

Industrial Process Furnace and Oven Manufacturing: 2002

Issued January 2005

EC02-311-333994 (RV)

2002 Economic Census

Manufacturing

Industry Series



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-- Not applicable for this report.

Introduction to the Economic Census

PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in "2" and "7."

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the federal government use the data to monitor economic activity and to assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

INDUSTRY CLASSIFICATIONS

Data from the 2002 Economic Census are published primarily according to the 2002 North American Industry Classification System (NAICS). NAICS was first adopted in the United States, Canada, and Mexico in 1997. The 2002 Economic Census covers the following 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 Food Services
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), largely covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 100 subsectors (three-digit codes), 317 industry groups (four-digit codes), and, as implemented in the United States, 1,179 industries (six-digit codes).

RELATIONSHIP TO HISTORICAL INDUSTRY CLASSIFICATIONS

Prior to the 1997 Economic Census, data were published according to the Standard Industrial Classification (SIC) system. While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The 1997 Economic Census *Bridge Between NAICS and SIC* demonstrates the relationships between NAICS and SIC industries. Where changes are significant, it may not be possible to construct time series that include data for points both before and after 1997.

Most industry classifications remained unchanged between 1997 and 2002, but NAICS 2002 includes substantial revisions within the construction and wholesale trade sectors, and a number of revisions for the retail trade and information sectors. These changes are noted in industry definitions and will be demonstrated in the *Bridge Between NAICS 2002 and NAICS 1997*.

For 2002, data for enterprise support establishments (those functioning primarily to support the activities of their company's operating establishments, such as a warehouse or a research and development laboratory) are included in the industry that reflects their activities (such as warehousing). For 1997, such establishments were termed auxiliaries and were excluded from industry totals.

BASIS OF REPORTING

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company. (For selected industries, only payroll, employment, and classification are collected for individual establishments, while other data are collected on a consolidated basis.)

GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for states, metropolitan and micropolitan statistical areas, counties, and corporate municipalities (places) including cities, towns, townships, villages, and boroughs. Respondents were required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from administrative sources is used as a basis for coding.

AVAILABILITY OF ADDITIONAL DATA

All results of the 2002 Economic Census are available on the Census Bureau Internet site (www.census.gov) and on digital versatile discs (DVD-ROMs) for sale by the Census Bureau. The American FactFinder system at the Internet site allows selective retrieval and downloading of the data. For more information, including a description of reports being issued, see the Internet site, write to the U.S. Census Bureau, Washington, DC 20233-6100, or call Customer Services at 301-763-4100.

HISTORICAL INFORMATION

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart

from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some service trades in 1933. Censuses of construction, manufacturing, and the other business censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated, providing comparable census data across economic sectors and using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census report forms.

The range of industries covered in the economic census expanded between 1967 and 2002. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity. New for 2002 is coverage of four industries classified in the agriculture, forestry, and fishing sector under the SIC system: landscape architectural services, landscaping services, veterinary services, and pet care services.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. Reports for 1997 were published primarily on the Internet and copies of 1992 reports are also available there. CD-ROMs issued from the 1987, 1992, and 1997 Economic Censuses contain databases that include all or nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for the 2002 Economic Census and related surveys is published in the *Guide to the 2002 Economic Census* at www.census.gov/econ/census02/guide. More information on the methodology, procedures, and history of the census will be published in the *History of the 2002 Economic Census* at www.census.gov/econ/www/history.html.

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Manufacturing

SCOPE

The Manufacturing sector (sector 31-33) comprises establishments engaged in the mechanical, physical, or chemical transformation of materials, substances, or components into new products. The assembling of component parts of manufactured products is considered manufacturing, except in cases where the activity is appropriately classified in Sector 23, Construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and characteristically use power-driven machines and materials-handling equipment. However, establishments that transform materials or substances into new products by hand or in the worker's home and those engaged in selling to the general public products made on the same premises from which they are sold, such as bakeries, candy stores, and custom tailors, may also be included in this sector. Manufacturing establishments may process materials or may contract with other establishments to process their materials for them. Both types of establishments are included in manufacturing.

The materials, substances, or components transformed by manufacturing establishments are raw materials that are products of agriculture, forestry, fishing, mining, or quarrying, as well as products of other manufacturing establishments. The materials used may be purchased directly from producers, obtained through customary trade channels, or secured without recourse to the market by transferring the product from one establishment to another, under the same ownership. The new product of a manufacturing establishment may be finished in the sense that it is ready for utilization or consumption, or it may be semifinished to become an input for an establishment engaged in further manufacturing. For example, the product of the alumina refinery is the input used in the primary production of aluminum; primary aluminum is the input to an aluminum wire drawing plant; and aluminum wire is the input for a fabricated wire product manufacturing establishment.

The subsectors in the manufacturing sector generally reflect distinct production processes related to material inputs, production equipment, and employee skills. In the machinery area, where assembling is a key activity, parts and accessories for manufactured products are classified in the industry of the finished manufactured item when they are made for separate sale. For example, a replacement refrigerator door would be classified with refrigerators and an attachment for a piece of metal working machinery would be classified with metal working machinery. However, components, input from other manufacturing establishments, are classified based on the production function of the component manufacturer. For example, electronic components are classified in Subsector 334, Computer and Electronic Product Manufacturing; and stampings are classified in Subsector 332, Fabricated Metal Product Manufacturing.

Manufacturing establishments often perform one or more activities that are classified outside the manufacturing sector of NAICS. For instance, almost all manufacturing has some captive research and development or administrative operations, such as accounting, payroll, or management. These captive services are treated the same as captive manufacturing activities. When the services are provided by separate establishments, they are classified to the NAICS sector where such services are primary, not in manufacturing.

The boundaries of manufacturing and the other sectors of the classification system can be somewhat blurry. The establishments in the manufacturing sector are engaged in the transformation of materials into new products. Their output is a new product. However, the definition of what constitutes a new product can be somewhat subjective. As clarification, the following activities are

considered manufacturing in NAICS: milk bottling and pasteurizing; water bottling and processing; fresh fish packaging (oyster shucking, fish filleting); apparel jobbing (assigning of materials to contract factories or shops for fabrication or other contract operations); as well as contracting on materials owned by others; printing and related activities; ready-mixed concrete production; leather converting; grinding of lenses to prescription; wood preserving; electroplating, plating, metal heat treating, and polishing for the trade; lapidary work for the trade; fabricating signs and advertising displays; rebuilding or remanufacturing machinery (i.e., automotive parts); ship repair and renovation; machine shops; and tire retreading.

Exclusions. There are activities that are sometimes considered manufacturing, but for NAICS are classified in another sector. These activities include logging, classified in Sector 11, Agriculture, Forestry, Fishing and Hunting is considered a harvesting operation; the beneficiating of ores and other minerals, classified in Sector 21, Mining, is considered part of the activity of mining; the construction of structures and fabricating operations performed at the site of construction by contractors, is classified in Sector 23, Construction; establishments engaged in breaking of bulk and redistribution in smaller lots, including packaging, repackaging, or bottling products, such as liquors or chemicals; the customized assembly of computers; sorting of scrap; mixing paints to customer order; and cutting metals to customer order, classified in Sector 42, Wholesale Trade or Sector 44-45, Retail Trade, produce a modified version of the same product, not a new product; and publishing and the combined activity of publishing and printing, classified in Sector 51, Information, perform the transformation of information into a product where as the value of the product to the consumer lies in the information content, not in the format in which it is distributed (i.e., the book or software diskette).

The tabulations for this sector do not include central administrative offices, warehouses, or other establishments that serve manufacturing establishments within the same organization. Data for such establishments are classified according to the nature of the service they provide. For example, separate headquarters establishments are reported in NAICS Sector 55, Management of Companies and Enterprises.

The reports described below exclude establishments of firms with no paid employees. These "nonemployers," typically self-employed individuals or partnerships operating businesses that they have not chosen to incorporate, are reported separately in Nonemployer Statistics. The contribution of nonemployers, relatively small for this sector, may be examined at www.census.gov/nonemployerimpact.

The reports described below cover all manufacturing establishments with one or more paid employees.

Definitions. Industry categories are defined in Appendix B, NAICS Codes, Titles, and Descriptions. Other terms are defined in Appendix A, Explanation of Terms.

REPORTS

The following reports provide statistics on this sector:

Industry Series. There are 473 reports, each covering a single NAICS industry (six-digit code). These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. The industry reports also include data for states with 100 employees or more in the industry. The data in industry reports are preliminary and subject to change in the following reports.

Geographic Area Series. There are 51 separate reports, one for each state and the District of Columbia. Each state report presents similar statistics at the "all manufacturing" level for each state and its metropolitan and micropolitan areas with 250 employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

Subject Series:

x Manufacturing

2002 Economic Census

- **Industry-Product Analysis Summary.** This report presents value of shipments, value of product shipments, percentage of product shipments of the total value of shipments, and percentage of distribution of value of product shipments on the NAICS six-digit industry level and by the six- and seven-digit product code levels. It also includes miscellaneous receipts at the six- and seven-digit product code levels by NAICS six-digit industry levels.
- **General Summary.** This report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.
- **Product Summary.** This report summarizes the products data published in the industry reports. This report also includes a table with data for products that are primary to more than one industry, which are not in the industry reports.
- **Materials Summary.** This report summarizes the materials data published in the industry reports.
- **Concentration Ratio Summary.** This report publishes data on the percentage of value of shipments and value added accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Herfindahl-Herschmann indexes for each industry.
- **Location of Manufacturing Plants Summary.** This report contains statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

ZIP Code Statistics. This report contains statistics on the number of establishments for the three- and six-digit NAICS industry by employment-size of the establishment by ZIP Code.

Other reports. Data for this sector are also included in reports with multisector coverage, including Nonemployer Statistics, Comparative Statistics, Bridge Between 2002 NAICS and 1997 NAICS, Business Expenses, and the Survey of Business Owners reports.

GEOGRAPHIC AREAS COVERED

The level of geographic detail varies by report. Maps are available at www.census.gov/econ2002maps. Notes specific to areas in the state are included in Appendix D, Geographic Notes.

1. The United States as a whole.
2. States and the District of Columbia.
3. Metropolitan and micropolitan statistical areas with 250 employees or more. A core based statistical areas (CBSA) contains a core area with a substantial population nucleus, together with adjacent communities having a high degree of social and economic integration with that core. CBSAs are differentiated into metropolitan and micropolitan statistical areas based on size criteria. Both metropolitan and micropolitan areas are defined in terms of entire counties, and are listed in Appendix E, Metropolitan and Micropolitan Statistical Areas.
 - a. Metropolitan Statistical Areas (metro areas). Metro areas have at least one urbanized area of 50,000 or more population, plus adjacent territory that has a high degree of social and economic integration with the core as measured by commuting ties.
 - b. Micropolitan Statistical Areas (micro areas). Micro areas have at least one urban cluster of at least 10,000 but less than 50,000 population, plus adjacent territory that has a high degree of social and economic integration with the core as measured by commuting ties.
 - c. Metropolitan Divisions (metro divisions). If specified criteria are met, a metro area containing a single core with a population of 2.5 million or more may be subdivided to form smaller groupings of counties referred to as Metropolitan Divisions.

