Defense, Navigational, and Aerospace Electronics: 2006

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(Formerly MA334B, Selected Instruments and Related Products)

Current Industrial Reports

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These data are also available on Internet through the U.S. Department of Commerce and STAT-USA by subscription. The Internet address is: www.stat-usa.gov/. Follow the prompts to register. Also, you may call 202-482-1986 or 1-800-STAT-USA, for further information.

SUMMARY OF FINDINGS. During 2006, the total value of shipments of defense, navigational and aerospace electronics totaled $42.1 billion, an increase of over 8.2 percent from the revised 2005 value of $38.9 billion. The 2006 data includes: aeronautical, nautical, and navigational instruments, $2.7 billion, down 2.7 percent from 2005; search, detection, navigation, and guidance systems and equipment, $36.1 billion, an increase of 9.6 percent from 2005; aircraft engine instruments (except flight), $0.9 billion, an increase of 10.0 percent from 2005; electronic trainers and simulators, teaching machines, and teaching aids, including kits, $1.0 billion, down 20.6 percent from 2005; sighting, tracking, and fire control equipment optical type, $1.3 billion, up 26.9 percent from 2005.

For general CIR information, explanation of general terms and historical note, see the appendix.

Address inquiries concerning these data to Investment Goods Industries Branch, Manufacturing and Construction Division (MCD), Washington, DC 20233-6900, or call Joseph Shinn, 301-763-4800.

For mail or fax copies of this publication, please contact the Information Services Center, MCD, Washington, DC 20233-6900, or call 301-763-4673.

U S C E N S U S B U R E A U

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Table 1. Defense, Navigational, and Aerospace Electronics: 2001 to 2006
[Millions of dollars]

Product code	Product description	2006		2005	2004	2003	2002	2001
3345111	Aeronautical, nautical, and navigational instruments	2,693.5	r/	2,766.9	2,199.7	2,231.8	2,693.1	2,861.2
3345113	Search and detection, navigation and guidance systems and equipment	36,066.9		32,899.0	33,945.3	30,535.7	27,272.2	29,340.0
3345192	Aircraft engine instruments (except flight)	978.5	r/	889.5	761.6	888.2	798.8	777.6
3333197	Electronic trainers and simulators, teaching machines, and teaching aids, including kits	1,044.0		1,314.9	1,571.1	1,222.6	1,167.7	1,172.0
3333141	Sighting, tracking, and fire control equipment, optical type	1,313.6	r/	1,035.4	786.1	687.7	607.9	512.1

r/Revised by 5 percent or more from previously published data.

Table 2. Value of Defense, Navigational and Aerospace Electronics: 2006 and 2005
[in thousands of dollars.]

