \$1,055 million, while long term debt rose from \$1,094 million to \$1,897 million.

• The total net worth of these 57 aerospace firms rose from \$3,974 million to \$4,722 million between 1966 and 1967. This increase was the result of rising capital stock and earned surplus and reserves of these firms during the year.

COMPOSITION OF CURRENT ASSETS, 1956 TO DATE, AEROSPACE COMPANIES
(in Per Cent of Total)

Year	Total Current Assets	Cash and Securities	Inventories	Receivables	Miscellaneous
1956	100.0	9.7	64.1	25.3	0.9
1957	100.0	8.7	62.8	27.2	1.3
1958	100.0	9.7	60.2	28.8	1.3
1959	100.0	8.0	60.8	29.3	1.9
1960	100.0	8.2	60.2	30.2	1.4
1961	100.0	8.0	58.2	32.0	1.8
1962	100.0	7.2	58.4	32.3	1.2
1963	100.0	7.4	61.2	28.7	2.7
1964	100.0	7.8	62.0	27.1	3.1
1965	100.0	7.1	61.0	26.9	5.0
1966	100.0	5.0	66.2	25.1	3.7
1967	100.0	4.4	70.4	22.3	2.9

NOTE: Includes 57 companies classified in industry group 372 which filed reports with the Securities and Exchange Commission.

Source: Securities & Exchange Commission—Federal Trade Commission, "Quarterly Financial Report for Manufacturing Corporations."

AEROSPACE FACTS AND FIGURES, 1968

BALANCE SHEET COMPARISONS, AEROSPACE COMPANIES 1961 to Date (Millions of Dollars)

	1962	1963	1964	1965	1966	1967
Assets:						
Current Assets						
Cash	\$ 395	\$ 435	\$ 415	\$ 395	\$ 369	\$ 460
U. S. Government Securities ..	46	39	74	75	46	16
Total Cash and U. S. Govt.						
Securities	\$ 441	\$ 474	\$ 489	\$ 470	\$ 415	\$ 476
Receivables (total)	1,981	1,847	1,695	1,788	2,066	2,387
Inventories (gross)	3,580	3,936	3,876	4,048	5,453	7,550
Other current assets	133	174	193	331	302	314
Total Current Assets	\$6,135	\$6,431	\$6,253	\$6,637	\$ 8,236	\$10,727
Total Net Plant	1,509	1,575	1,591	1,670	2,148	2,849
Other Non-Current Assets	257	278	341	402	684	1,128
Total Assets	\$7,901	\$8,284	\$8,185	\$8,709	\$11,068	\$14,704
Liabilities:						
Current Liabilities						
Short term loans	698	461	388	339	670	1,055
Advances by U. S. Govt.	1,338	1,674	1,725	1,868	2,446	3,578
Trade accounts and notes payable	1,037	1,072	928	835	1,098	1,391
Federal income taxes accrued ..	265	255	239	252	256	229
Installments due on long term debt	32	28	38	45	61	88
Other current liabilities	769	756	770	1,043	1,369	1,558
Total current liabilities	\$4,139	\$4,246	\$4,088	\$4,382	\$ 5,900	\$ 7,899
Long Term Debt	783	835	816	807	1,094	1,897
Other Non-Current Liabilities	37	42	47	67	100	186
Total Liabilities	\$4,959	\$5,123	\$4,951	\$5,256	\$ 7,094	\$ 9,982
Stockholders' Equity:						
Capita Stock	1,318	1,354	1,339	1,312	1,488	1,785
Earned Surplus and Reserves	1,625	1,808	1,895	2,142	2,486	2,937
Total Net Worth	\$2,943	\$3,162	\$3,234	\$3,454	\$ 3,974	\$ 4,722
Total Liabilities and Stockholder's Equity	\$7,091	\$8,284	\$8,185	\$8,709	\$11,068	\$14,704
Net Working Capital	\$1,996	\$2,185	\$2,166	\$2,256	\$ 2,336	\$ 2,828

NOTE: Includes 57 companies classified in industry group 382 which filed reports with the Securities and Exchange Commission.
Source: Securities & Exchange Commission—Federal Trade Commission. "Quarterly Financial Report for Manufacturing Corporations."

FINANCE

FINANCIAL RATIOS, AEROSPACE COMPANIES 1956 to Date

Year	Net Federal Taxes as a Per Cent of Total Income	Net Profit as a Per Cent of Sales After Taxes
1956	52.3	3.1
1957	52.3	2.9
1958	51.7	2.4
1959	52.3	1.6
1960	44.4	1.4
1961	50.7	1.8
1962	47.2	2.4
1963	47.5	2.3
1964	46.9	2.6
1965	46.7	3.2
1966	45.2	3.0
1967	44.5	2.7

NOTE: Does not include data for companies which produce aerospace products but are classified in industries other than industry group 372. Includes 57 companies.

Source: Securities & Exchange Commission—Federal Trade Commission, "Quarterly Financial Report for Manufacturing Corporations."

INCOME ACCOUNTS, AEROSPACE COMPANIES 1960 to Date (Millions of Dollars)

	1961	1962	1963	1964	1965	1966	1967
Net Sales.....	\$13,954	\$15,206	\$15,313	\$15,403	\$16,073	\$19,224	\$22,739
Net Profit from Operations.....	570	739	695	756	997	1,076	1,152
Total Income before Federal Income Taxes.....	521	682	665	748	984	1,046	1,099
Provision for Federal Income Taxes.....	264	322	316	351	460	473	489
Net Profit after Taxes.	257	360	350	395	524	572	610
Net Profit Retained in Business.....	147	231	214	241	339	380	382

NOTE: Does not include data for companies which produce aerospace products but are classified in industries other than industry group 372. Includes 57 companies.

Source: Securities & Exchange Commission—Federal Trade Commission, "Quarterly Financial Report for Manufacturing Corporations."

AEROSPACE FACTS AND FIGURES, 1968

MAJOR DEFENSE CONTRACTORS (Listed by rank according to net value of military prime contracts awarded July 1, 1950-June 30, 1967) (Millions of Dollars)