-
- d. Combined Statistical Areas (combined areas). If specified criteria are met, adjacent metro and micro areas, in various combinations, may become the components of a new set of areas called Combined Statistical Areas. The areas that combine retain their own designations as metro or micro areas within the larger combined area.
4. Counties and county equivalents defined as of January 1, 2002, with 500 employees or more. Counties are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs, census areas, and city and boroughs. Maryland, Missouri, Nevada, and Virginia have one place or more that is independent of any county organization and constitutes primary divisions of their states. These places are treated as counties and as places.
 5. Economic places with 500 employees or more.
 - a. Municipalities of 2,500 inhabitants or more defined as of January 1, 2002. These are areas of significant population incorporated as cities, boroughs, villages, or towns according to the 2000 Census of Population. For the economic census, boroughs and census areas in Alaska and boroughs in New York are not included in this category.
 - b. Consolidated cities defined as of January 1, 2002. Consolidated cities are consolidated governments that consist of separately incorporated municipalities.
 - c. Townships in Michigan, New Jersey, and Pennsylvania, and towns in New York, Wisconsin, and the six New England states with 10,000 inhabitants or more (according to the 2000 Census of Population).
 - d. Balance of county. Areas outside the entities listed above, including incorporated municipalities with populations of fewer than 2,500, town and townships not qualifying as noted above, and the remainders of counties outside places are categorized as "Balance of county."

DOLLAR VALUES

All dollar values presented are expressed in current dollars; i.e., 2002 data are expressed in 2002 dollars, and 1997 data, in 1997 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

COMPARABILITY OF THE 1997 AND 2002 ECONOMIC CENSUSES

Both the 2002 Economic Census and the 1997 Economic Census present data based on the North American Industry Classification System (NAICS). While there were revisions to selected industries for 2002, this sector is not affected by those revisions.

For 2002, there have been several additional data tables added, which did not exist in 1997. These tables for 2002 include products primary to more than one industry, industry-product analysis, e-commerce value of shipments, and leased and nonleased detail employment statistics by subsectors.

RELIABILITY OF DATA

All data compiled for this sector are subject to nonsampling errors. Nonsampling errors can be attributed to many sources: inability to identify all cases in the actual universe; definition and classification difficulties; differences in the interpretation of questions; errors in recording or coding the data obtained; and other errors of collection, response, coverage, processing, and estimation for missing or misreported data. Selected data in tables titled "Detailed Statistics" are based on the Annual Survey of Manufactures and are subject to sampling errors as well as nonsampling errors.

No direct measurement of these effects has been obtained except for estimation for missing or misreported data, as by the percentages shown in the tables. Precautionary steps were taken in all phases of the collection, processing, and tabulation of the data in an effort to minimize the effects of nonsampling errors. More information on the reliability of the data is included in Appendix C, Methodology.

DISCLOSURE

In accordance with federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments in a specific industry or geographic area is not considered a disclosure; therefore, this information may be released even though other information is withheld. Techniques employed to limit disclosure are discussed at www.census.gov/epcd/ec02/disclosure.htm.

The disclosure analysis for "industry statistics" files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. Nonetheless, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures, which can be suppressed even though value of shipments data are published.

AVAILABILITY OF MORE FREQUENT ECONOMIC DATA

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 55,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data. In addition to the ASM, the Census Bureau conducts the Current Industrial Reports (CIR) program. The CIR program publishes selected detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) Program, which publishes detailed statistics for manufacturing industries at the U.S. level.

In addition, the County Business Patterns program offers annual statistics on the number of establishments, employment, and payroll classified by industry within each county, and Statistics of U.S. Businesses provides annual statistics classified by the employment size of the enterprise, further classified by industry for the United States, and by broader categories for states and metropolitan areas.

CONTACTS FOR DATA USERS

Questions about these data may be directed to the U.S. Census Bureau, Manufacturing & Construction Division, Information Services Center, 301-763-4673 or ask.census.gov.

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with these data:

A	Standard error of 100 percent or more
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue
N	Not available or not comparable
S	Withheld because estimates did not meet publication standards
X	Not applicable
Z	Less than half the unit shown
a	0 to 19 employees
b	20 to 99 employees
c	100 to 249 employees

e	250 to 499 employees
f	500 to 999 employees
g	1,000 to 2,499 employees
h	2,500 to 4,999 employees
i	5,000 to 9,999 employees
j	10,000 to 24,999 employees
k	25,000 to 49,999 employees
l	50,000 to 99,999 employees
m	100,000 employees or more
p	10 to 19 percent estimated
q	20 to 29 percent estimated
r	Revised
s	Sampling error exceeds 40 percent
nsk	Not specified by kind
-	Represents zero (page image/print only)
(CC)	Consolidated city
(IC)	Independent city

Table 1. Historical Statistics for the Industry: 2002 and Earlier Years

[Data based on the 2002 Economic Census and the 2002 Annual Survey of Manufactures (ASM). For information on confidentiality protection, sampling error, nonsampling error, and explanation of terms, see note at end of table. For meaning of abbreviations and symbols, see introductory text]

Industry and year ¹	Com-panies ²	All estab-lish-ments ³	All employees		Production workers			Value added (\$1,000)	Total cost of materials (\$1,000)	Total value of shipments (\$1,000)	Total capital expenditures (\$1,000)	
			Number ⁴	Payroll (\$1,000)	Number ⁴	Hours (1,000)	Wages (\$1,000)					
333994, Industrial process furnace and oven manufacturing	2002..	328	354	11 571	474 488	6 677	13 085	205 475	935 181	690 101	1 634 967	37 182
	2001..	N	N	15 294	622 605	9 089	17 593	265 904	1 116 749	1 077 508	2 267 022	47 499
	2000..	N	N	16 345	632 925	10 026	20 140	289 060	1 330 538	1 249 553	2 595 299	74 671
	1999..	N	N	16 834	624 847	9 813	20 420	287 059	1 212 480	1 159 541	2 413 765	100 501
	1998..	N	N	17 929	670 345	11 061	24 626	325 798	1 439 927	1 324 851	2 685 900	46 774
	1997..	378	404	17 575	657 327	10 313	23 295	288 549	1 514 761	1 365 736	2 869 912	65 381

¹Statistics presented for years ending in 2 and 7 are census data. Interim census years are derived in a representative sample of manufacturing establishments canvassed in the Annual Survey of Manufactures (ASM).

²For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

³Includes establishments with payroll at any time during the year.

⁴Number of employees figures represent average number of production workers for pay period that includes the 12th of March, May, August, and November plus other employees for payroll period that includes the 12th of March.

Note: The data in this table are based on the 2002 Economic Census and the 2002 Annual Survey of Manufactures (ASM). To maintain confidentiality, the Census Bureau suppresses data to protect the identity of any business or individual. The census results in this table contain sampling errors and nonsampling errors. Data users who create their own estimates using data from American FactFinder tables should cite the Census Bureau as the source of the original data only. For explanation of terms, see Appendix A. For full technical documentation, see Appendix C.

Table 2. Industry Statistics for Selected States: 2002

[States that are a disclosure or with less than 100 employees are not shown. Data based on the 2002 Economic Census. For information on confidentiality protection, nonsampling error, explanation of terms, and geographical definitions, see note at end of table. For information on geographic areas followed by *, see Appendix D. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	All establishments ²			All employees		Production workers			Value added (\$1,000)	Total cost of materials (\$1,000)	Total value of shipments (\$1,000)	Total capital expenditures (\$1,000)
	E ¹	Total	With 20 employees or more	Number ³	Payroll (\$1,000)	Number ³	Hours (1,000)	Wages (\$1,000)				
333994, Industrial process furnace and oven manufacturing												
United States	2	354	143	11 571	474 488	6 677	13 085	205 475	935 181	690 101	1 634 967	'37 182
California	2	35	10	639	26 925	392	762	11 793	53 888	35 530	91 605	'1 956
Connecticut	3	6	1	110	3 399	66	118	1 401	5 691	5 943	11 633	'92
Illinois	1	20	10	1 022	41 711	621	1 282	20 027	111 213	64 316	172 503	'3 550
Indiana	5	14	6	422	17 272	247	495	6 965	37 933	25 788	62 411	'937
Massachusetts	1	16	6	604	25 823	338	522	10 547	40 117	23 709	64 986	'463
Michigan	2	34	13	948	41 312	591	1 198	19 583	77 721	61 698	143 157	'6 192
Minnesota	2	7	3	282	17 458	102	203	3 997	20 150	17 983	39 245	'778
Missouri	—	11	9	1 142	38 001	674	1 326	17 676	80 290	31 825	113 361	'2 139
New Jersey	1	19	10	723	34 069	330	561	12 662	73 861	63 779	136 549	'1 022
Oklahoma	7	7	4	278	12 393	194	396	6 847	16 979	17 661	38 098	'870
Texas	2	16	5	321	9 887	226	376	5 701	20 120	13 281	32 799	'908

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

²Includes establishments with payroll at any time during the year.

³Number of employees figures represent average number of production workers for pay period that includes the 12th of March, May, August, and November plus other employees for payroll period that includes the 12th of March.

Note: The data in this table are based on the 2002 Economic Census. To maintain confidentiality, the Census Bureau suppresses data to protect the identity of any business or individual. The census results in this table contain nonsampling errors. Data users who create their own estimates using data from American FactFinder tables should cite the Census Bureau as the source of the original data only. For explanation of terms, see Appendix A. For full technical documentation, see Appendix C. For geographical definitions, see Appendix D.

