OFFSETS IN DEFENSE TRADE AND THE U.S. SUBCONTRACTOR BASE

Special Report
Conducted Under Section 309 of the Defense Production Act of 1950, as Amended

Prepared by
U.S. Department of Commerce
Bureau of Industry and Security
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Executive Summary

- In December 2003, Congress passed the Defense Production Act Reauthorization of 2003 (Act).[1] Section 7 of the Act required the Department of Commerce to prepare a report to the Congress on offsets in defense trade, with a focus on the U.S. defense subcontractor base. The Act required the Department of Commerce to submit this report to Congress as part of the annual report the Department prepares under Section 309(a) of the Defense Production Act of 1950, as amended.[2] The legislation required the analyses outlined in paragraphs (A)–(C) of Section 7(a)(1):

  > (A) Detail the number of foreign contracts involving domestic contractors that use offsets, industrial participation agreements, or similar arrangements during the preceding 5-year period;
  >
  > (B) Calculate the aggregate, median, and mean values of the contracts and the offsets, industrial participation agreements, and similar arrangements during the preceding 5-year period;
  >
  > (C) Describe the impact of international or foreign sales of United States defense products and related offsets, industrial participation agreements, and similar arrangements on domestic prime contractors and, to the extent practicable, the first 3 tiers of domestic contractors and subcontractors during the preceding 5-year period in terms of domestic employment, including any job losses, on an annual basis.

- During the five-year period of 1998-2002, U.S. defense contractors reported exports of defense products and services, with related offset agreements, totaling over $28.6 billion. The mean value for the five-year period was more than $141 million for 203 export contracts. The median value of these sales was $35 million.

- The monetary value of offset agreements rose from 1998-2002. Offset agreements were valued at about $1.85 billion in 1998, and at $6.09 billion in 2002, an increase of 230 percent. For the five-year period, offset agreements totaled almost $22.8 billion, or 79.5 percent of the export contracts' value.

- The mean value of offset agreements from 1998-2002 was $112.3 million. The median value was $23.6 million.

[1] Pub.L. No. 108-195 (Dec. 19, 2003) (50 U.S.C. App. § 2099 Note)
[2] Codified at 50 U.S.C. App § 2099(a)

Subcontractors

- BIS surveyed 1,716 subcontractors and received 672 responses. Of these, 286 were first-tier subcontractors, and 386 were second- and third-tier subcontractors.

- Of the subcontractors who responded, 72.1 percent indicated they were not involved in offsets. Another 15.5 percent indicated that they were involved in fulfilling offsets. The remaining firms were uncertain.

- The subcontractors listed a variety of activities undertaken in connection with fulfilling a prime contractor's offset agreement, including subcontracting, purchases, co-production, technology transfer, and training.

- Fifty-one percent of responding subcontractors involved in offsets indicated positive experiences with offsets; 36 percent indicated that they had had negative experiences with offsets. Another 13 percent indicated that offsets had both positive and negative impacts.

- Subcontractors not directly or indirectly involved in offsets also indicated that there were positive and negative effects of offsets. Fourteen percent reported that they were negatively affected, and 8 percent benefited.

Employment

- Thirteen prime contractors responded to a survey requesting employment data.[3] Employment for these prime contractors rose from almost 403 thousand workers in 1998 to more than 423 thousand workers in 2002, a 5.1 percent change.

- For the subcontractors surveyed, employment went from almost 419 thousand in 1998 to over 508 thousand in 2002, a 21 percent increase. Employment peaked in 2000 at slightly over 547 thousand employees.

[3] Requiring this documentation was authorized under P.L. 108-195, Sec.7(a)(3)(B). BIS was given the authority to request documentation for all of the nearly 700 weapon systems and components contracts detailed in the BIS offset database for the entire five-year period covered by the study (1998-2002). However, after discussions with individual prime contractors, BIS decided that this would impose an unreasonable reporting burden on the companies. Moreover, in the eight month timeframe allowed to complete the assessment for Congress, it would have not been possible to collect, review and analyze data for all of the weapon systems. Therefore, documentation for 2002 was requested for two weapon systems for each company.

Factors Affecting Subcontractor Employment

- Subcontractors cited "cost of doing business" and "fair trade" as the two most important factors leading to decreases in employment between 1998 and 2002. "Offsets in defense trade" ranked fifth out of eight factors leading to drops in employment.

- Subcontractors indicated that "increased defense related contracts" and "increased non-defense related contracts" were the top two factors leading to increases in employment in the same period. Among nine categories, "offsets in defense trade" was the category deemed least responsible for growth in employment.

- Subcontractors that were involved in helping prime contractors fulfill offset agreements had an average gain in employment of 20 percent over the five-year period. Firms' positive or negative opinions of offsets did not correlate with the employment data.

- Subcontractors that were not involved in offsets had an overall employment drop of about 2.5 percent from 1998-2002. Firms with a positive view of offsets gained 2.7 percent; firms with a negative view recorded a 10.9 percent drop in employment.

- There was no discernible pattern for employment gains or losses by industry sector based on the company's positive or negative opinions on offsets.

1. Introduction

1.1 Background

Under Section 309 of the Defense Production Act of 1950, as amended (DPA), the U.S. Department of Commerce is required to prepare an annual report to Congress on the impact of offsets in defense trade on the defense preparedness, industrial competitiveness, employment, and trade of the United States.[4] The Bureau of Industry and Security (BIS) is delegated authority within the Department of Commerce to prepare this annual report.[5] For this report, BIS collects data on an annual basis from U.S. defense prime contractors involved in defense exports and related offsets to assess the positive and negative impacts of offsets. BIS has recently submitted its eighth such report to the Congress, covering offset agreements with foreign governments and offset transactions to fulfill offset obligations, for the years 1993 through 2002.