Company	July 1, 1950 to June 30, 1967	July 1, 1966 to June 30, 1967	July 1, 1965 to June 30, 1966	July 1, 1964 to June 30, 1965	July 1, 1963 to June 30, 1964	World War II ^a (Per- cent)
U. S. TOTAL, ALL CONTRACTS	\$423,841.5	\$39,219.4	\$33,532.6	\$24,177.8	\$25,163.7	100.0%
Boeing.....	18,789.2	911.7	914.5	583.3	1,365.2	1.5
General Dynamics....	18,636.6	1,831.9	1,136.0	1,178.6	986.7	N.A.
Lockheed.....	17,432.9	1,807.2	1,531.0	1,715.0	1,455.4	1.9
McDonnell Douglas ^b ..	16,335.8	2,124.6	1,001.0	1,025.9	2,386.5	N.A.
General Electric.....	15,388.2	1,289.8	1,187.0	824.3	892.6	1.9
North American.....	13,520.9	688.8	520.4	745.8	1,019.5	1.6
United Aircraft.....	12,885.0	1,097.1	1,138.7	632.1	625.4	2.2
General Motors.....	12,752.7	625.1	508.0	254.4	255.8	7.9
American Telephone and Telegraph.....	8,865.0	637.0	672.1	587.6	635.6	1.5
Martin Marietta.....	6,894.0	290.2	337.8	315.6	476.4	1.3
Sperry Rand.....	5,699.8	484.1	426.8	318.4	373.9	0.9
Fairchild Hiller.....	5,482.6	93.5	80.1	70.1	89.2	0.7
Grumman.....	4,680.3	487.7	322.9	353.4	395.6	0.8
Hughes.....	4,632.0	419.5	336.6	278.3	288.7	N.A.
Westinghouse Electric	4,372.8	453.1	348.7	260.9	236.9	0.8
Bendix.....	4,325.6	296.1	281.8	234.9	257.4	1.1
Raytheon.....	4,049.2	403.3	368.5	293.4	253.0	N.A.
Radio Corp. of America.....	4,019.7	268.4	242.4	213.9	233.6	0.3
Avco.....	3,613.4	419.5	506.0	234.2	278.7	0.6
Curtiss-Wright.....	3,551.8	90.8	91.1	49.3	51.2	4.1
International Busi- ness Machine.....	3,491.3	194.9	181.6	186.2	332.4	N.A.
General Tire and Rubber.....	3,470.7	273.1	327.3	302.0	364.4	N.A.
Northrop.....	3,394.4	306.4	276.0	255.9	164.9	0.1
Textron.....	2,675.9	496.6	554.8	195.7	216.3	0.7
Philco Ford.....	2,198.5	403.8	247.9	312.0	211.2	N.A.
International Tele- phone & Telegraph.	2,170.0	255.2	219.8	206.7	256.1	N.A.
Ling-Temco-Vought..	1,921.7	534.7	310.8	264.7	247.5	N.A.
Honeywell.....	1,718.5	313.7	250.6	82.5	107.5	N.A.
Thiokol.....	1,626.0	172.7	110.7	136.2	253.6	N.A.

N.A.—Not available.

^a Estimated at \$193.3 billion.

^b Combined data for McDonnell and Douglas.

Sources: 1950 to Date: Department of Defense, "100 Companies and their Subsidiary Corporations Listed According to Net Value of Military Prime Contract Awards" (Annually). World War II: War Production Board.

FINANCE

MAJOR NATIONAL AERONAUTICS AND SPACE ADMINISTRATION CONTRACTORS
 (Listed by rank according to net value of NASA prime contracts
 awarded July 1, 1960-June 30, 1967)
 (Millions of Dollars)

Company	July 1, 1960 to June 30, 1967	July 1, 1966 to June 30, 1967	July 1, 1965 to June 30, 1966	July 1, 1964 to June 30, 1965	July 1, 1963 to June 30, 1964	July 1, 1962 to June 30, 1963
U. S. TOTAL, ALL CONTRACTS	\$19,352.8	\$3,864.1	\$4,087.7	\$4,141.4	\$4,521.1	\$2,661.6
North American.....	4,929.2	983.8	1,128.9	1,099.4	917.2	525.8
McDonnell Douglas ^a ..	2,055.2	243.9	312.0	418.4	517.9	353.6
Grumman.....	1,369.9	481.1	381.2	267.2	156.4	48.2
Boeing.....	1,206.9	273.5	313.7	306.0	197.1	101.0
General Electric.....	825.3	179.3	235.7	181.5	143.6	53.0
International Busi- ness Machines.....	557.2	186.4	108.2	128.3	85.6	36.1
General Dynamics.....	545.5	61.0	92.1	111.1	148.2	103.1
Chrysler.....	465.1	76.6	83.5	86.0	99.4	75.4
Bendix.....	364.4	120.0	78.0	66.1	41.9	32.5
Radio Corp. of America.....	336.2	57.5	51.3	106.6	49.8	42.2
General Motors.....	313.1	65.2	123.3	72.5	41.9	10.2
United Aircraft.....	207.7	40.0	40.7	43.3	36.7	48.9
Lockheed.....	193.3	42.0	44.5	35.8	39.0	23.7
TRW.....	187.5	52.6	49.9	50.5	39.0	2.6
Brown Engineering.....	176.1	16.7	24.3	30.9	41.6	24.1
Ling-Temco-Vought..	174.2	46.3	28.8	15.1	21.5	26.7
Philco Ford.....	153.4	32.1	25.4	30.0	35.7	14.7
Sperry Rand.....	124.8	38.7	29.5	39.4	11.8	3.2
Hayes International..	119.3	7.3	28.1	28.5	18.7	15.4
Hughes.....	111.2	19.9	22.4	26.5	14.9	18.3
Honeywell.....	89.6	22.6	22.2	27.1	7.1	3.2
Fairchild Hiller.....	89.1	9.8	15.3	22.2	19.7	15.5
Union Carbide.....	76.8	12.6	19.7	20.0	20.1	^b
Collins Radio.....	53.4	^b	17.0	31.5	4.9	^b
Catalytic Construction	47.8	11.1	5.5	25.3	5.9	^b
Bellecom.....	44.9	9.3	9.7	9.8	8.7	6.4
Martin Marietta.....	44.2	12.8	5.7	8.4	8.5	7.2
Western Electric.....	41.8	2.3	4.2	^b	^b	^b
Raytheon.....	28.2	^b	3.2	2.2	34.2	^b
Kollsman Instrument.	23.5	1.9	1.7	^b	13.6	5.1

^a Combined data for McDonnell and Douglas.

^b Not in list of major contractors for indicated year.

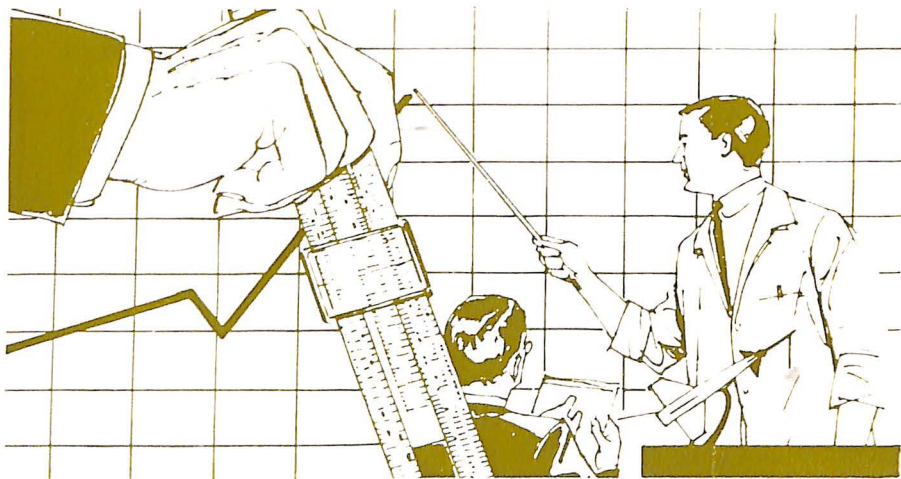
Source: National Aeronautics and Space Administration, "NASA Annual Procurement Report."