Table 3. Detailed Statistics by Industry: 2002

[Data based on the 2002 Economic Census and the 2002 Annual Survey of Manufactures (ASM). For information on confidentiality protection, sampling error, nonsampling error, and explanation of terms, see note 2 at end of table. For meaning of abbreviations and symbols, see introductory text]

Item	Value
333994, Industrial process furnace and oven manufacturing	
Companies ¹	number.. 328
All establishments ²	number.. 354
Establishments with 1 to 19 employees	number.. 211
Establishments with 20 to 99 employees	number.. 115
Establishments with 100 employees or more	number.. 28
All employees ³	number.. 11 571
Total compensation	\$1,000.. 578 694
Annual payroll	\$1,000.. 474 488
Total fringe benefits	\$1,000.. 104 206
Production workers, average for year	number.. 6 677
Production workers on March 12	number.. 6 826
Production workers on May 12	number.. 6 651
Production workers on August 12	number.. 6 666
Production workers on November 12	number.. 6 543
Production worker hours	1,000.. 13 085
Production worker wages	\$1,000.. 205 475
Total cost of materials	\$1,000.. 690 101
Materials, parts, containers, packaging, etc., used	\$1,000.. 573 668
Resales	\$1,000.. 75 918
Purchased fuels	\$1,000.. 3 657
Purchased electricity	\$1,000.. 11 720
Contract work	\$1,000.. 25 138
Quantity of electricity purchased for heat and power	1,000 kWh.. 174 184
Quantity of electricity generated less sold for heat and power	1,000 kWh.. -
Total value of shipments	\$1,000.. 1 634 967
Primary products value of shipments	\$1,000.. 1 403 977
Secondary products value of shipments	\$1,000.. 80 867
Total miscellaneous receipts	\$1,000.. 150 123
Value of resales	\$1,000.. 112 217
Contract receipts	\$1,000.. 22 901
Other miscellaneous receipts	\$1,000.. 15 005
Primary products specialization ratio	percent.. 95
Value of primary products shipments made in all industries	\$1,000.. 1 512 249
Value of primary products shipments made in this industry	\$1,000.. 1 403 977
Value of primary products shipments made in other industries	\$1,000.. 108 272
Coverage ratio	percent.. 93
Value added	\$1,000.. 935 181
Total inventories, beginning of year	\$1,000.. 292 983
Finished goods inventories	\$1,000.. 47 565
Work-in-process inventories	\$1,000.. 94 601
Materials and supplies inventories	\$1,000.. 150 817
Total inventories, end of year	\$1,000.. 251 438
Finished goods inventories	\$1,000.. 44 551
Work-in-process inventories	\$1,000.. 87 930
Materials and supplies inventories	\$1,000.. 118 957
Gross value of depreciable assets (acquisition costs) at beginning of year	\$1,000.. '579 131
Total capital expenditures (new and used)	\$1,000.. '37 182
Buildings and other structures (new and used)	\$1,000.. '7 872
Machinery and equipment (new and used)	\$1,000.. '29 310
Automobiles, trucks, etc., for highway use	\$1,000.. '1 756
Computers and peripheral data processing equipment	\$1,000.. '4 542
All other expenditures for machinery and equipment	\$1,000.. '23 012
Total retirements	\$1,000.. '46 554
Gross value of depreciable assets at end of year	\$1,000.. '569 759
Depreciation charges during year	\$1,000.. '35 652
Total rental payments	\$1,000.. 29 926
Buildings and other structures	\$1,000.. 22 426
Machinery and equipment	\$1,000.. 7 500
Total other expenses ⁴	\$1,000.. 167 060
Response coverage ratio ⁵	percent.. 85
Repair and maintenance services of buildings and/or machinery ⁴	\$1,000.. 7 357
Communications services ⁴	\$1,000.. 6 058
Legal services ⁴	\$1,000.. 5 049
Accounting, auditing, and bookkeeping services ⁴	\$1,000.. 2 552
Advertising and promotional services ⁴	\$1,000.. 10 760
Expensed computer hardware and supplies and purchased computer services ⁴	\$1,000.. 3 671
Refuse removal (including hazardous waste) services ⁴	\$1,000.. 1 939
Management consulting and administrative services ⁴	\$1,000.. 5 307
Taxes and license fees ⁴	\$1,000.. 7 814
All other expenses ⁴	\$1,000.. 116 554

¹For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

²Includes establishments with payroll at any time during the year.

³Number of employees figures represent average number of production workers for pay period that includes the 12th of March, May, August, and November plus other employees for payroll period that includes the 12th of March.

⁴Based on 2002 Annual Survey of Manufactures (ASM) sample data.

⁵A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those Annual Survey of Manufactures (ASM) establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note 1: The amounts shown for other expenses reflect only those services that establishments purchase from other companies.

Note 2: The data in this table are based on the 2002 Economic Census and the 2002 Annual Survey of Manufactures (ASM). To maintain confidentiality, the Census Bureau suppresses data to protect the identity of any business or individual. The census results in this table contain sampling errors and nonsampling errors. Data users who create their own estimates using data from American FactFinder tables should cite the Census Bureau as the source of the original data only. For explanation of terms, see Appendix A. For full technical documentation, see Appendix C.

Table 4. Industry Statistics by Employment Size: 2002

[Data based on the 2002 Economic Census. For information on confidentiality protection, nonsampling error, and explanation of terms, see note at end of table. For meaning of abbreviations and symbols, see introductory text]

Employment size class	E ¹	All establishments ²	All employees		Production workers			Value added (\$1,000)	Total cost of materials (\$1,000)	Total value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number ³	Payroll (\$1,000)	Number ³	Hours (1,000)	Wages (\$1,000)				
333994, Industrial process furnace and oven manufacturing											
All establishments	2	354	11 571	474 488	6 677	13 085	205 475	935 181	690 101	1 634 967	'37 182
Establishments with—											
1 to 4 employees	9	88	197	7 862	120	208	3 345	11 236	14 258	29 397	'514
5 to 9 employees	6	55	386	17 862	223	435	7 207	36 715	30 886	67 387	'1 166
10 to 19 employees	2	68	905	39 627	500	935	17 301	82 041	64 899	148 695	'1 920
20 to 49 employees	2	70	2 268	96 374	1 336	2 691	43 492	186 729	147 694	333 494	'6 620
50 to 99 employees	1	45	3 057	128 797	1 725	3 452	52 963	287 601	211 020	501 495	'11 526
100 to 249 employees	1	24	3 408	142 669	1 814	3 517	57 322	233 593	192 605	429 071	'13 076
250 to 499 employees	—	4	1 350	41 297	959	1 847	23 845	97 266	28 739	125 428	2 360
500 to 999 employees	—	—	—	—	—	—	—	—	—	—	—
1,000 to 2,499 employees	—	—	—	—	—	—	—	—	—	—	—
2,500 employees or more	—	—	—	—	—	—	—	—	—	—	—
Administrative records ⁴	9	125	486	20 958	291	559	8 807	40 929	37 083	78 014	'1 455

¹Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data account for 10 percent or more of the figures shown: 1—10 to 19 percent; 2—20 to 29 percent; 3—30 to 39 percent; 4—40 to 49 percent; 5—50 to 59 percent; 6—60 to 69 percent; 7—70 to 79 percent; 8—80 to 89 percent; 9—90 percent or more.

²Includes establishments with payroll at any time during the year.

³Number of employees figures represent average number of production workers for pay period that includes the 12th of March, May, August, and November plus other employees for payroll period that includes the 12th of March.

⁴Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

Note: The data in this table are based on the 2002 Economic Census. To maintain confidentiality, the Census Bureau suppresses data to protect the identity of any business or individual. The census results in this table contain nonsampling errors. Data users who create their own estimates using data from American FactFinder tables should cite the Census Bureau as the source of the original data only. For explanation of terms, see Appendix A. For full technical documentation, see Appendix C.

Table 5. Industry Statistics by Primary Product Class Specialization: 2002

[Data based on the 2002 Economic Census. For information on confidentiality protection, nonsampling error, and explanation of terms, see note at end of table. For meaning of abbreviations and symbols, see introductory text]

Industry or product class code	Industry or primary product class	All establishments ¹	All employees		Production workers			Value added (\$1,000)	Total cost of materials (\$1,000)	Total value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number ²	Payroll (\$1,000)	Number ²	Hours (1,000)	Wages (\$1,000)				
333994	Industrial process furnace and oven manufacturing	354	11 571	474 488	6 677	13 085	205 475	935 181	690 101	1 634 967	'37 182
3339940	Industrial furnaces and ovens, and electric industrial heating equipment	354	11 571	474 488	6 677	13 085	205 475	935 181	690 101	1 634 967	'37 182

¹Includes establishments with payroll at any time during the year.

²Number of employees figures represent average number of production workers for pay period that includes the 12th of March, May, August, and November plus other employees for payroll period that includes the 12th of March.

Note: The data in this table are based on the 2002 Economic Census. To maintain confidentiality, the Census Bureau suppresses data to protect the identity of any business or individual. The census results in this table contain nonsampling errors. Data users who create their own estimates using data from American FactFinder tables should cite the Census Bureau as the source of the original data only. For explanation of terms, see Appendix A. For full technical documentation, see Appendix C.

Table 6a. Products Statistics: 2002 and 1997

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. Data based on the 2002 Economic Census. For information on confidentiality protection, nonsampling error, and explanation of terms, see note 2 at end of table. For meaning of abbreviations and symbols, see introductory text]