Product code	Product description	No. of cos.		2006 Value		2005 Value
3345111	Aeronautical, nautical, and navigational instruments (except aircraft engine instruments)	68	a/	2,693,496	r/	2,766,886
	Flight and navigation sensors, transmitters, and displays:					
3345111106	Compasses, altimeters, and airspeed indicators	23	a/	608,298	a/r/	681,821
3345111111	Acceleration indicators, rate-of-climb and angle-of-attack indicators, and artificial horizon flight instruments	17		97,622	r/	104,515
3345111115	Other aerospace and navigational instruments	20		1,134,033	r/	1,116,262
3345111226	Gyroscopes, sold separately	10	c/	101,772		142,515
3345111232	Airframe equipment instruments	17		141,324		145,709
3345111233	Other aerospace flight instruments	16		318,649	r/	298,643
3345111335	Nautical instruments	9	b/	85,049		83,087
3345111437	Parts and components	25	b/	206,749	b/	194,334
3345113	Search and detection systems, navigation and guidance systems and equipment	139	a/	36,066,936	a/	32,899,017
3345113101	Light reconnaissance and surveillance electronic systems and equipment	29		5,572,408	r/	4,622,109
3345113103	IFF equipment	8	b/	378,097		443,634
3345113207	Search, detection, and acquisition radar systems and equipment airborne and missile/space	18		2,098,603		2,067,877
3345113212	Other search, detection, and acquisition radar systems and equipment	19		(D)		(D)
3345113318	Tracking radar systems and equipment (fire control, bombing, bombing navigational radar, aircraft and missile tracking radar, etc.)	16		4,284,262		4,295,754
3345113325	Instrumentation radar systems and equipment (altimeters, highway speed control radar, missle and space satellite tracking range radar, GCA and other precision approach radar, etc.)	9		134,533		203,582
3345113426	Sonar search, detection, tracing and communication systems and equipment, guidance, including ASM (sonar telephone, communication equipment, depth finding, fire control, fusing, hydrophones mapping, sonabuoys, navigation, sonar fish finders, sonar range instrumentation, etc.)	22		528,081		479,536
3345113428	Electronic checkout and monitoring, equipment for radar, sonar search, detection, and communication systems and equipment	14		290,931		279,991
3345113433	Specialized command and control equipment	16		664,413	r/	388,583
3345113436	Other search, detection, identification, and tracking systems and equipment	26		1,536,874		1,582,207
	Electronic warfare systems and equipment:					
3345113437	Countermeasures equipment: jamming, communications and radar	13	b/	3,294,562		2,533,017
3345113441	Other countermeasures equipment	8		246,338		315,582
3345113443	Specialized electronic and communications intelligence equipment	17		2,747,448	r/	2,592,033
3345113545	Missile borne and space vehicle guidance systems	22		5,366,995		4,841,886
3345113547	Nonmissile and space vehicle guidance systems	13	a/	694,090		242,650
3345113549	Electronic checkout, launching, and other missile and space support systems	13	a/	471,063		404,533

Table 2. Value of Defense, Navigational and Aerospace Electronics: 2006 and 2005
[in thousands of dollars.]

Product code	Product description	No. of cos.		2006 Value		2005 Value
	Airborne navigational systems:					
3345113651	Radio navigation receivers and displays	17		816,465	r/	783,935
3345113653	Airborne integrated data systems/flight recorders	4	a/	291,598	a/	244,374
3345113661	Inertial navigation systems	8	b/	1,178,845		926,662
3345113663	Proximity warning/collision avoidance equipment	3		(D)		(D)
3345113667	Other airborne navigational systems	16	a/	2,107,421		2,003,246
3345113669	Surface (ship and ground) navigational systems	27	b/	476,918	b/	398,971
3345113673	Electronic checkout, monitoring, evaluation, and other electronic support equipment for navigational systems and equipment	25		535,513		594,374
3345113681	All other search and detection, navigation and guidnace systems and equipment, not specified above	7		343,407		253,311
3345192	Aircraft engine instruments (except flight)	36	b/	978,527	r/	889,509
3345192101	Temperature sensors, transmitters, and displays	20	b/	420,538		362,661
3345192104	Pressure ratio and vacuum sensors, transmitters, controls, and displays	11		96,374		(D)
3345192114	All other aircraft engine instruments	23	a/	430,917	r/	388,325
3345192115	Parts and components	8	c/	30,698		(D)
3333197	Electronic trainers and simulators, teaching machines, and teaching aids, including kits	28	a/	1,043,986		1,314,853
3333141	Sighting, tracking, and fire control equipment optical type	39		1,313,620	r/	1,035,379
3333141101	Made from lenses, prisms, etc., produced in this plant	9		509,426		366,547
3333141103	Made from purchased lenses, prisms, etc.	14		281,112	r/	219,248
3333141104	Sighting and tracking laser systems	6		299,743		270,672
3333141106	Night vision goggles and equipment	5		153,564		(D)
3333141109	Parts and accessories	17	b/	69,775	a/	(D)

D Withheld to avoid disclosing data for individual companies. r/Revised by 5 percent or more from previously published data.