AEROSPACE FACTS AND FIGURES, 1968

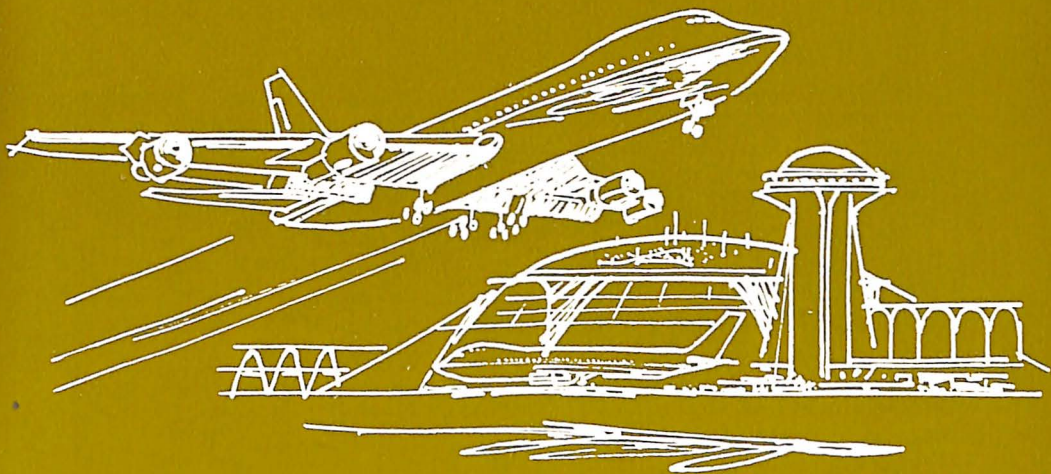
CAPITAL SPENDING, ALL MANUFACTURING AND THE AEROSPACE INDUSTRY Calendar years 1963 to Date (Millions of Dollars)

Year Ending December 31	All Manufacturing	Aerospace Industry	Aerospace Industry As a Per Cent of All Manufacturing
1963	\$15,690	\$390	2.5%
1964	18,584	350	1.9
1965	22,449	410	1.8
1966	26,986	770	2.9
1967	26,692	770	2.9

Sources: U. S. Department of Commerce, Office of Business Economics. McGraw Hill, Inc., Economics Department.



AIR TRANSPORTATION



The expansion of U.S. air transportation continued during 1967. Scheduled airlines carried 132 million passengers over nearly 99 billion passenger miles compared to 109 million passengers in 1966 over nearly 80 billion miles and 63 million passengers over more than 44 billion passenger miles five years before.

Air freight carriers hauled a total of 3,537 million ton miles of cargo, up from 3,048 million ton miles in 1966. U.S. air mail tonnage jumped from 762 million ton miles in 1966 to 985 million ton miles in 1967.

By the end of 1967 U.S. airlines had a total of 2,452 aircraft flying global routes as compared to 2,272 a year previous. Dominating the fleet were 1,788 turbojet and turboprop aircraft, up from 1,378 at the end of 1966. Airlines were flying a total of 642 piston-powered aircraft, down from 873 the year before. The airlines were also flying 22 helicopters at the end of 1967, up one from 1966.

Domestic airlines reported to the Civil Aeronautics Board that the gross

AEROSPACE FACTS AND FIGURES, 1968

PUBLIC AIRPORTS BY LENGTH OF RUNWAY AND REGION,
January 1, 1968

Region	TOTAL	Airports by Length of Runway (in feet)		
		Under 5,000	5,000- 9,999	10,000 & over
TOTAL.....	10,126	8,820	1,058	248
New England.....	416	338	55	23
Middle Atlantic.....	919	834	62	23
East North Central.....	1,459	1,349	92	18
West North Central.....	1,567	1,449	96	22
South Atlantic.....	1,024	869	144	11
East South Central.....	446	398	48	—
West South Central.....	1,457	1,305	127	25
Mountain.....	1,080	846	223	11
Pacific.....	1,731	1,413	205	113
Other.....	27	19	6	2

Department of Transportation, Federal Aviation Administration.

value of their flight equipment stood at nearly \$5.5 billion compared to \$4.5 billion the year before.

At the end of 1967, domestic and foreign airlines had a total of 1,659 aircraft valued at nearly \$8.5 billion on order with U.S. manufacturers. Of this number, 1,093 aircraft worth more than \$8 billion were commercial transports. The remainder were executive type aircraft.

There were 10,126 public airports in the country accommodating the growing U.S. air transportation system. The major number, 1,731, are located in the Pacific coast area, according to figures compiled by the Federal Aviation Administration.

Commenting on the health of the nation's airline industry, Stuart G. Tipton, president of the Air Transport Association, said: "The (airline) industry has re-equipped and expanded on a massive scale, met substantially increased wage costs, as well as higher and higher material, equipment and construction costs and at the same time has reduced its average fare per passenger mile 13 per cent during this period. . . .

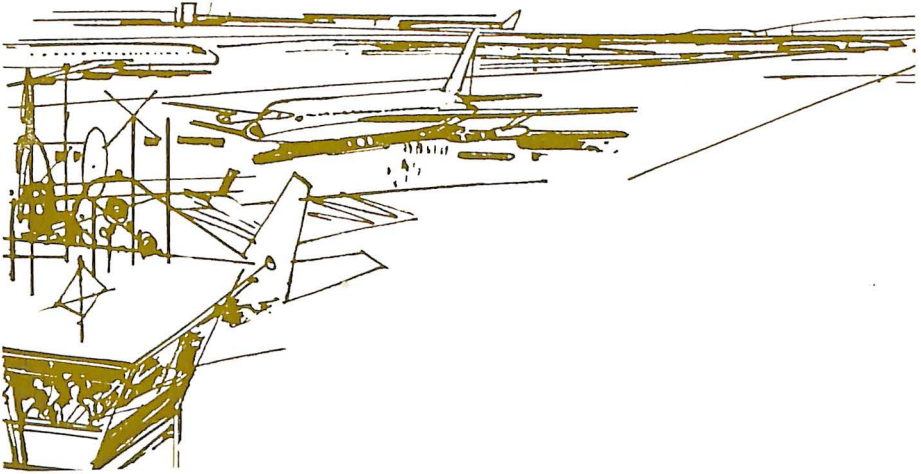
"The greater technological sophistication of the aircraft and supporting equipment allows the airline to utilize the nation's airways as well as the airports more efficiently at a time when growing congestion makes such efficiency exceptionally valuable," he added.

AIR TRANSPORTATION

ORDERS AND DELIVERIES BY YEAR FOR EXECUTIVE TYPE JET AIRCRAFT As of December 31, 1967

	TOTAL	For Delivery During	
		1968	1969
TOTAL			
Number of aircraft.....	566	276	290
Value-million dollars.....	\$391	\$199	\$192
FOR FOREIGN DELIVERY			
Number of aircraft.....	85	46	39
Value-million dollars.....	\$41	\$23	\$18

Source: Aerospace Industries Association, reports from member companies.