Product code	Product	Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)
333994	Industrial process furnace and oven manufacturing	2002 N 1997 N	X X	X X	1 512 249 2 861 613
33399401	Fuel-fired industrial process furnaces, ovens, and kilns	2002 N 1997 N	X X	X X	377 594 589 647
3339940103	Fuel-fired industrial metal processing and heat treating furnaces (including annealing, hardening, carburizing, and porcelain enameling furnaces), except parts and attachments	2002 51 1997 61	X X	X X	247 474 289 129
3339940106	Fuel-fired metal processing and heat treating furnaces, ovens, and kilns for the melting, roasting, and all other heat treatment of ores, pyrites, or metals, except parts and attachments	2002 21 1997 25	X X	X X	52 780 60 253
3339940109	All other miscellaneous fuel-fired industrial furnaces, ovens, and kilns	2002 34 1997 42	X X	X X	77 340 240 265
33399402	Parts and attachments for industrial fuel-fired furnaces, ovens, and kilns	2002 N 1997 N	X X	X X	109 357 75 470
3339940214	Parts and attachments for industrial fuel-fired furnaces, ovens, and kilns	2002 46 1997 48	X X	X X	109 357 75 470
33399403	High-frequency induction and dielectric heating equipment, including furnaces, ovens, and kilns (except parts and attachments)	2002 N 1997 N	X X	X X	167 508 209 880
3339940323	High-frequency induction and dielectric heating equipment, including furnaces, ovens, and kilns (except parts and attachments)	2002 28 1997 33	X X	X X	167 508 209 880
33399404	Electric resistance-heated furnaces, ovens, and kilns (except parts and attachments)	2002 N 1997 N	X X	X X	113 488 246 968
3339940429	Electric resistance-heated metal processing and heat treating furnaces for annealing, hardening, carburizing, and porcelain enameling (except parts and attachments)	2002 36 1997 56	X X	X X	58 506 167 902
3339940431	Electric resistance-heated furnaces, ovens, and kilns, except for metal processing and heat treating (except parts and attachments)	2002 20 1997 30	X X	X X	54 982 79 066
33399405	Electric (except high-frequency induction and dielectric and resistance-heated) metal processing and heat treating furnaces (except parts and attachments)	2002 N 1997 N	X X	X X	31 863 184 371
3339940535	Electric (except high-frequency induction and dielectric and resistance-heated) metal processing and heat treating furnaces (except parts and attachments)	2002 14 1997 23	X X	X X	31 863 184 371
33399406	Other electric industrial furnaces, ovens, and kilns (complete units)	2002 N 1997 N	X X	X X	104 942 546 983
3339940639	Electric (except high-frequency induction and dielectric and resistance-heated) furnaces and ovens for diffusion, oxidation, and annealing of semiconductor wafers (except parts and attachments)	2002 12 1997 29	X X	X X	20 317 267 271
3339940653	All other miscellaneous electric industrial furnaces, ovens, and kilns (except parts)	2002 29 1997 43	X X	X X	84 625 279 712
33399407	Parts and attachments for electric industrial furnaces, ovens, and kilns, including high-frequency induction and dielectric heating equipment	2002 N 1997 N	X X	X X	92 121 114 498
3339940759	Parts and attachments for electric industrial furnaces, ovens, and kilns, including high-frequency induction and dielectric heating equipment	2002 50 1997 71	X X	X X	92 121 114 498
33399408	Other electrical heating equipment for industrial use, except parts and attachments for soldering irons	2002 N 1997 N	X X	X X	267 375 520 608
3339940871	Industrial electric tubular heaters	2002 19 1997 30	X X	X X	99 653 109 758
3339940875	All other miscellaneous electrical heating equipment for industrial use, except parts and attachments and soldering irons	2002 24 1997 53	X X	X X	167 722 410 850
33399409	Parts and attachments for electric industrial tubular heaters and all other miscellaneous electrical heating equipment for industrial use	2002 N 1997 N	X X	X X	86 285 72 560
3339940979	Parts and attachments for electric industrial tubular heaters and all other miscellaneous electrical heating equipment for industrial use	2002 24 1997 35	X X	X X	86 285 72 560
3339940Y	Industrial furnaces and ovens, and electric industrial heating equipment, nsk, total	2002 N 1997 N	X X	X X	161 716 300 628
3339940YWW	Industrial furnaces and ovens, and electric industrial heating equipment, nsk, for nonadministrative-record establishments	2002 N 1997 N	X X	X X	90 943 258 301
3339940YWY	Industrial furnaces and ovens, and electric industrial heating equipment, nsk, for administrative-record establishments	2002 N 1997 N	X X	X X	70 773 42 327

Note 1: For some establishments, data have been estimated from central unit values that are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: p-10 to 19 percent estimated; q-20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Table 6a. Products Statistics: 2002 and 1997—Con.

Note 2: The data in this table are based on the 2002 Economic Census. To maintain confidentiality, the Census Bureau suppresses data to protect the identity of any business or individual. The census results in this table contain nonsampling errors. Data users who create their own estimates using data from American FactFinder tables should cite the Census Bureau as the source of the original data only. For explanation of terms, see Appendix A. For full technical documentation, see Appendix C.

Table 6b. **Product Class Shipments for Selected States: 2002 and 1997**

[Not applicable for this report.]

Table 7. Materials Consumed by Kind: 2002 and 1997

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. Data based on the 2002 Economic Census. For information on confidentiality protection, nonsampling error, and explanation of terms, see note 2 at end of table. For meaning of abbreviations and symbols, see introductory text]

Material code	Material consumed	Quantity	Delivered cost (\$1,000)
333994	Industrial process furnace and oven manufacturing		
0090001	Total materials	2002.. X	573 668
		1997.. X	1 180 320
00190090	Fluid power products	2002.. X	19 663
		1997.. X	102 779
33200005	Fabricated metal products, including forgings	2002.. X	45 871
		1997.. X	141 752
33151001	Iron and steel castings (rough and semifinished)	2002.. X	14 588
		1997.. X	14 134
33152011	Nonferrous (aluminum, copper, etc.) castings (rough and semifinished)	2002.. X	6 226
		1997.. X	17 548
33120007	Steel bars, bar shapes, and plate (excluding castings, forgings, and fabricated metal products)	2002.. X	15 663
		1997.. X	47 977
33120016	Steel sheet and strip (including tinplate)	2002.. X	13 128
		1997.. X	N
33120033	All other steel shapes and forms (excluding castings, forgings, and fabricated metal products)	2002.. X	10 051
		1997.. X	28 887
33100077	Other nonferrous shapes and forms (excluding castings, forgings, and fabricated metal products)	2002.. X	11 871
		1997.. X	28 768
33100038	Aluminum and aluminum-base alloy shapes and forms (excluding castings, forgings, and fabricated metal products)	2002.. X	2 193
		1997.. X	N
001900B1	Electrical transmission, distribution, and control equipment	2002.. X	42 786
		1997.. X	151 769
33399400	Electric heating elements for industrial furnaces, ovens, and kilns	2002.. X	37 987
		1997.. X	38 858
00970099	All other materials and components, parts, containers, and supplies	2002.. X	122 626
		1997.. X	452 590
00971000	Materials, ingredients, containers, and supplies, nsk	2002.. X	231 015
		1997.. X	155 258

Note 1: For some establishments, data have been estimated from central unit values that are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: p-10 to 19 percent estimated; q-20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

Note 2: The data in this table are based on the 2002 Economic Census. To maintain confidentiality, the Census Bureau suppresses data to protect the identity of any business or individual. The census results in this table contain nonsampling errors. Data users who create their own estimates using data from American FactFinder tables should cite the Census Bureau as the source of the original data only. For explanation of terms, see Appendix A. For full technical documentation, see Appendix C.

Appendix A.

Explanation of Terms

BEGINNING- AND END-OF-YEAR INVENTORIES

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and, then, to report the LIFO reserve and the LIFO value after adjustment for the reserve.

Inventory data by stage of fabrication

Total inventories and three detailed components (1)finished goods, (2)work-in-process, and (3)materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

COST OF MATERIALS

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc. Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.
3. Cost of fuels consumed for heat and power. Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity. The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work. This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

Specific materials consumed

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials that were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the "Cost of all other materials" Census material code 00970099.

Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the "Materials not specified by kind" Census materials code 00971000.

Duplication in cost of materials and value of shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries.

Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

SELECTED PURCHASED SERVICES

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of selected purchased services for the repair and maintenance services of buildings and/or machinery; communication services; legal services; accounting, auditing, and bookkeeping services; advertising and promotional services; expensed computer hardware and supplies and purchased computer services; refuse removal services; management consulting and administrative services; taxes and license fees; and all other expenses not previously stated. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services. These expenses are normally considered as nonproduction related costs purchased from other companies.

Included in the cost of selected purchased services for the repair and maintenance services of buildings and/or machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Excluded from this item are extensive repairs or reconstruction that was capitalized, which is considered capital expenditures; costs incurred directly by the establishment in using its own work force to perform repairs and maintenance work; and repairs and maintenance provided by the building or machinery owner as part of the rental contract.

Included in the cost of selected purchased services for communication is the actual expense incurred or payable during the year for any type of communication. Such types of communication include telephone, data transmission, telegraph, Internet, connectivity, FAX, telex, photo transmission, paging, cellular telephone, on-line access and related services, etc.

Included in the cost of selected purchased services for legal services are payments made to other companies for these services that were paid directly by the establishment. Excluded are the salaries paid to employees of the establishment for these services.

Included in the cost of selected accounting, auditing, and bookkeeping services are payments made to other companies for these services that were paid directly by the establishment. Excluded are the salaries paid to employees of this establishment for these services.

Included in the cost of selected advertising and promotional services are payments made to other companies for these services that were paid directly by the establishment. These include payments for printing, media coverage, and other services and materials. Excluded are the salaries paid to employees of this establishment for these services.

Included in the cost of selected expensed computer hardware and supplies and purchased computer services are actual expenses incurred or payable during the year for this item. Purchases for computer hardware and supplies, computer services (software, data transmission, processing services, Web design, etc.) are all included. Excluded are services provided by other establishments of the same company (such as a separate central data processing unit).

Included in the cost of selected purchased refuse removal services are payments made to other companies for these services that were paid directly by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures and the salaries paid to employees of the establishment for these services.

Included in the cost of selected purchased management consulting and administrative services are payments made to other companies for these services that were paid directly by the establishment. Excluded are the salaries paid to employees of this establishment for these services.

Included in the cost of selected purchased taxes and license fees are payments made to other companies for these services that were paid directly by the establishment, excluding income, sales, payroll, and excise taxes. Excluded are also the salaries paid to employees of this establishment for these services.

Response coverage ratio

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and nonreporters).

DEPRECIATION CHARGES FOR FIXED ASSETS

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

NUMBER OF EMPLOYEES

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period that included the 12th of the months specified on the report form. Included are employees on paid sick leave, paid holidays, and paid vacations; not included are proprietors and partners of unincorporated businesses.

These individuals comprise of all full-time and part-time employees who are on the payrolls of establishments who worked or received pay for any part of the pay period including the 12th of March, May, August, and November.

The “all employees” number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November

Production Workers

The “production workers” number includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant’s own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

All Other Employees

The “other employees” covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

TOTAL FRINGE BENEFITS

This item is the employer’s costs for social security tax, unemployment tax, workmen’s compensation insurance, state disability insurance pension plans, stock purchase plans, union-negotiated benefits, life insurance premiums, and insurance premiums on hospital and medical plans for employees.

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of federal old age and survivors’ insurance, unemployment compensation, and workers’ compensation. Payments for voluntary programs include all programs not specifically required by legislation, whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

GROSS VALUE OF DEPRECIABLE ASSETS (ACQUISITION COSTS) AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)

Total value of depreciable assets is collected on all census forms.

It shows the value of depreciable assets for the beginning of year (BOY) and end of year (EOY). The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year.

Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

ESTABLISHMENT

An establishment is a single physical location where business is conducted or where services or industrial operations are performed. Data in this sector includes those establishments where manufacturing is performed. A separate report was required for each manufacturing establishment (plant) with one employee or more that were in operation at any time during the year.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

Company

A company or ("enterprise") is comprised of all the establishments that operate under the ownership or control of a single organization. A company may be a business, service, or membership organization; consist of one or several establishments; and operate at one or several locations. It includes all subsidiary organizations, all establishments that are majority-owned by the company or any subsidiary, and all the establishments that can be directed or managed by the company or any subsidiary.

A company may have one or many establishments. Examples include product and service sales offices (retail and wholesale), industrial production plants, processing or assembly operations, mines or well sites, and support operations (such as an administrative office, warehouse, customer service center, or regional headquarters). Each establishment should receive, complete, and return a separate census form.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

PAYROLL

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

PRODUCT CODES AND CLASSES OF PRODUCTS

NAICS United States industries are identified by a six-digit code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits.

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. Since the 1997 census programs, information is collected on the output of almost 10,000 individual product items.