Note: Percent of estimation of each item is indicated as follows: a/10 to 25 percent of this item has been estimated. b/26 to 50 percent of this item has been estimated. c/Over 50 percent of this item has been estimated.

Table 3. Shipments, Exports, and Imports of Defense, Navigational, and Aerospace Electronics: 2006
[Value in thousands of dollars]

Product code	Product description	Manufacturers' shipments (value of f.o.b. plant)	Exports of domestic merchandise (value at port) 1/	Imports for consumption (value) 2/ 3/
3345111 106	Compasses (all types).....	608,298	105,818	58,535
3345111 111, 115, 226, 232, 233, 335, 437 3345113 101,103	Search, detection, aeronautical, nautical, and navigational and guidance systems, equipment, and instruments, n.e.c. (except aircraft engine instruments).....	8,035,703	1,051,922	587,798
3345113 207, 212, 318, 325	Radar systems and equipment.....	(D)	545,521	146,249
3345113 651	Radio navigational aid receivers and displays.....	816,465	436,510	2,057,442
3345113 426, 428, 433, 436, 437, 441, 443, 545, 547, 549, 653, 661,663, 669, 673, 681	Sonar search, detection, tracking, and communication systems and equipment, including ASW (sonar telephone, communication equipment, depth finding, fire control, fusing guidance, hydrophones, mapping, sonabuoys, navigation, sonar fish finders, sonar finders, sonar range instrumentation, and other).....	(D)	148,561	221,769
3333141	Sighting, tracking, and fire control equipment, optical type.....	1,313,620	50,212	126,219

D Withheld to avoid disclosing data for individual companies. n.e.c. Not elsewhere classified.

1/Source: Census Bureau report, EM 545, U.S. Exports.
2/Source: Census Bureau report, IM 145, U.S. Imports for Consumption.
3/Value represents the c.i.f. (cost, insurance, and freight) value at first port of entry in the United States plus import duties.

Table 4. Comparison of North American Industry Classification System (NAICS)-Based Product Codes with Schedule B Export Codes and HTSUSA Import Codes: 2006

Product code	Product description	Export code 1/	Import code 2/
3345111 106	Compasses (all types).....	9014.10.1040 9014.10.1080 9014.10.6040 9014.10.6080 9014.10.7040 9014.10.7080 9014.10.9040 9014.10.9080	9014.10.1000 9014.10.6000 9014.10.7030 9014.10.7060 9014.10.9000
3345111, 111, 115, 226, 232, 233, 335, 437 3345113 101, 103	Search, detection, aeronautical, nautical, and navigational and guidance systems, equipment, and instruments, n.e.c. (except aircraft engine instruments).....	9014.20.2000 9014.20.6000 9014.20.8040 9014.20.8080 9014.90.0000	9014.20.2000 9014.20.6000 9014.20.8040 9014.20.8080 9014.90.2040 9014.90.2080 9014.90.6000 9014.80.1000
3345113 207, 212, 318, 325	Radar systems and equipment.....	8526.10.0010 8526.10.0020 8526.10.0070	8526.10.0020 8526.10.0040
3345113 651	Radio navigational aid receivers and displays.....	8526.91.0010 8526.91.0030 8526.91.0070	8526.91.0020 8526.91.0040
3345113 426, 428, 433, 436 437, 441, 443, 545, 547, 549 653, 661, 663, 669, 673, 681	Sonar search, detection, tracking, and communication systems and equipment, including ASW (sonar telephone, communication equipment, depth finding, fire control, fusing guidance, hydrophones, mapping, sonabuoys, navigation, sonar fish finders, sonar range instrument-ation, and other).....	9014.80.2000 9014.80.6000	9014.80.2000 9014.80.4000 9014.80.5000
3333141	Sighting, tracking, and fire control equipment, optical type.....	9013.10.2000 9013.10.4000	9013.10.1000 9013.10.3000 9013.10.4000

n.e.c. Not elsewhere classified.