AEROSPACE FACTS AND FIGURES, 1968

U. S. MANUFACTURED AIRCRAFT IN OPERATION ON WORLD AIRLINES
Calendar Years 1961 to Date

	1961	1962	1963	1964	1965	1966
TOTAL MANUFACTURED IN U. S.	2,542	2,345	2,266	2,317	2,548	2,556
4 Engine	1,505	1,474	1,434	1,417	1,493	1,410
Turbojets	423	517	580	627	738	825
Boeing 707	150	209	206	233	291	365
Boeing 720	40	51	55	109	119	118
Boeing 720B	44	25	52			
Douglas DC-8	149	167	183	199	236	254
Convair 880	40	44	53	53	52	53
Convair 990	—	21	31	33	40	35
Turboprops	137	137	137	137	136	136
Lockheed Electra	137	137	137	137	136	133
Lockheed L-100 Hercules	—	—	—	—	—	3
Piston Engine	945	820	717	655	619	449
Lockheed Constellation	261	206	179	176	136	83
Douglas DC-7	254	232	178	133	85	47
Douglas DC-6	316	277	257	250	265	210
Douglas DC-4	114	105	103	96	132	109
Boeing Stratocruiser	—	—	—	—	1	—
3 Engine	—	—	4	97	193	309
Boeing 727 (turbojet)	—	—	4	97	193	309
2 Engine	971	833	783	754	803	791
Turbojets	—	—	—	—	4	59
Douglas DC-9	—	—	—	—	4	59
Turboprops	8	7	7	7	7	18
Fairchild F-227	—	—	—	—	—	10
Fairchild F-27	8	7	7	7	7	8
Piston Engine	963	826	776	747	792	714
Convair 240, 340, 440	288	250	228	201	190	177
Martin 202, 404	40	4	4	—	4	—
Curtiss Commando C-46	36	36	37	38	57	56
Douglas DC-3/C-47	568	516	479	471	481	441
Other	31	20	28	37	60	40
1 Engine	34	12	18	19	21	13
Helicopters	32	26	27	30	38	33
ALL MANUFACTURERS GRAND TOTAL	3,319	3,162	3,086	3,137	3,461	3,541
Per Cent of Grand Total Manufactured in U. S.	76.6	74.2	73.4	73.9	73.6	72.2

Source: International Air Transport Association, "World Air Transport Statistics" (Annually). Based on reports by IATA members.

AIR TRANSPORTATION

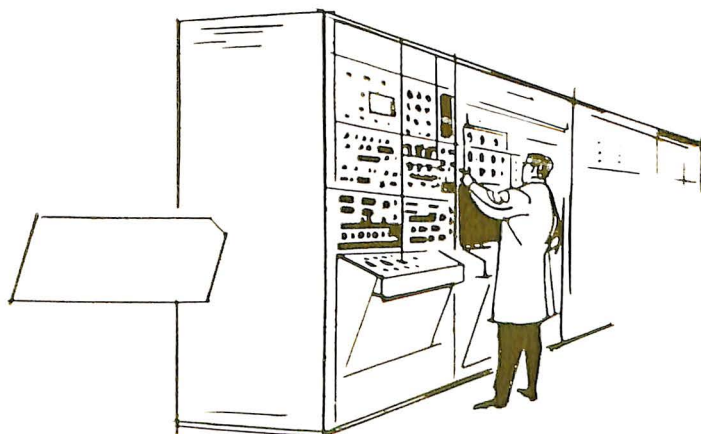
WORLD CIVIL AIRLINES Selected Calendar Years, 1919 to Date (Revenue Traffic, Scheduled Services, International and Domestic) (Data in Millions)

Year Ending December 31	Miles Flown	Passengers Carried	Passenger- Miles	Cargo Ton-Miles	Mail Ton-Miles
1919	1	N.A.	N.A.	N.A.	N.A.
1929	55	N.A.	105	N.A.	N.A.
1934	100	N.A.	405	N.A.	N.A.
1939	185	N.A.	1,260	N.A.	N.A.
1944	260	N.A.	3,410	N.A.	N.A.
1949	840	27	15,000	390	130
1951	1,005	42	22,000	630	160
1953	1,205	52	28,500	725	190
1955	1,425	68	38,000	905	255
1956	1,580	77	44,000	1,030	275
1957	1,765	86	50,500	1,125	295
1958	1,820	88	53,000	1,150	320
1959	1,920	98	61,000	1,330	355
1960	1,925	106	67,500	1,480	415
1961	1,940	111	72,500	1,700	490
1962	2,015	121	80,500	1,995	555
1963	2,130	135	91,500	2,230	590
1964	2,290	155	106,000	2,670	625
1965	2,550	177	123,000	3,390	755
1966	2,790	200	142,000	4,010	1,050
1967	3,300	235	170,000	4,600	1,295

N.A.—Not available.

NOTE: Excludes China (mainland) and the USSR.

Source: International Civil Aviation Organization, "Development of Civil Air Transport, Total Scheduled Services—Revenue Traffic" (Annually).



COMPOSITION OF U. S. AIR LINE FLEET, BY TYPE OF AIRCRAFT, NUMBER OF
ENGINES, AND MODEL: JANUARY 1, 1968, 1967, AND 1966
(Number of Aircraft)

Type of Aircraft, Number of Engines, and Model	January 1		
	1968	1967	1966
TOTAL, AIRCRAFT	2,452	2,272	2,125
<u>Total fixed-wing</u>	2,430	2,251	2,104
<u>Turbine-powered-total</u>	1,788	1,378	1,037
<u>Four engine-total</u>	902	796	726
<u>Turbojet-total</u>	706	586	511
B-707	338	245	191
B-720	135	129	121
CV-990	14	17	18
CV-880	45	46	47
DC-8	173	149	134
L-1329	1	—	—
<u>Turboprop-total</u>	196	210	215
L-188, 188A	125	125	126
L-382	9	5	—
V-745	38	44	48
V-810/812	—	8	11
Argosy 650	5	6	6
CL-44	19	22	24
<u>Three engine-total</u>	410	287	173
B-727	410	287	173
<u>Twin engine-total</u>	468	287	130
<u>Turbojet-total</u>	228	133	41
Caravelle	20	20	20
BAC-111	57	54	17
Dassault/Sud SE-20	3	3	—
DC-9	148	56	4
<u>Turboprop-total</u>	241	154	89
CV-340T	85	42	18
CV-240T	29	28	2
F-27	49	64	63
FH-227	58	16	—
G-159	2	1	1
Nihon YS-11	2	3	—
NO-262	12	—	5
DHC-6	3	—	—
SC-7	1	—	—
<u>Single-engine Turboprop-total</u>	7	8	8
PC-6A	3	4	4
PC-6B	4	4	4