In the manufacturing sector for 2002, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. There are 1,450 product classes (seven-digit codes), 5,674 census products, and an additional 3,746 ten-digit product codes. The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives.

Comparability with previous figures was given considerable weight in the selection of product categories, so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

PRODUCTION-WORKER HOURS

This item covers all hours worked or paid for at the manufacturing plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave when the employee was not at the establishment.

QUANTITY OF ELECTRICITY PURCHASED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained, if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments.

However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

CAPITAL EXPENDITURES FOR NEW AND USED PLANT AND EQUIPMENT

Represents the total new and used capital expenditures reported by establishments in operation and any known plants under construction.

These data include expenditures for:

1. Permanent additions and major alterations to manufacturing and mining establishments.
2. New and used machinery and equipment used for replacement and additions to plant capacity, if they are of the type for which depreciation, depletion, or (for mining establishments) Office of Minerals Exploration accounts are ordinarily maintained. In addition, for mining establishments, these data include expenditures made during the year for development and exploration of mineral properties. For manufacturing establishments, these data are broken down into three types.
 - a. Automobiles, trucks, etc. for highway use. These include vehicles acquired under a lease-purchase agreement and excludes vehicles leased or normally designed to transport materials, property, or equipment on mining, construction, petroleum development, and similar projects. These vehicles are of such size or weight as to be normally restricted by state laws or regulations from operating on public highways. It also excludes purchases of vehicles that are purchased by a company for highway use.
 - b. Computers and peripheral data processing equipment. This item include all purchases of computers and related equipment.
 - c. All other expenditures for machinery and equipment excluding automobiles and computer equipment.

Capital expenditures include work done by contract, as well as by the establishment's own workforce.

These data exclude expenditures for land and mineral rights and cost of maintenance and repairs charged as current operating expenses.

VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments: Reported contract work — receipts for work or services that a plant performed for others on their materials. Value of resales — sales of products brought and sold without further manufacture, processing, or assembly. Other miscellaneous receipts — such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are: Primary products value of shipments. Secondary product value of shipments. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

Duplication in cost of materials and value of shipment

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since, the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries.

Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries that included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

Specialization and coverage ratio

These items are not collected on the report forms, but are derived from the data shown in Table 3. An establishment is classified in a particular industry, if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.).

Specialization and coverage ratio have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1 through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

Appendix B.

NAICS Codes, Titles, and Descriptions

333994 INDUSTRIAL PROCESS FURNACE AND OVEN MANUFACTURING

This U.S. Industry comprises establishments primarily engaged in manufacturing industrial process furnaces, ovens, induction and dielectric heating equipment, and kilns (except cement, chemical, and wood).

Appendix C.

Methodology

SOURCES OF THE DATA

The manufacturing sector includes approximately 350,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing. The amount of information requested from manufacturing establishments was dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the Annual Survey of Manufactures (ASM).

Establishments in the 2002 Economic Census are divided into those sent report forms and those not sent report forms. The coverage of and the method of obtaining census information from each are described below:

1. Establishments sent a report form:

- a. ASM sample establishments. This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments, as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-10000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A. Explanation of Terms, for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 473 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries, as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in certain cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry, which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided

for the respondent to describe significant materials not listed on the form.

A wide variety of special inquiries were included to measure activities peculiar to a given industry, such as operations performed and equipment used.

- b. Large and medium establishments (non-ASM). Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census — manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.
- c. Small single-establishment companies (non-ASM). This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated “short form” was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics, because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the “not specified by kind” (nsk) categories.

2. Establishments not sent a report form:

- a. Small single-establishment companies not sent a report form. Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and the Census Bureau’s ability to assign the correct six-digit NAICS industry classification to the establishment. For each six-digit NAICS industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report that requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these establishments, but were included in the product and material “not specified by kind” (nsk) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit NAICS group classification codes available in the files. For manufacturing, these establishments were sent a

separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics, other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

- b. All nonemployers, i.e., all firms subject to federal income tax, with no paid employees, during 2002 are excluded as in previous censuses. Data for nonemployers are not included in this report, but are released in the annual *Nonemployer Statistics* series.

The report forms used to collect information for establishments in this sector are available at help.econ.census.gov/econhelp/resources/.

A more detailed examination of census methodology is presented in the *History of the Economic Census* at www.census.gov/econ/www/history.html.

INDUSTRY CLASSIFICATION OF ESTABLISHMENTS

The classifications for all establishments covered in the 2002 Economic Census — Manufacturing are classified in 1 of 473 industries in accordance with the industry definitions in the *North American Industry Classification System (NAICS), United States, 2002* manual. There were no changes between the 2002 edition and the 1997 edition affecting this sector. When applicable, Appendix F of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 2002, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. There are 1,450 product classes (seven-digit codes), 5,674 census products, and an additional 3,746 ten-digit product codes. The ten-digit products are considered the primary products of the industry with the same first six digits.

For the 2002 Economic Census — Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 2002, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments that may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry's output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

ESTABLISHMENT BASIS OF REPORTING

The 2002 Economic Census — Manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports, if the plant records permit such a separation and if the activities are substantial in size.

In 2002, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures, except for data on number of establishments for a few industries.

The 2002 Economic Census — Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

DESCRIPTION OF THE ASM SURVEY SAMPLE

The ASM sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1999 survey year based on the 1997 Economic Census — Manufacturing. This sample will be in place through the 2003 ASM.

In 1997, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the establishments in the 1997 manufacturing population were partitioned into two components for developing estimates within the ASM. The details of each are described below:

1. Mail stratum. The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies

that operate at more than one physical location). Approximately 200,000 of the 370,000 establishments in the 1997 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1999 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1997 census. Supplemental samples representing both 1998 and 1999 births (newly active establishments that were not included in the 1997 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 2003.

The 1999-2003 ASM sample design is similar to the one used since 1984. Companies in the 1997 Economic Census — Manufacturing with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1999-2003 sample, there are approximately 500 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. Across these arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1997 Economic Census — Manufacturing.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1997 industry classification and its 1997 product class data. For each product class (1,755) and six-digit industry (473), a desired reliability constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints, while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by the Census Bureau's primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) that permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

2. Nonmail stratum. The initial nonmail component of the survey was comprised of approximately 170,000 small, single-establishment companies that were tabulated as administrative records in the 1997 Economic Census — Manufacturing. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

RELIABILITY OF DATA

All data compiled in the economic census are subject to nonsampling errors. Nonsampling errors can be attributed to many sources during the development or execution of the census. The following are two ways that further explain this method: ASM Estimating Procedure. Most of the ASM

estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1997 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the “difference” between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1998-2002 ASM estimates, the 1997 Economic Census — Manufacturing values serve as the base year. For the 2003 ASM, the base will be updated to be the 2002 Economic Census — Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contained approximately 170,000 individual establishments in 1999, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication. ASM Data Qualifications. The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists, but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

- From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.
- From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.
- From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS

The 2002 Economic Census — Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

DISCLOSURE

In accordance with federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments in a specific industry or geographic area is not considered a disclosure; therefore, this information may be released even though other information is withheld. Techniques employed to limit disclosure are discussed at www.census.gov/epcd/ec02/disclosure.htm.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. Nonetheless, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures, which can be suppressed even though value of shipments data are published.

Appendix D. Geographic Notes

Not applicable for this report.

Appendix E. Metropolitan Areas and Micropolitan Statistical Areas

Not applicable for this report.