1/Source: 2006 edition, Harmonized System-based Schedule B, Statistical Classification of Domestic and Foreign Commodities Exported from the United States.

2/Source: Harmonized Tariff Schedule of the United States, Annotated (2006).

Appendix.
General CIR Survey Information, Explanation of General Terms and Historical Note

GENERAL

The CIR program has been providing monthly, quarterly, and annual measures of industrial activity for many years. Since 1904, with its cotton and fats and oils surveys, the CIR program has formed an essential part of an integrated statistical system involving the quinquennial economic census, manufacturing sector, and the annual survey of manufactures. The CIR surveys, however, provide current statistics at a more detailed product level than either of the other two statistical programs.

The primary objective of the CIR program is to produce timely, accurate data on production and shipments of selected products. The data are used to satisfy economic policy needs and for market analysis, forecasting, and decision making in the private sector. The product-level data generated by these surveys are used extensively by individual firms, trade associations, and market analysts in planning or recommending marketing and legislative strategies, particularly if their industry is significantly affected by foreign trade. Although production and shipments information are the two most common data items collected, the CIR program collects other measures also such as inventories, orders, and consumption. These surveys measure manufacturing activity in important commodity areas such as textiles and apparel, chemicals, primary metals, computer and electronic components, industrial equipment, aerospace equipment, and consumer goods.

The CIR program uses a unified data collection, processing, and publication system. The U.S. Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic census, manufacturing sector. The manufacturing sector provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is too large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. The CIR program includes a group of mandatory and voluntary surveys. Typically the monthly and quarterly surveys are conducted on a voluntary basis. Those companies that choose not to respond to the voluntary surveys are required to submit a mandatory annual counterpart corresponding to the more frequent survey.

NORTH AMERICAN INDUSTRY CLASSIFICATION SYSTEM (NAICS), 1997

The adoption of the North American Industry Classification System (NAICS) in the 1997 Economic Census has had a major impact on the comparability of current and historic data. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those that left manufacturing are logging and portions of publishing. Prominent among the industries that came into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. The net effect of the classification changes are such that if the 1997 value of shipments data for all manufacturers were tabulated on an SIC basis, it would be approximately 3 percent higher.

Listed below are the NAICS sectors:

21 Mining
22 Utilities
23 Construction
31-33 Manufacturing
42 Wholesale Trade
44-45 Retail Trade
48-49 Transportation and Warehousing
51 Information
52 Finance and Insurance
53 Real Estate and Rental and Leasing
54 Professional, Scientific, and Technical Services
55 Management of Companies and Enterprises
56 Administrative and Support and Waste Management and Remediation Services
61 Educational Services
62 Health Care and Social Assistance
71 Arts, Entertainment, and Recreation
72 Accommodation and Foodservices
81 Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

FUNDING

The Census Bureau funds most of the surveys. However, a number of surveys are paid for either fully or partially by other Federal Government agencies or private trade associations. A few surveys are mandated, but all are authorized by Title 13 of the United States Code.

RELIABILITY OF DATA

Survey error may result from several sources including the inability to obtain information about all cases in the survey, response errors, definitional difficulties, differences in the interpretation of questions, mistakes in recording or coding the reported data, and other errors of collection, response, coverage, and estimation. These nonsampling errors also occur in complete censuses. Although no direct measurement of the biases due to these nonsampling errors has been obtained, precautionary steps were taken in all phases of the collection, processing, and tabulation of the data in an effort to minimize their influence.