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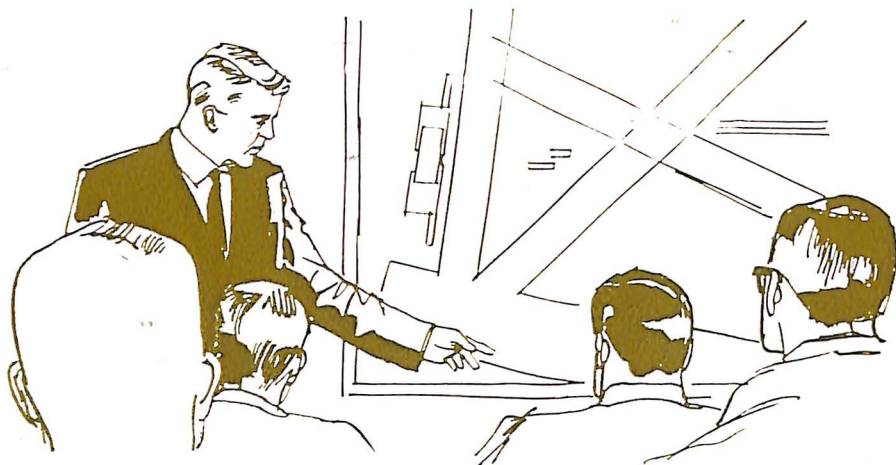
AIR TRANSPORTATION

COMPOSITION OF U. S. AIR LINE FLEET, BY TYPE OF AIRCRAFT, NUMBER OF ENGINES AND MODEL: JANUARY 1, 1968, 1967, 1966—*Continued* (Number of Aircraft)

Type of Aircraft, Number of Engines, and Model	January 1		
	1968	1967	1966
<u>Piston-powered-total</u>	642	873	1,067
<u>Four engine-total</u>	265	388	447
B-377.....	—	1	1
DC-4.....	10	10	9
DC-6.....	133	164	210
DC-7.....	55	91	92
L-049/149.....	5	6	8
L-749.....	7	37	38
L-1049.....	54	70	82
L-1649.....	1	9	7
<u>Twin engine-total</u>	357	461	590
AC-680E.....	1	1	1
CV-28-5ACF.....	4	4	4
CV-240.....	12	32	56
CV-340/440.....	78	112	146
BE-D18, E18, G18.....	—	1	2
C-46, 20T.....	63	69	82
DC-2.....	—	—	1
DC-3, 3A.....	107	137	176
F-C82.....	4	4	2
G-21, 21A.....	18	19	22
G-44A.....	2	3	6
G-SA16.....	2	2	2
G-73.....	2	1	1
L-12.....	1	—	1
M-202A.....	2	1	15
M-404.....	57	75	72
PA-31.....	4	—	—
<u>Single engine-total</u>	20	24	30
<u>Rotary Wing-total</u>	22	21	21
<u>Turbine-powered-total</u>	17	16	15
S-61.....	9	8	7
S-62.....	1	1	1
V-107 II.....	7	7	7
<u>Piston-powered-total</u>	5	5	6
S-55.....	2	2	2
S-58C.....	3	3	4

Source: Department of Transportation, Federal Aviation Administration, "U. S. Civil Carrier Fleet" (Annually).

AEROSPACE FACTS AND FIGURES, 1968



UNITED STATES SCHEDULED AIRLINES
Selected Calendar Years, 1949 to Date

Year Ending Dec 31	Revenue Miles Flown (Millions)	Passengers Carried (Millions)	Revenue Passenger- Miles (Millions)	Cargo Ton-Miles ^a (Millions)	Mail Ton-Miles ^b (Millions)
1949	463	17	8,827	196	66
1951	527	25	13,204	324	92
1953	657	32	18,245	359	106
1955	780	42	24,351	503	150
1956	869	46	27,625	634	160
1957	976	49	31,261	721	169
1958	973	49	31,499	726	185
1959	1,030	56	36,372	853	209
1960	998	58	38,863	880	250
1961	970	58	39,831	1,023	308
1962	1,010	63	43,760	1,388	350
1963	1,095	71	50,362	1,346	368
1964	1,189	82	58,494	1,634	383
1965	1,354	95	68,676	2,270	494
1966	1,482	109	79,889	3,048	762
1967	1,834	132	98,747	3,537	985

NOTE: Figures represent total scheduled services excluding nonrevenue operations of U. S. international and domestic certificated route air carriers.

^a Includes freight plus express revenue ton-miles in scheduled and nonscheduled operations.

^b U. S. mail ton-miles plus foreign mail ton-miles.

Source: Civil Aeronautics Board.

AIR TRANSPORTATION

U. S. DOMESTIC AND INTERNATIONAL AIRLINE PASSENGER SERVICE Selected Calendar Years, 1926 to Date

Year Ending Dec 31	Domestic		International	
	Passengers Carried (Thousands)	Revenue Passenger- Miles Flown (Millions)	Passengers Carried (Thousands)	Revenue Passenger- Miles Flown (Millions)
1926	6	1.3	N.A.	N.A.
1930	385	85.1	33	7.8
1935	679	281.2	111	46.7
1940	2,803	1,052.2	163	99.8
1945	6,541	3,360.3	511	450.1
1950	17,468	8,029.1	1,752	2,214.0
1951	22,711	10,589.7	2,140	2,613.8
1952	25,176	12,559.3	2,391	3,065.0
1953	28,901	14,793.9	2,745	3,450.8
1954	32,529	16,802.4	2,919	3,810.4
1955	38,221	19,852.1	3,488	3,398.9
1956	41,937	22,398.6	4,068	5,226.2
1957	45,162	25,378.8	4,259	5,882.0
1958	44,741	25,375.5	4,428	6,123.9
1959	51,000	29,307.6	4,999	7,064.2
1960	52,377	30,556.6	5,499	8,306.2
1961	52,712	31,062.3	5,699	8,768.5
1962	55,950	33,623.0	6,598	10,138.0
1963	63,925	38,456.6	7,513	11,905.4
1964	72,988	44,141.3	8,775	14,352.4
1965	84,460	51,887.4	10,195	16,789.0
1966	97,746	60,590.8	11,646	19,298.4
1967	118,669	75,487.3	13,424	23,259.3

NOTE: Figures represent total scheduled services excluding nonrevenue operations of certificated route air carriers. Passenger originations only.

N.A.—Not available.

Source: Civil Aeronautics Board.

AEROSPACE FACTS AND FIGURES, 1968

U. S. DOMESTIC AIRLINES
TOTAL ASSETS AND NET INVESTMENT IN FLIGHT EQUIPMENT
(Dollar Figures in Millions)
1958 to Date

As of June 30	Total Assets ^a	Flight Equip- ment (Net-after depreciation)	Per Cent of Total Assets in Flight Equipment
1958	\$1,182	\$ 852	72.1%
1959	1,494	1,048	70.1
1960	1,760	1,374	78.1
1961	2,099	1,734	82.6
1962	2,273	1,874	82.4
1963	2,211	1,818	82.2
1964	2,415	2,030	84.0
1965	2,816	2,391	84.9
1966	3,747	2,981	79.6
1967	5,003	3,833	76.6

^a Comprises net investment in buildings and ground equipment, flight equipment, working capital, etc.
NOTE: Excludes helicopter airlines.

Sources:

Civil Aeronautics Board 1964, "Annual Report."

Civil Aeronautics Board, Research and Statistics Section.