Appendix F. Comparability of Product Classes and Product Codes: 2002 to 1997

2002 published	2002 collected	1997 published	2002 published	2002 collected	1997 published	2002 published	2002 collected	1997 published
3331111	3331111	3331111	3331319	3331319	3331319	3332103YVW	3332103YVW	3332103YVW
333111100	333111100	333111000	333131901	333131901	333131901	3332105	3332105	3332105
3331114	3331113 pt	3331113 pt	333131906	333131906	333131906	3332105311	3332105211	3332105211
3331114100 pt	3331113110	3331113000 pt	333131911	333131911	333131911	3332105351 pt	3332105251 pt	3332105211
3331114100 pt	3331113YVW	3331113000 pt	3331319216	3331319216	3331319216	3332105351 pt	3332105251 pt	3332105231
3331117	3331117	3331117	3331319321	3331319321	3331319321	3332105351 pt	3332105251 pt	3332105241
3331117100	3331117100	3331117000	3331319426	3331319426	3331319426	3332105351 pt	3332105251 pt	3332105251
3331119	3331119	3331119	3331319531	3331319531	3331319531	3332105351 pt	3332105251 pt	3332105251
3331119100	3331119100	3331119000	3331319636	3331319636	3331319636	3332105351 pt	3332105251 pt	3332105251
333111A	333111A	333111A	3331319744	3331319744	3331319744	3332105YVW	3332105YVW	3332105YVW
333111A100	333111A100	333111A000	3331319YVW	3331319YVW	3331319YVW	333210W	333210W	333210W
333111C	333111C	333111C	333131W	333131W	333131W	333210WYVW	333210WYVW	333210WYVW
333111C110	333111C110	333111C110	333131WYVW	333131WYVW	333131WYVW	333210WYVW	333210WYVW	333210WYVW
333111C200	333111C200	333111C200	333131WYVW	333131WYVW	333131WYVW	3332201	3332201	3332201
333111CYVW	333111CYVW	333111CYVW	3331321	3331321	3331321	3332201106	3332201106	3332201106
333111E	333111E	333111E	3331321101	3331321101	3331321101	3332201111	3332201111	3332201111
333111E100	333111E100	333111E000	3331321116	3331321116	3331321116	3332201116	3332201116	3332201116
333111G	333111G	333111G	3331321123 pt	3331321122 pt	3331321106	3332201121	3332201121	3332201121
333111G100	333111G100	333111G000	3331321123 pt	3331321122 pt	3331321111	3332201201	3332201201	3332201201
333111J	333111J	333111J	3331321126	3331321126	3331321122	3332201226	3332201226	3332201226
333111J100	333111J100	333111J000	3331321131	3331321131	3331321126	3332201231	3332201231	3332201231
333111W	333111W pt	333111W pt	3331321136	3331321136	3331321131	3332201236	3332201236	3332201236
333111WYVW	333111WYVW pt	333111WYVW pt	3331321151	3331321151	3331321136	3332201341	3332201341	3332201341
333111WYVW	333111WYVW pt	333111WYVW pt	3331321156	3331321156	3331321151	3332201346	3332201346	3332201346
3331121	3331121	3331121	3331321167 pt	3331321166 pt	3331321156	3332201351	3332201351	3332201351
3331121100	3331121100	3331121000	3331321167 pt	3331321166 pt	3331321166	3332201356	3332201356	3332201356
3331123	3331123	3331123	3331321271	3331321271	3331321271	3332201361	3332201361	3332201361
3331123100	3331123100	3331123000	3331321YVW	3331321YVW	3331321YVW	3332201366	3332201366	3332201366
3331127	3331127	3331127	3331323	3331323	3331323	3332201371	3332201371	3332201371
3331127100	3331127100	3331127000	333132311	333132311	333132311	3332201476	3332201476	3332201476
333112W	333112W	333112W	3331323123 pt	3331323122 pt	3331323101	3332201481	3332201481	3332201481
333112WYVW	333112WYVW	333112WYVW	3331323123 pt	3331323122 pt	3331323101	3332201486	3332201486	3332201486
333112WYVW	333112WYVW	333112WYVW	3331323123 pt	3331323122 pt	3331323106	3332201YVW	3332201YVW	3332201YVW
3331201	3331201	3331201	3331323226	3331323226	3331323226	3332203	3332203	3332203
3331201110	3331201110	3331201110	3331323YVW	3331323YVW	3331323YVW	3332203101	3332203101	3332203101
3331201220	3331201220	3331201220	3331325	3331325	3331325	3332203106	3332203106	3332203106
3331201330	3331201330	3331201330	3331325101	3331325106	3331325106	3332203111	3332203111	3332203111
3331201440	3331201440	3331201440	3331325111	3331325111	3331325111	3332203116	3332203116	3332203116
3331201550	3331201550	3331201550	3331325116	3331325116	3331325116	3332203116	3332203116	3332203116
3331201660	3331201660	3331201660	3331325121	3331325121	3331325121	3332203121	3332203121	3332203121
3331201770	3331201770	3331201770	3331325126	3331325126	3331325126	3332203226	3332203226	3332203226
3331201YVW	3331201YVW	3331201YVW	3331325141	3331325141	3331325141	3332203YVW	3332203YVW	3332203YVW
3331208	3331208	3331208	3331325146	3331325146	3331325146	333220W	333220W	333220W
3331208110	3331208110	3331208110	3331325151	3331325151	3331325151	333220WYVW	333220WYVW	333220WYVW
3331208115	3331208115	3331208115	3331325156	3331325156	3331325156	333220WYVW	333220WYVW	333220WYVW
3331208126	3331208126	3331208126	3331325161	3331325161	3331325161	3332911	3332911	3332911
3331208127	3331208127	3331208127	3331325166	3331325166	3331325166	3332911104 pt	3332911106 pt	3332911101
3331208135	3331208135	3331208135	3331325171	3331325171	3331325171	3332911104 pt	3332911106 pt	3332911106
3331208144	3331208144	3331208144	3331325176	3331325176	3331325176	3332911111	3332911111	3332911111
3331208148	3331208148	3331208148	3331325181	3331325181	3331325181	3332911111	3332911111	3332911111
3331208152	3331208152	3331208152	3331325186	3331325186	3331325186	3332911121	3332911121	3332911121
3331208156	3331208156	3331208156	3331325191	3331325191	3331325191	3332911122 pt	3332911126 pt	3332911116
3331208199	3331208199	3331208199	3331325196	3331325196	3331325196	3332911123 pt	3332911126 pt	3332911126
3331208YVW	3331208YVW	3331208YVW	3331325256	3331325256	3331325256	3332911123 pt	3332911131	3332911131
3331209	3331209	3331209	3331325YVW	3331325YVW	3331325YVW	3332911123 pt	3332911131	3332911131
3331209111	3331209111	3331209111	3331327	3331327	3331327	3332911126 pt	3332911131	3332911131
3331209245	3331209245	3331209245	3331327101	3331327101	3331327101	3332911131	3332911131	3332911131
3331209352	3331209352	3331209352	3331327210	3331327210	3331327210	3332911236	3332911236	3332911236
3331209353	3331209353	3331209353	3331327YVW	3331327YVW	3331327YVW	3332911241	3332911241	3332911241
3331209366	3331209366	3331209366	3331329	3331329	3331329	3332911346	3332911346	3332911346
3331209377	3331209377	3331209377	3331329108 pt	3331329108 pt	3331329101	3332911351	3332911351	3332911351
3331209388	3331209388	3331209388	3331329108 pt	3331329108 pt	3331329106	3332911361	3332911361	3332911361
3331209YVW	3331209YVW	3331209YVW	3331329111	3331329111	3331329111	3332911456	3332911456	3332911456
333120W	333120W	333120W	3331329YVW	3331329YVW	3331329YVW	3332911566	3332911566	3332911566
333120WYVW	333120WYVW	333120WYVW	333132W	333132W	333132W	3332911571	3332911571	3332911571
333120WYVW	333120WYVW	333120WYVW	333132WYVW	333132WYVW	333132WYVW	3332911576	3332911576	3332911576
3331311	3331311	3331311	333132WYVW	333132WYVW	333132WYVW	3332911581	3332911581	3332911581
3331311100	3331311100	3331311000	333132WYVW	333132WYVW	333132WYVW	3332911591	3332911591	3332911591
3331313	3331313	3331313	3332103	3332103	3332103	3332911597 pt	3332911596 pt	3332911586
3331313100	3331313100	3331313100	3332103101	3332103101	3332103101	3332911597 pt	3332911596 pt	3332911596
3331315	3331315	3331315	3332103106	3332103106	3332103106	3332911YVW	3332911YVW	3332911YVW
3331315100	3331315100	3331315000	3332103111	3332103111	3332103111	3332913	3332913	3332913
3331317	3331317	3331317	3332103116	3332103116	3332103116	3332913101	3332913101	3332913101
3331317100	3331317100	3331317000	3332103121	3332103121	3332103121	3332913211	3332913211	3332913211
			3332103126	3332103126	3332103126	3332913321	3332913321	3332913321
			3332103231	3332103231	3332103231	3332913431	3332913431	3332913431
			3332103236	3332103236	3332103236	3332913541	3332913541	3332913541
			3332103241	3332103241	3332103241	3332913YVW	3332913YVW	3332913YVW
			3332103246	3332103246	3332103246	333291W	333291W	333291W
			3332103251	3332103251	3332103251	333291WYVW	333291WYVW	333291WYVW
			3332103256	3332103256	3332103256	333291WYVW	333291WYVW	333291WYVW
			3332103261	3332103261	3332103261	3332921	3332921	3332921
			3332103266	3332103266	3332103266	3332921101	3332921101	3332921101
			3332103271	3332103271	3332103271	3332921103	3332921103	3332921103
			3332103276	3332103276	3332103276	3332921106	3332921106	3332921106
			3332103292 pt	3332103291 pt	3332103279	3332921111	3332921111	3332921111
			3332103292 pt	3332103291 pt	3332103283	3332921116	3332921116	3332921116
			3332103292 pt	3332103291 pt	3332103287	3332921121	3332921121	3332921121
			3332103292 pt	3332103291 pt	3332103291	3332921131	3332921131	3332921131
			3332103396	3332103396	3332103396			

2002 published	2002 collected	1997 published	2002 published	2002 collected	1997 published	2002 published	2002 collected	1997 published
3332921136	3332921136	3332921136	3332945	3332945	3332945	3332987216	3332987216	3332987216
3332921241	3332921241	3332921241	3332945101	3332945101	3332945101	3332987226	3332987226	3332987226
3332921246	3332921246	3332921246	3332945111	3332945111	3332945111	3332987236	3332987236	3332987236
3332921358 pt	3332921358 pt	3332921351	3332945116	3332945116	3332945116	3332987266	3332987266	3332987266
3332921358 pt	3332921358 pt	3332921356	3332945121	3332945121	3332945121	3332987276	3332987276	3332987276
3332921461	3332921461	3332921461	3332945131	3332945131	3332945131	3332987291	3332987291	3332987291
3332921462	3332921462	3332921462	3332945135	3332945135	3332945135	33329872A1	33329872A1	33329872A1
3332921476	3332921476	3332921476	3332945141	3332945141	3332945141	33329872B1	33329872B1	33329872B1
3332921566	3332921566	3332921566	3332945151	3332945151	3332945151	33329872C1	33329872C1	33329872C1
3332921571	3332921571	3332921571	3332945161	3332945161	3332945161	33329872D6	33329872D6	33329872D6
3332921681	3332921681	3332921681	3332945206	3332945206	3332945206			
3332921686	3332921686	3332921686	3332945208	3332945208	3332945208	33329872F6	33329872F6	33329872F6
3332921691	3332921691	3332921691	3332945371	3332945371	3332945371	33329872J6	33329872J6	33329872J6
3332921YVW	3332921YVW	3332921YVW	3332945376	3332945376	3332945376	33329872P6	33329872P6	33329872P6
			3332945376	3332945376	3332945376	33329873D1	33329873D1	33329873D1
3332923	3332923	3332923	3332945381	3332945381	3332945381	33329873E1	33329873E1	33329873E1
3332923101	3332923101	3332923101	3332945392 pt	3332945391 pt.	3332945391 pt.	33329873E6	33329873E6	33329873E6
3332923106	3332923106	3332923106	3332945392 pt	3332945391 pt.	3332945391 pt.	33329873F1	33329873F1	33329873F1
3332923111	3332923111	3332923111	3332945YVW	3332945YVW	3332945YVW	33329873G1	33329873G1	33329873G1
3332923216	3332923216	3332923216				33329874A6	33329874A6	33329874A6
3332923321	3332923321	3332923321	33329294W	33329294W	33329294W	33329875R1	33329875R1	33329875R1
3332923331	3332923331	3332923331	333294WYVW	333294WYVW	333294WYVW	3332987YVW	3332987YVW	3332987YVW
3332923336	3332923336	3332923336	333294WYVW	333294WYVW	333294WYVW			
3332923341	3332923341	3332923341						
3332923346	3332923346	3332923346	3332950	3332950	3332950	333298W	333298W	333298W
3332923451	3332923451	3332923451	3332950106	3332950106	3332950106	333298WYVW	333298WYVW	333298WYVW
			3332950211	3332950211	3332950211			
3332923456	3332923456	3332923456	3332950326	3332950326	3332950326			
3332923561	3332923561	3332923561	3332950401	3332950401	3332950401	3333111	3333111	3333111
3332923566	3332923566	3332923566	3332950416	3332950416	3332950416	333311100	333311100	333311100
3332923671	3332923671	3332923671	3332950421	3332950421	3332950421			
3332923681	3332923681	3332923681	3332950434 pt	3332950431 pt.	3332950431 pt.	3333113 pt.	3333113 pt.	3333113 pt.
3332923791	3332923791	3332923791	3332950434 pt	3332950431 pt.	3332950436	3333113157 pt	3333112157 pt.	3333112159
3332923YVW	3332923YVW	3332923YVW	3332950441	3332950441	3332950441	3333113269	3333112659	3333112659
			3332950446	3332950446	3332950446	3333113271	3333113271	3333113271
						3333113271	3333113271	3333113271
333292W	333292W	333292W	3332950451	3332950451	3332950451	3333113YVW	3333112YVW	3333112YVW
333292WYVW	333292WYVW	333292WYVW	3332950456	3332950456	3332950456			
333292WYVW	333292WYVW	333292WYVW	3332950461	3332950461	3332950461			
			3332950468 pt	3332950468 pt.	3332950466	3333114	3333114	3333114
			3332950468 pt	3332950468 pt.	3332950471	3333114101	3333114101	3333114101
3332931	3332931	3332931	3332950581	3332950581	3332950581	3333114105	3333114120	3333114120
3332931101	3332931101	3332931101	3332950586	3332950586	3332950586	3333114YVW	3333114YVW	3333114YVW
3332931111	3332931111	3332931111	3332950591	3332950591	3332950591			
3332931221	3332931221	3332931221	3332950596	3332950596	3332950596	333311W	333311W	333311W
3332931331	3332931331	3332931331	33329505A1	33329505A1	33329505A1	333311WYVW	333311WYVW	333311WYVW
3332931351	3332931351	3332931351	33329505A6	33329505A6	33329505A6	333311WYVW	333311WYVW	333311WYVW
3332931441	3332931441	3332931441	33329505B1	33329505B1	33329505B1			
3332931YVW	3332931YVW	3332931YVW	33329505B6	33329505B6	33329505B6	3333120	3333120	3333120
			3332950YVW	3332950YVW	3332950YVW	3333120101	3333120101	3333120101
			3332950YVW	3332950YVW	3332950YVW	3333120211	3333120211	3333120211
						3333120231	3333120231	3333120231
						3333120241	3333120241	3333120241
						3333120351	3333120351	3333120351
						3333120361	3333120361	3333120361
						3333120366	3333120366	3333120366
						3333120471	3333120471	3333120471
						3333120491	3333120491	3333120491
						3333120577	3333120577	3333120577
						3333120581	3333120581	3333120581
						3333120586	3333120586	3333120586
						3333120YVW	3333120YVW	3333120YVW
						3333120YVW	3333120YVW	3333120YVW
						3333131	3333131	3333131
						3333131100	3333131100	3333131100
						3333137	3333137	3333137
						3333137100	3333137100	3333137100
						333313A	333313A	333313A
						333313A100	333313A100	333313A100
						333313E pt	333313E pt.	333313D pt
						333313E pt	3399427 pt	3399425 pt
						333313E100 pt	333313E121	333313D000 pt
						333313E100 pt	333313EYVW pt	333313D000 pt
						333313E100 pt	3399427YVW pt	3399425000 pt
						333313E100 pt	3399427YVW pt	3399425000 pt
						333313H	333313G pt	333313G pt
						333313H100 pt	333313H100 pt	333313G000 pt
						333313H100 pt	333313GYVW	333313G000 pt
						333313J	333313J	333313J
						333313J100	333313J100	333313J000
						333313W pt	333313W pt	333313W pt
						333313W pt	339942W pt	339942W pt
						333313WYVW pt.	333313WYVW pt.	333313WYVW pt
						333313WYVW pt.	339942WYVW pt.	339942WYVW pt
						333313WYVW pt.	333313WYVW pt.	333313WYVW pt
						333313WYVW pt.	339942WYVW pt.	339942WYVW pt
						3333141	3333141	3333141
						3333141100	3333141100	3333141100
						3333143	3333143	3333143
						3333143110	3333143110	3333143110
						3333143230	3333143230	3333143230
						3333143YVW	3333143YVW	3333143YVW
						333314W	333314W	333314W
						333314WYVW	333314WYVW	333314WYVW
						333314WYVW	333314WYVW	333314WYVW
						3333151	3333151	3333151
						3333151101	3333151101	3333151101
						3333151206	3333151206	3333151206
						3333151311	3333151311	3333151311
						3333151416	3333151416	3333151416
						3333151521	3333151521	3333151521
						3333151YVW	3333151YVW	3333151YVW
						3333153	3333153	3333153
						3333153100	3333153100	3333153100