A major source of bias in the published estimates is the imputing of data for nonrespondents, for late reporters, and for data that fail logic edits. Missing figures are imputed based on period-to-period movements shown by reporting firms. A figure is considered to be an impute if the value was not directly reported on the questionnaire, directly derived from other reported items, directly available from supplemental sources, or obtained from the respondent during the analytical review phase. Imputation generally is limited to a maximum of 10 percent for any one data cell. Figures with imputation rates greater than 10 percent are suppressed or footnoted. The imputation rate is not an explicit indicator of the potential error in published figures due to nonresponse, because the actual yearly movements for nonrespondents may or may not closely agree with the imputed movements. The range of difference between the actual and imputed figures is assumed to be small. The degree of uncertainty regarding the accuracy of the published data increases as the percentage of imputation increases. Figures with imputation rates above 10 percent should be used with caution.

DATA REVISIONS

Statistics for previous years may be revised as the result of corrected figures from respondents, late reports for which imputations were originally made, or other corrections. Data that have been revised by more than 5percent from previously published data are indicated by footnotes.

DISCLOSURE

The Census Bureau collects the CIR data under the authority of Title 13, United States Code, which specifies that the information can only be used for statistical purposes and cannot be published or released in any manner that would identify a person, household, or establishment. "D" indicates that data in the cell have been suppressed to avoid disclosure of information pertaining to individual companies.

EXPLANATION OF GENERAL TERMS

Capacity. The maximum quantity of a product that can be produced in a plant in 1 day if operating for 24 hours. Includes the capacity of idle plants until the plant is reported to be destroyed, dismantled, or abandoned.

Consumption. Materials used in producing or processing a product or otherwise removing the product from the inventory.

Exports. Includes all types of products shipped to foreign countries, or to agents or exporters for reshipment to foreign countries.

Gross shipments. The quantity or value of physical shipments from domestic establishments of all products sold, transferred to other establishments of the same company, or shipped on consignment, whether for domestic or export sale or use. Shipments of products purchased for resale are omitted. Shipments of products made under toll arrangements are included.

Interplant transfers. Shipments to other domestic plants within a company for further assembly, fabrication, or manufacture.

Inventories. The quantity or value of finished goods, work in progress, and materials on hand.

Machinery in place. The number of machines of a particular type in place as of a particular date whether the machinery was used for production, prototype, or sampling, or was idle. Machinery in place includes all machinery set up in operating positions.

Net receipts. Derived by subtracting the materials held at the end of the previous month from the sum of materials used during the current month.

Production. The total volume of products produced, including: products sold; products transferred or added to inventory after adjustments for breakage, shrinkage, and obsolescence, plus any other inventory adjustment; and products that undergo further manufacture at the same establishment.

Quantities produced and consumed. Quantities of each type of product produced by a company for internal consumption within that same company.

Quantity and value of new orders. The sales value of orders received during the current reporting period for products and services to be delivered immediately or at some future date. Also represents the net sales value of contract change documents that increase or decrease the sales value of the orders to which they are related, when the parties concerned are in substantial agreement as to the amount involved. Included as orders are only those that are supported by binding legal documents such as signed contracts or letter contracts.

Quantity and value of shipments. The figures on quantity and value of shipments represent physical shipments of all products sold, transferred to other establishments of the same company, or shipped on consignment, whether for domestic or export sale. The value represents the net sales price, f.o.b. plant, to the customer or branch to which the products are shipped, net of discounts, allowances, freight charges, and returns. Shipments to a company's own branches are assigned the same value as comparable appropriate allocation of company overhead and profit. Products bought and resold without further manufacture are excluded.

Stocks. Total quantity of ending finished inventory.

Unfilled orders (backlog). Calculated by adding net new orders and subtracting net sales from the backlog at the end of the preceding year.

HISTORICAL NOTE

Data on selected instruments and related products have been collected by the Census Bureau since 1961 on survey MA334B.

Beginning in 2005, a portion of data for MA334B, Selected Instruments and Related Products, will be published under the new survey MA334D, Defense, Navigational, and Aerospace Electronics. Additional data for MA334B can be found on surveys MA334A, Analytical and Biomedical Instruments, MA334C, Control Instruments, and MA334T, Meters and Test Devices. Historical data may be obtained from Current Industrial Reports available at your local Federal Depository Library.