U. S. DOMESTIC AIRLINES, VALUE OF FLIGHT EQUIPMENT^a
1958 to Date
(Millions of Dollars)

As of June 30	Total Gross Value of Flight Equipment	Less: Depreciation	Plus: Construction Work in Process	Equals: Net Value of Flight Equipment
1958	\$1,498.5	\$ 709.8	\$ 63.4	\$ 852.1
1959	1,752.8	816.8	112.3	1,048.3
1960	2,174.3	889.6	89.5	1,374.2
1961	2,719.2	1,062.0	76.7	1,733.9
1962	3,006.0	1,183.3	51.7	1,874.4
1963	3,132.4	1,341.4	27.1	1,818.1
1964	3,382.7	1,401.6	48.4	2,029.5
1965	3,843.5	1,504.7	51.7	2,390.5
1966	4,519.7	1,645.5	106.9	2,981.1
1967	5,485.0	1,805.6	153.2	3,832.6

^a Excludes helicopters.

Source: Civil Aeronautics Board.

AIR TRANSPORTATION

TOTAL ORDERS FOR JET AIRCRAFT (DOMESTIC AND FOREIGN) Airline and Executive-Type Fixed Wing As of December 31, 1967

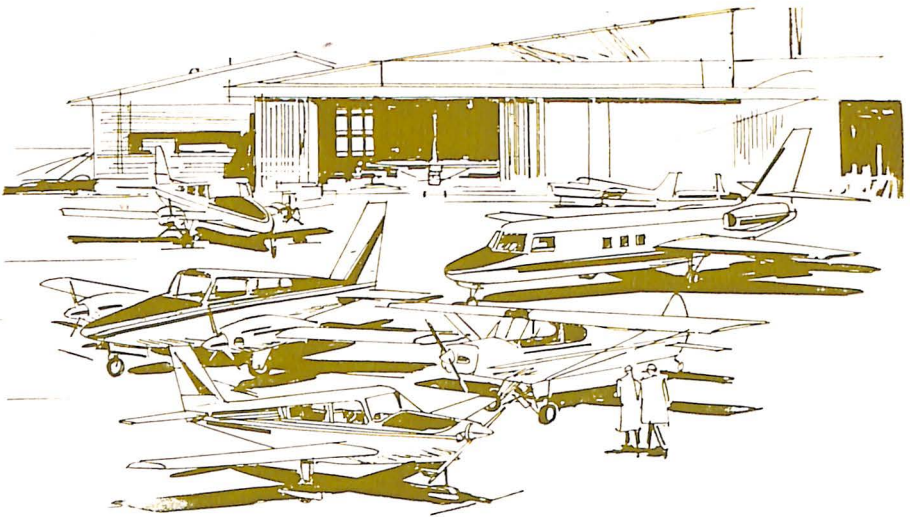
	TOTAL Aircraft for Delivery in 1968 or Later	TOTAL Foreign Orders
TOTAL		
Number of aircraft.....	1,659	436
Value-million dollars.....	\$8,457	\$2,604
TRANSPORTS		
Number of aircraft.....	1,093	351
Value-million dollars.....	\$8,066 ^a	\$2,563
EXECUTIVE TYPE		
Number of aircraft.....	566 ^b	85
Value-million dollars.....	\$391	\$41
NUMBER OF TRANSPORT AIRCRAFT		
Boeing		
B-707.....	133	40
B-727.....	186	19
B-737.....	184	54
B-747.....	141	40
McDonnell-Douglas		
DC-8.....	181	68
DC-9.....	263	125
Fairchild Hiller		
FH-227.....	5	5

^a Dollar values exclude the cost of spare parts.

^b Backlogs of executive jet aircraft are not totally comparable to those reported for transports, as executive orders are purchased largely off-the-shelf.

Source: Aerospace Industries Association, reports from member companies.

GENERAL AVIATION



Manufacturers delivered 13,577 new general aviation airplanes valued in excess of \$359 million during 1967 making it the second largest year in the history of the industry. Deliveries were, however, 13.6 percent below 1966 when 15,747 were delivered worth more than \$408 million.

Exports accounted for 3,035 of the year's production. These were valued at more than \$76 million.

Turbocharged piston engines and pressurization appeared in greater amounts and in a wider variety of models during 1967 and more than 250 of those delivered were turbine powered.

Of the year's total production, 2,020 aircraft were multi-engine and 11,557 single-engine. The nearly 100 different models produced ranged from single-seat agricultural applicators, and two-place single-engine training models to multi-engine, jet-powered business transports.

Scheduled air taxi operators numbered 165 at the end of 1967 compared to 116 in 1966, denoting the increasing utilization of general aviation aircraft in this growing segment of the industry.

Air taxi operators began flying the U.S. air mail in 1967, a Post Office Department assignment which is expected to grow rapidly. Cargo operations in these aircraft generally are increasing as airplanes designed with special, wide cargo doors and quickly removable seats appear in greater numbers from the manufacturers.

INVENTORY OF CIVIL AIRCRAFT
Including Air Carrier Aircraft
1928 to Date

Year As of January 1	TOTAL	Eligible	Ineligible
1928	2,740	N.A.	N.A.
1932	10,680	N.A.	N.A.
1935	8,322	N.A.	N.A.
1941	26,013	N.A.	N.A.
1951	92,809	60,921	31,888
1952	88,545	54,039	34,506
1955	92,067	58,994	33,073
1956	85,320	60,432	24,888
1957	87,531	64,688	22,843
1958	93,189	67,153	26,036
1959	98,893	69,718	29,175
1960	105,309	70,747	34,562
1961	111,580	78,760	32,820
1962	117,904	82,853	35,051
1963	124,273	86,287	37,986
1964	129,975	87,267	42,708
1965	137,189	90,935	46,254
1966	142,078	97,741	44,337
1967	155,132	107,085	48,047

NOTE: An eligible aircraft is an aircraft with a current airworthiness certificate which, through a periodic or progressive inspection, has been renewed within the past 12 months.

N.A.—Not available.

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

INVENTORY OF ELIGIBLE CIVIL AIRCRAFT, BY YEAR OF MANUFACTURE
As of January 1, 1967

Year of Manufacture	Number	Per Cent of Total
TOTAL	107,085	100.0
1966	11,893	11.1
1965	9,388	8.8
1964	7,200	6.7
1963	5,544	5.2
1962	4,769	4.5
1961	4,586	4.3
1960	5,161	4.8
1959	5,671	5.3
1958	4,421	4.1
1957	3,686	3.4
1956 and prior years	44,766	41.8

NOTE: An eligible aircraft is an aircraft with a current airworthiness certificate which, through a periodic or progressive inspection, has been renewed within the past 12 months.