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3333155	3333155	3333155	3334120327	3334120327	3334120327	3334159YVW	3334159YVW	3334159YVW
3333155101	3333155101	3333155101	3334120329	3334120329	3334120329	333415A	333415A	333415A
3333155106	3333155106	3333155106	3334120344	3334120344	3334120344	333415A100	333415A100	333415A000
3333155111	3333155111	3333155111	3334120463	3334120463	3334120463	333415C	333415C	333415C
3333155116	3333155116	3333155116	3334120465	3334120465	3334120465	333415C100	333415C100	333415C000
3333155221	3333155221	3333155221	3334120573	3334120573	3334120573	333415D	333415D	333415D
3333155YVW	3333155YVW	3333155YVW	3334120575	3334120575	3334120575	333415D101	333415D101	333415D101
3333157	3333157	3333157	3334120688	3334120688	3334120688	333415D111	333415D111	333415D111
3333157101	3333157101	3333157101	3334120YVW	3334120YVW	3334120YVW	333415D121	333415D121	333415D121
3333157206	3333157206	3333157206	3334120YWY	3334120YWY	3334120YWY	333415D131	333415D131	333415D131
3333157311	3333157311	3333157311	3334141	3334141	3334141	333415D141	333415D141	333415D141
3333157YVW	3333157YVW	3333157YVW	3334141101	3334141101	3334141101	333415D151	333415D151	333415D151
333315W	333315W	333315W	3334141106	3334141106	3334141106	333415D161	333415D161	333415D161
333315WYVW	333315WYVW	333315WYVW	3334141111	3334141111	3334141111	333415D171	333415D171	333415D171
333315WYVY	333315WYVY	333315WYVY	3334141116	3334141116	3334141116	333415D181	333415D181	333415D181
3333191	3333191	3333191	3334141YVW	3334141YVW	3334141YVW	333415DYVW	333415DYVW	333415DYVW
3333191111	3333191111	3333191111	3334143	3334143	3334143	333415E	333415E	333415E
3333191116	3333191116	3333191116	3334143101	3334143101	3334143101	333415E100	333415E100	333415E000
3333191121	3333191121	3333191121	3334143106	3334143106	3334143106	333415F	333415F	333415F
3333191131	3333191131	3333191131	3334143111	3334143111	3334143111	333415F100	333415F100	333415F000
3333191241	3333191241	3333191241	3334143116	3334143116	3334143116	333415G	333415G	333415G
3333191251	3333191251	3333191251	3334143121	3334143121	3334143121	333415G100	333415G100	333415G000
3333191261	3333191261	3333191261	3334143126	3334143126	3334143126	333415W pt.	332322W pt.	332322W pt.
3333191271	3333191271	3333191271	3334143131	3334143131	3334143131	333415W pt.	333414W pt.	333414W pt.
3333191281	3333191281	3333191281	3334143136	3334143136	3334143136	333415W pt.	333415W pt.	333415W pt.
3333191391	3333191391	3333191391	3334143141	3334143141	3334143141	333415WYVW pt.	333415WYVW pt.	333415WYVW pt.
3333191YVW	3333191YVW	3333191YVW	3334143146	3334143146	3334143146	333415WYVY pt.	333415WYVY pt.	333415WYVY pt.
3333193	3333193	3333193	3334143151	3334143151	3334143151	333415WYVY pt.	333415WYVY pt.	333415WYVY pt.
3333193101	3333193101	3333193101	3334143YVW	3334143YVW	3334143YVW	3335110	3335110	3335110
3333193111	3333193111	3333193111	3334145	3334145	3334145	3335110101	3335110101	3335110101
3333193221	3333193221	3333193221	3334145101	3334145101	3334145101	3335110106	3335110106	3335110106
3333193YVW	3333193YVW	3333193YVW	3334145111	3334145111	3334145111	3335110411	3335110411	3335110411
3333195	3333195	3333195	3334145YVW	3334145YVW	3334145YVW	3335110416	3335110416	3335110416
3333195101	3333195101	3333195101	3334147	3334147	3334147	3335110421	3335110421	3335110421
3333195106	3333195106	3333195106	3334147101	3334147101	3334147101	3335110426	3335110426	3335110426
3333195111	3333195111	3333195111	3334147106	3334147106	3334147106	3335110431	3335110431	3335110431
3333195116	3333195116	3333195116	3334147111	3334147111	3334147111	3335110436	3335110436	3335110436
3333195121	3333195121	3333195121	3334147116	3334147116	3334147116	3335110441	3335110441	3335110441
3333195126	3333195126	3333195126	3334147121	3334147121	3334147121	3335110446	3335110446	3335110446
3333195231	3333195231	3333195231	3334147126	3334147126	3334147126	3335110451	3335110451	3335110451
3333195YVW	3333195YVW	3333195YVW	3334147YVW	3334147YVW	3334147YVW	3335110476	3335110476	3335110476
3333197	3333197	3333197	333414A pt.	333414A pt.	333414A pt.	3335110541	3335110541	3335110541
3333197100	3333197100	3333197000	333414A pt.	33339998 pt.	33339998 pt.	3335110546	3335110546	3335110546
333319A pt.	3333199	3333199	333414A101	3334149101	3334149101	3335110556	3335110556	3335110556
333319A pt.	339999K pt.	339999H pt.	333414A106	3334149106	3334149106	3335110558	3335110558	3335110558
333319A101	3333199101	3333199101	333414A111	3334149111	3334149111	3335110560	3335110560	3335110560
333319A106	3333199106	3333199106	333414A121	3334149121	3334149121	3335110YVW	3335110YVW	3335110YVW
333319A111	3333199111	3333199111	333414A126	3334149126	3334149126	3335110YVY	3335110YVY	3335110YVY
333319A116	3333199116	3333199116	333414A131	3334149131	3334149131	3335121	3335121	3335121
333319A146	3333199146	3333199146	333414A136	3334149136	3334149136	333512100 pt.	333512100 pt.	333512100 pt.
333319A151	3333199151	3333199151	333414A138	3333999893	3333999895 pt.	3335121100 pt.	3335121100 pt.	3335121100 pt.
333319A161	3333199161	3333199161	333414A140	3334149140	3334149140	3335122	3335122	3335122
333319A166	3333199166	3333199166	333414A150	3334149150	3334149150	3335122100	3335122100	3335122000
333319A171	3333199171	3333199171	333414A151	3334149151	3334149151	3335123	3335123	3335123
333319A174	3333199174	3333199174	333414AYVW pt.	3334149YVW pt.	3334149YVW pt.	3335123100	3335123100	3335123000
333319A178	3333199178	3333199178	333414AYVW pt.	33339998YVW pt.	33339998YVW pt.	3335124	3335124	3335124
333319A182	3333199182	3333199182	333414W pt.	333414W pt.	333414W pt.	3335124100	3335124100	3335124000
333319A186	3333199186	3333199186	333414W pt.	3333999W pt.	3333999W pt.	3335125	3335125	3335125
333319A189	3333199189	3333199189	333414WYVW pt.	333414WYVW pt.	333414WYVW pt.	3335125101	3335125101	3335125101
333319A191	339999K106	339999H106	333414WYVW pt.	3333999WYVW pt.	3333999WYVW pt.	3335125106	3335125106	3335125106
333319A194	3333199194	3333199194	333414WYVY pt.	333414WYVY pt.	333414WYVY pt.	3335125116	3335125116	3335125116
333319A196	3333199196	3333199196	333414WYVY pt.	3333999WYVY pt.	3333999WYVY pt.	3335125198 pt.	3335125198 pt.	3335125111
333319A221	3333199221	3333199221	3334152 pt.	332322E pt.	332322E pt.	3335125199 pt.	3335125199 pt.	3335125199
333319A236	3333199236	3333199236	3334152 pt.	3334149 pt.	3334149 pt.	3335125YVW	3335125YVW	3335125YVW
333319A256	3333199256	3333199256	3334152 pt.	3334152 pt.	3334152 pt.	3335126	3335126	3335126
333319A299	3333199299	3333199299	3334152 pt.	3334149 pt.	3334149 pt.	3335126101	3335126101	3335126101
333319A301	3333199301	3333199301	3334152 pt.	3334149 pt.	3334149 pt.	3335126107	3335126107	3335126106 pt.
333319A326	3333199326	3333199326	3334152 pt.	3334149 pt.	3334149 pt.	3335126111	3335126111	3335126106 pt.
333319A331	3333199331	3333199331	3334152100 pt.	33219990185	33219990191 pt.	3335126YVW	3335126YVW	3335126YVW
333319A341	3333199341	3333199341	3334152100 pt.	33219990YVW pt.	33219990YVW pt.	3335127	3335127	3335127
333319AYVW pt.	3333199YVW	3333199YVW	3334152100 pt.	33219990YVY pt.	33219990YVY pt.	3335127100	3335127100	3335127000
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333319W pt.	333319W	333319W	3334152100 pt.	332322EYVW pt.	332322EYVW pt.	3335128100	3335128100	3335128000
333319W pt.	333319W	333319W	3334152100 pt.	3334149153	3334149YVW pt.	3335129	3335129	3335129
333319WYVW pt.	333319WYVW	333319WYVW	3334152100 pt.	3334149YVW pt.	3334149YVW pt.	3335129100	3335129100	3335129000
333319WYVW pt.	339999WYVW pt.	339999WYVW pt.	3334152100 pt.	3334151100	3334151000	333512A	333512A	333512A
333319WYVY pt.	333319WYVY	333319WYVY	3334153	3334153	3334153	333512A100 pt.	333512A100 pt.	333512A100
333319WYVY pt.	339999WYVY pt.	339999WYVY pt.	3334153101	3334153101	3334153101	333512A100 pt.	333512A100 pt.	333512AYVW
3334111	3334111	3334111	3334153106	3334153106	3334153106	333512W	333512W	333512W
3334111110	3334111110	3334111110	3334153111	3334153111	3334153111	333512WYVW	333512WYVW	333512WYVW
3334111165	3334111165	3334111165	3334153116	3334153116	3334153116	3335131	3335131	3335131
3334111YVW	3334111YVW	3334111YVW	3334153121	3334153121	3334153121	3335131100	3335131100	3335131000
3334113	3334113	3334113	3334153126	3334153126	3334153126	3335133	3335133	3335133
3334113103	3334113103	3334113103	3334153131	3334153131	3334153131	333513300	333513300	3335133000
3334113207	3334113207	3334113207	3334153136	3334153136	3334153136	3335135	3335135	3335135
3334113211	3334113211	3334113211	3334153141	3334153141	3334153141	3335135100	3335135100	3335135000
3334113231	3334113231	3334113231	3334153146	3334153146	3334153146	3335155	3335155	3335155
3334113355	3334113355	3334113355	3334153151	3334153151	3334153151	3335156	3335156	3335156
3334113YVW	3334113YVW	3334113YVW	3334153156	3334153156	3334153156	3335156100	3335156100	3335156000
333411W	333411W	333411W	3334153191	3334153191	3334153191	3335159	3335159	3335159
333411WYVW								