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

ELIGIBLE CIVIL AIRCRAFT BY TYPE AND CIVIL AIRPORTS
Calendar Years 1954 to Date

Year Jan. 1	Active Civil Aircraft									Air-ports on Record with FAA	
	TOTAL	Total Air Carrier ^a	General Aviation Aircraft						Rotor- craft ^b		Other ^c
			TOTAL	Fixed-Wing Aircraft			Other ^c				
				Multi- engine	Single-Engine						
					4-place & over	3-place & less					
1954	55,505	1,615	53,890	N.A.	N.A.	N.A.	N.A.	N.A.	6,780		
1955	58,994	1,606	57,388	2,600	17,078	37,278	235	197	6,977		
1956	60,432	1,642	58,790	3,342	19,240	35,654	283	271	6,839		
1957	64,638	1,802	62,886	4,183	22,805	35,291	350	257	7,028		
1958	67,153	1,864	65,289	5,036	23,751	35,809	433	260	6,412		
1959	69,718	1,879	67,839	5,416	26,170	35,440	521	292	6,018		
1960 ^d	70,747	2,020	68,727	6,034	27,301	34,543	525	324	6,426		
1961	78,760	2,211	76,549	7,243	34,829	33,472	634	361	6,881		
1962	82,853	2,221	80,632	8,401	38,206	32,800	798	427	7,715		
1963	86,287	2,166	84,121	9,186	41,120	32,341	967	507	8,084		
1964	87,267	2,179	85,088	9,695	42,657	30,977	1,171	588	8,814		
1965	90,935	2,193	88,742	10,644	45,777	30,367	1,306	648	9,490		
1966	97,741	2,299	95,442	11,977	49,789	31,364	1,503	809	9,566		
1967	107,085	2,379	104,706	13,548	52,972	35,687	1,622	877	9,673		

N.A.—Not available.

^a Registered, not necessarily in operation. Includes helicopters.

^b Includes autogiros; excludes air carrier helicopters.

^c Includes gliders, dirigibles, and balloons.

^d Excludes approximately 4,000 unclassified active aircraft.

Source: Federal Aviation Administration, "U. S. Active Civil Aircraft by State and County."

ACTIVE AIRMAN CERTIFICATES HELD
1955 to Date

Year as of Jan. 1	Pilots						Non- pilots	Other
	TOTAL	Stu- dents	Private	Com- mercial	Airline	Other		
1955	349,729	71,969	184,595	80,346	12,129	690	140,199	64,263
1956	298,076	80,494	132,525	72,957	11,774	326	148,335	71,307
1957	259,567	96,124	96,864	54,545	11,173	861	155,121	62,927
1958	309,212	98,498	124,799	70,813	13,964	1,138	149,274	74,682
1959	354,365	103,456	140,573	93,126	15,840	1,370	157,424	88,079
1960	359,875	107,815	139,804	93,815	16,950	1,491	167,074	91,259
1961	348,062	99,182	138,869	89,904	18,279	1,828	169,598	94,723
1962	352,860 ^E	93,973	144,312 ^E	92,976 ^E	19,155 ^E	2,444 ^E	175,287 ^E	98,257 ^E
1963	365,971	95,870	149,755	96,047	20,032	4,267	181,982	101,793
1964	378,700	105,298	152,209	96,341	20,269	4,583	186,304	83,800
1965	431,041	120,743	175,574	108,428	21,572	4,724	195,396	116,600
1966	479,770	139,172	196,393	116,655	22,440	5,100	204,333	128,541
1967	548,757	165,177	222,427	131,539	23,917	5,697	217,132	146,068
1968	611,465	181,267	252,185	144,846	25,807	7,360	231,736	N.A.

^E Estimate.

N.A.—Not available.

Source: Federal Aviation Administration, Office of Management Services.

AIR TRANSPORTATION

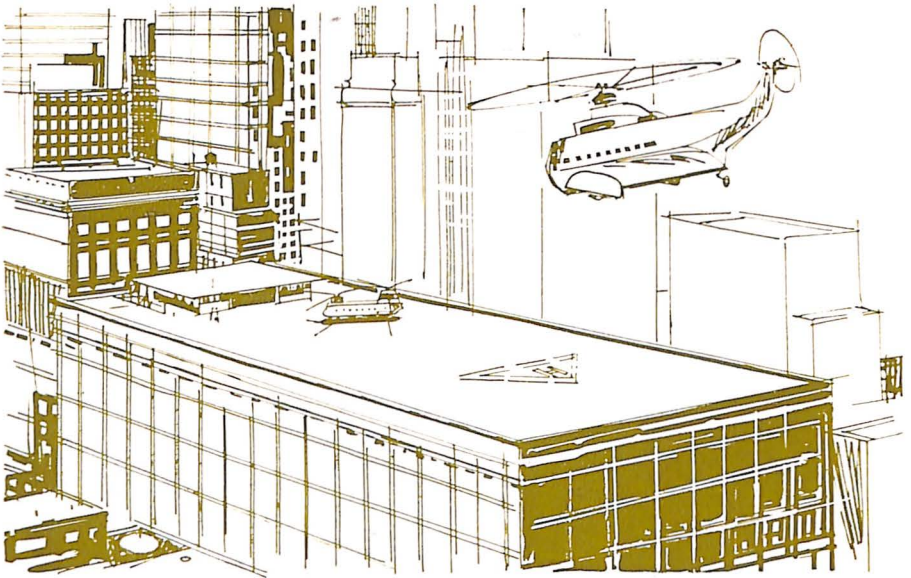
GENERAL AVIATION, HOURS, AND MILES FLOWN, BY TYPE OF FLYING Calendar Years 1931 to Date

Year Ending Decem- ber 31	Total	Business		Commercial		Instructional		Personal		Other	
		Units	Per Cent	Units	Per Cent	Units	Per Cent	Units	Per Cent	Units	Per Cent
ESTIMATED HOURS FLOWN, Thousands											
1931	1,083	152	14	281	26	307	28	343	32	—	—
1936	1,059	122	12	245	23	380	36	312	29	—	—
1941	4,460	250	6	511	11	2,816	63	883	20	—	—
1946	9,788	1,068	11	943	10	5,996	61	1,686	17	95	1
1951	8,451	2,950	35	1,584	19	1,902	23	1,880	22	135	1
1953	8,527	3,626	42	1,649	19	1,248	15	1,846	22	158	2
1955	9,500	4,300	45	1,950	21	1,275	13	1,975	21	—	—
1957	10,938	4,864	45	2,013	18	1,864	17	2,109	19	88	1
1959	12,903	5,699	44	2,365	18	2,043	16	2,796	22	—	—
1960	13,121	5,699	44	2,365	18	1,828	14	3,172	24	57	^a
1961	13,602	5,699	42	2,634	19	1,796	13	3,398	25	75	1
1962	14,500	5,431	38	3,051	21	2,385	16	3,489	24	144	1
1963	15,106	5,740	38	3,172	21	2,417	16	3,626	24	151	1
1964	15,738	5,823	37	3,305	21	2,675	17	3,777	24	156	1
1965	16,733	5,857	35	3,348	20	3,346	20	4,016	24	166	1
1966	21,023	7,057	33	3,555	17	5,674	27	4,540	22	197	1
ESTIMATED MILES FLOWN, Millions											
1931	94	13	14	26	28	25	27	29	31	—	—
1936	93	12	13	25	26	30	33	27	28	—	—
1941	346	27	8	51	15	197	57	71	20	—	—
1946	875	122	14	108	12	479	55	157	18	10	1
1951	975	380	39	190	20	190	19	200	21	15	1
1953	1,045	499	48	210	20	121	11	196	19	19	2
1955	1,216	628	52	246	20	121	10	222	18	—	—
1957	1,426	721	51	249	17	202	14	241	17	13	1
1959	1,716	858	50	292	17	223	13	243	20	—	—
1960	1,769	881	50	299	17	194	11	387	22	8	^a
1961	1,858	888	48	333	18	203	11	425	23	9	^a
1962	1,965	935	48	367	18	256	13	388	20	20	1
1963	2,049	983	48	369	18	266	13	410	20	20	1
1964	2,181	1,047	48	393	18	284	13	436	20	22	1
1965	2,562	1,204	47	461	18	359	14	512	20	26	1
1966	3,336	1,536	46	516	16	646	19	606	18	32	1

^a Less than .05 per cent.

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

VERTICAL LIFT AIRCRAFT



Helicopter operations continued to rise in both the U.S. and Canada during 1967 with 1,023 operators in business compared to 933 the year before. There were 522 flying commercially, 427 operated by private companies and 74 by government agencies. Together they were operating 2,438 helicopters compared to 2,318 flown in 1966.

Scheduled helicopter airlines reported to the Civil Aeronautics Board that they carried 1,220,000 passengers during the year a total of 29,670,000 revenue passenger miles. This compared to 1,067,000 passengers in 1966 flown 25,420,000 miles. These same operators also carried a total of 2,960,000 revenue ton miles of cargo, up from 2,562,000 in 1966. This included 142,000 revenue ton-miles of U.S. air mail, express, air freight and excess baggage.

By the end of 1966 there were 1,238 heliports and helistops throughout the U.S., Canada and Puerto Rico. Of these 1,098 are ground level facilities and 127 are elevated. The largest number, 358, are located in the Pacific coast area.

The helicopter continues to be used as an air taxi, agricultural sprayer, construction crane, forest fire fighter, executive transport, and is proving effective in city traffic patrol and in the urban fight against crime as well as an airborne ambulance.

AIR TRANSPORTATION

Hospitals continue to use the helicopter in transporting patients throughout the country. Hospital heliports increased from 67 in 1966 to 88 in 1967. In addition to those in operation, 21 are proposed to serve the needs of medicine.

HELICOPTER SCHEDULED AIRLINES Available Service and Utilization Calendar Years 1952 to Date (In Thousands)

Year Ending Dec 31	Passengers Carried	Revenue Ton-Miles Flown	Revenue Passenger- Miles Flown	Revenue Plane-Miles Flown
1952	—	75	—	632
1953	1	127	26	1,007
1954	8	151	183	1,074
1955	29	193	628	1,152
1956	64	281	1,585	1,318
1957	153	449	3,275	1,604
1958	230	594	4,885	1,675
1959	366	856	7,477	1,899
1960	430	1,054	9,475	2,219
1961	490	963	8,604	2,157
1962	359	897	8,192	1,518
1963	458	1,317	12,510	1,462
1964	608	1,668	16,003	1,976
1965	718	1,948	18,811	1,984
1966	1,067	2,562	25,420	2,241
1967	1,220	2,960	29,670	2,660

Source: Civil Aeronautics Board.

HELICOPTER PILOTS As of 1 January 1967

Type	TOTAL	Helicopter Only	Helicopter and Airplane	Other
TOTAL.....	12,698	1,819	10,748	131
Private.....	781	218	489	74
Commercial.....	11,706	1,438	10,211	57
Airline Transport Rating.....	211	163	48	—

Source: Federal Aviation Administration, Statistical Department.

AEROSPACE FACTS AND FIGURES, 1968

AIR TRANSPORTATION
 HELICOPTER SCHEDULED AIRLINES
 Revenue Ton-Mile Traffic Carried
 Calendar Years 1952 to Date
 (In Thousands)

Year Ending Dec 31	TOTAL TON-MILES	Passenger	U. S. Mail	Express	Freight	Excess Baggage
1952	75	—	75	—	—	—
1953	127	2	125	—	2	—
1954	151	18	116	13	4	—
1955	193	59	97	32	5	—
1956	281	146	91	36	7	1
1957	449	314	91	34	7	3
1958	594	468	84	33	6	3
1959	856	717	87	41	7	4
1960	1,054	911	91	40	7	5
1961	963	818	94	40	7	5
1962	897	778	65	44	6	3
1963	1,317	1,189	74	44	6	5
1964	1,668	1,520	92	45	6	6
1965	1,948	1,787	84	60	10	6
1966	2,562	2,415	60	70	10	7
1967	2,960	2,819	61	64	9	8

Source: Civil Aeronautics Board.



AIR TRANSPORTATION

HELIPORTS AND HELISTOPS IN THE UNITED STATES, CANADA, AND PUERTO RICO 1960 to Date

REGION	1960	1963	1964	1965	1966
TOTAL.....	357	797	1,000	1,118	1,238
(Others elevated).....	N.A.	N.A.	N.A.	(95)	(127)
New England.....	17	67	94	88	93
Middle Atlantic.....	42	90	148	179	210
East North Central.....	126	169	151	122	145
West North Central.....	8	26	36	47	43
South Atlantic.....	21	54	83	97	105
East South Central.....	8	13	20	25	28
West South Central.....	36	73	87	116	118
Mountain.....	15	60	77	78	92
Pacific.....	73	203	262	320	358
Other.....	11	42	42	46	46

Source: Aerospace Industries Association.

HOSPITAL HELIPORTS IN THE UNITED STATES, BY REGION 1965—1967

	1965	1966	1967 ^a
TOTAL.....	34	67	88
New England.....	1	2	2
Middle Atlantic.....	4	8	10
East North Central.....	1	12	14
West North Central.....	—	1	2
South Atlantic.....	10	13	16
East South Central.....	—	1	1
West South Central.....	9	13	16
Mountain.....	1	3	8
Pacific.....	8	14	19

^a In addition to those in operation, 21 are proposed. There is one hospital heliport in Toronto, Canada, also.

Source: Aerospace Industries Association.

AEROSPACE FACTS AND FIGURES, 1968

CIVIL HELICOPTER OPERATORS AND HELICOPTERS OPERATED 1960 to Date

Year as of February 1	TOTAL Number	Users		
		Commercial	Companies and Executives	Government Agencies ^a
CIVIL HELICOPTER OPERATORS				
1960	318	193	94	31
1961	406	265	106	35
1962	503	322	145	36
1963	600	405	150	45
1964	710	451	212	47
1965	860	508	299	53
1966	933	519	353	61
1967	1,023	522	427	74
HELICOPTERS OPERATED				
1960	936	705	134	97
1961	1,179	882	173	124
1962	1,319	994	213	112
1963	1,497	1,157	218	122
1964	1,767	1,333	311	123
1965	2,053	1,537	401	115
1966	2,318	1,699	475	144
1967	2,438	1,764	487	187

NOTE: Includes United States and Canada.

^a Federal, state and local governments.

Source: Aerospace Industries Association, company reports.

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AEROSPACE INDUSTRIES ASSOCIATION OF AMERICA, INC.
1725 DE SALES STREET, N.W., WASHINGTON, D. C. 20036