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3335137	3335137	3335137	3335163	3335163	3335163	3336133444	3336133444	3336133444
3335137101	3335137101	3335137101	3335163101	3335163101	3335163101	3336133545	3336133545	3336133545
3335137111	3335137111	3335137111	3335163106	3335163106	3335163106	3336133648	3336133648	3336133648
3335137117	3335137117	3335137116 pt	3335163191	3335163191	3335163191	3336133649	3336133649	3336133649
3335137121	3335137121	3335137116 pt	3335163YVW	3335163YVW	3335163YVW	3336133756	3336133756	3336133756
3335137YVW	3335137YVW	3335137YVW	3335165	3335165	3335165	3336133763	3336133763	3336133763
333513W	333513W	333513W	3335165101	3335165101	3335165101	3336133767	3336133767	3336133767
333513WYVW	333513WYVW	333513WYVW	3335165106	3335165106	3335165106	3336133788	3336133788	3336133788
333513WYVW	333513WYVW	333513WYVW	3335165111	3335165111	3335165111	3336133792	3336133792	3336133792
3335140	3335140	3335140	3335165116	3335165116	3335165116	3336133798	3336133798	3336133798
3335140101	3335140101	3335140101	3335165121	3335165121	3335165121	3336133YVW	3336133YVW	3336133YVW
3335140103	3335140103	3335140103	3335165YVW	3335165YVW	3335165YVW	333613W	333613W	333613W
3335140106	3335140106	3335140106	333516W	333516W	333516W	333613WYVW	333613WYVW	333613WYVW
3335140109	3335140109	3335140109	333516WYVW	333516WYVW	333516WYVW	333613WYVW	333613WYVW	333613WYVW
3335140112	3335140112	3335140112	333516WYVW	333516WYVW	333516WYVW	3336181	3336181	3336181
3335140215	3335140215	3335140215	3335181	3335181	3335181	3336181100	3336181100	3336181100
3335140318	3335140318	3335140318	3335181101	3335181101	3335181101	3336183	3336183	3336183
3335140321	3335140321	3335140321	3335181206	3335181206	3335181206	3336183100	3336183100	3336183100
3335140326	3335140326	3335140326	3335181311	3335181311	3335181311	3336185	3336185	3336185
3335140332	3335140332	3335140332	3335181416	3335181416	3335181416	3336185100	3336185100	3336185100
3335140423	3335140423	3335140423	3335181521	3335181521	3335181521	3336189	3336189	3336189
3335140429	3335140429	3335140429	3335181YVW	3335181YVW	3335181YVW	3336189100	3336189100	3336189100
3335140535	3335140535	3335140535	3335183	3335183	3335183	333618B pt	333618B pt	333618B pt
3335140538	3335140538	3335140538	3335183101	3335183101	3335183101	333618B pt	333618B pt	333618B pt
3335140541	3335140541	3335140541	3335183106	3335183106	3335183106	333618B101	333618B101	333618B101
3335140543	3335140543	3335140543	3335183111	3335183111	3335183111	333618B106	333618B106	333618B106
3335140546	3335140546	3335140546	3335183116	3335183116	3335183116	333618B108	333618B108	333618B108
3335140549	3335140549	3335140549	3335183121	3335183121	3335183121	333618B110	333618B110	333618B110
3335140652	3335140652	3335140652	3335183126	3335183126	3335183126	333618BYVW	333618BYVW	333618BYVW pt
3335140655	3335140655	3335140655	3335183131	3335183131	3335183131	333618BYVW	333618BYVW	333618BYVW
3335140658	3335140658	3335140658	3335183YVW	3335183YVW	3335183YVW	333618F	333618F	333618F
3335140661	3335140661	3335140661	333518W	333518W	333518W	333618F101	333618F101	333618F101
3335140663	3335140663	3335140663	333518WYVW	333518WYVW	333518WYVW	333618F106	333618F106	333618F106
3335140666	3335140666	3335140666	333518WYVW	333518WYVW	333518WYVW	333618F111	333618F111	333618F111
3335140769	3335140769	3335140769	3336110	3336110	3336110	333618F116	333618F116	333618F116
3335140772	3335140772	3335140772	3336110101	3336110101	3336110101	333618F121	333618F121	333618F121
3335140775	3335140775	3335140775	3336110211	3336110211	3336110211	333618F126	333618F126	333618F126
3335140878	3335140878	3335140878	3336110211	3336110211	3336110211	333618F131	333618F131	333618F131
3335140981	3335140981	3335140981	3336110741	3336110741	3336110741	333618F136	333618F136	333618F136
3335140YVW	3335140YVW	3335140YVW	3336110746	3336110746	3336110746	333618F141	333618F141	333618F141
3335140YVW	3335140YVW	3335140YVW	3336110761	3336110761	3336110761	333618F146	333618F146	333618F146
3335151	3335151	3335151	3336110766	3336110766	3336110766	333618F151	333618F151	333618F151
3335151102	3335151102	3335151102	3336110776 pt	3336110776 pt	3336110776 pt	333618F156	333618F156	333618F156
3335151124	3335151124	3335151124	3336110776 pt	3336110776 pt	3336110776 pt	333618F161	333618F161	333618F161
3335151126	3335151126	3335151126	3336110836	3336110836	3336110836	333618F166	333618F166	333618F166
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3335151188	3335151188	3335151188	3336110YVW	3336110YVW	3336110YVW	333618F199	333618F199	333618F199
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3335151312	3335151312	3335151312	3336123116	3336123116	3336123116	333618WYVW	333618WYVW	333618WYVW pt
3335151314	3335151314	3335151314	3336123118	3336123118	3336123118	333618WYVW	333618WYVW	333618WYVW
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3335151596	3335151596	3335151596	333612744R	333612744R	333612744R	3339127131	3339127131	3339127131
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3335151YVW	3335151YVW	3335151YVW	3336127559	3336127559	3336127559	3339127YVW	3339127YVW	3339127YVW
3335153	3335153	3335153	3336127666	3336127666	3336127666	333912W	333912W	333912W
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3335153106	3335153106	3335153106	3336127773	3336127773	3336127773	333912WYVW	333912WYVW	333912WYVW
3335153111	3335153111	3335153111	3336127776	3336127776	3336127776	3339130	3339130	3339130
3335153116	3335153116	3335153116	3336127879	3336127879	3336127879	3339130113	3339130113	3339130113
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333921316	333921316	333921316	3339242 pt.	332618C pt.	332618B pt	3339921126	3339921126	3339921126
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3339228226	3339227226	3339227226	333924WYWY pt.	332618WYWY pt.	332618WYWY pt.			
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3339228257 pt.	3339227257 pt.	3339227251	3339911116	333991116	333991116	333992A141	333992A141	333992A141
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