Section 7 of the Defense Production Act Reauthorization of 2003 (December 19, 2003) required an additional report to the Congress on offsets in defense trade, focusing on the U.S. defense subcontractor base.[6] This new report requires the following analysis:

> (A) Detail the number of foreign contracts involving domestic contractors that use offsets, industrial participation agreements, or similar arrangements during the preceding 5-year period;
>
> (B) Calculate the aggregate, median, and mean values of the contracts and the offsets, industrial participation agreements, and similar arrangements during the preceding 5-year period; and
>
> (C) Describe the impact of international or foreign sales of United States defense products and related offsets, industrial participation agreements, and similar arrangements on domestic prime contractors and, to the extent practicable, the first 3 tiers of domestic contractors and subcontractors during the preceding 5-year period in terms of domestic employment, including any job losses, on an annual basis.

The Secretary of Commerce was provided eight months from the enactment of the legislation to complete this analysis and submit the report to Congress. For the purposes of this report, offsets include industrial participation agreements and similar arrangements.

[4] Codified at 50 U.S.C. App. § 2099.
[5] See Department of Commerce Department Organizational Order 10-16, Sec. 4.01(g)
[6] Codified at 50 U.S.C. App. § 2099(a).

1.2 Methodology

Parts (A) and (B) of the legislative requirements were met using BIS data previously collected from prime contractors for the annual report to Congress on the impact of offsets in defense trade prepared pursuant to Section 309 of the DPA. The BIS offset database contains comprehensive information on offset agreements entered into and offset transactions fulfilled from 1993-2002. The latest five-year period of data available in the BIS offsets database and used extensively in this report is 1998-2002.[7]

It was also determined, however, that to more completely assess the impact of offsets, industrial participation agreements and similar arrangements on the annual employment of U.S. defense prime contractors and the first three tiers of domestic subcontractors, BIS's current database would not be sufficient. Therefore, BIS developed two new surveys to gather the information needed for the analysis; one focused on prime contractors and one focused on the three tiers of subcontractors.

The two draft surveys were field tested with a small number of prime and subcontractor firms to determine the suitability and effectiveness of the questions. The surveys were then forwarded to the Office of Management and Budget for approval under the Paperwork Reduction Act. Once approval was given, BIS started mailing surveys to prime contractors in February 2004. In the survey, the prime contractors were asked to provide a list of their top suppliers, along with contact information. This became the mailing list for the first tier of suppliers. Subsequently, the first tier subcontractors were asked to provide a list of their suppliers, and so on. Surveys were mailed out weekly through the end of April 2004.

To speed up the process of sending out surveys to multiple tiers of suppliers and tabulating the resultant response data, an electronic survey instrument was utilized. This internet-based, fully secure system, proved to be an effective way to disseminate surveys and retrieve needed information on the impact of offsets on company employment, as well as overall business perceptions and activities.

[7] Prime contractors were required to provide BIS with 2003 offset agreement and transaction data by June 15, 2004. Because a complete analysis of this 2003 data was not possible in the available time, BIS has not included that data in this special report.

Prime Contractor Survey

To begin the process, information was gathered from 13 U.S. defense prime contractors. The prime contractors were asked to provide their total employment data for the five-year period, 1998-2002. Total employment was further broken down by "U.S-based" vs. "foreign-based", "defense" vs. "non-defense", and "production workers" vs. "all other".

Next, the prime contractors were asked to submit copies of all reporting documentation already provided to foreign governments in fulfilling offset arrangements, industrial participation agreements, or similar arrangements in connection with two weapon systems specified for each company.[8] A diverse mix of weapon systems (land, sea, and air) was pre-selected by BIS.

BIS then asked the prime contractors to provide an electronic list of their top 1,000 (by value) subcontractors (both domestic and foreign) that contributed to the two specified weapon systems during the 1998-2002 period. For this list, the firms were asked to provide the name of the company, the defense system supported, the supplier's country, and the item or service supplied.

BIS chose at random 100 companies from each prime contractor's list, then contacted the prime contractors asking for detailed contact information for only these companies (contact name, phone number, and address). Again, in order to minimize the burden on the prime contractors, BIS required this level of information for only a sample of each prime contractor's suppliers. This information was used to mail survey letters to the first tier of the subcontractor base.

Subcontractor Survey

Due to the large number of companies to be surveyed at the subcontractor level, and in order to gather and process the data in a relatively short period, BIS developed a secure, internet-based survey instrument. In March 2004, BIS mailed a survey letter to 600 first-tier subcontractors indicating that they had been identified as a supplier by one of the prime contractors, outlining

[8] Requiring this documentation was authorized under P.L. 108-195, Sec.7(a)(3)(B). BIS was given the authority to request documentation for all of the nearly 700 weapon systems and components contracts detailed in the BIS offset database for the entire five-year period covered by the study (1998-2002). However, after discussions with individual prime contractors, BIS decided that this would impose an unreasonable reporting burden on the companies. Moreover, in the eight month timeframe allowed to complete the assessment for Congress, it would have not been possible to collect, review and analyze data for all of the weapon systems. Therefore, documentation for 2002 was requested for two weapon systems for each company.

the purpose of the analysis, and giving instructions on how to access the online survey. Duplicate company names were omitted, as were the prime contractors serving as subcontractors.

Subcontractors were first asked to describe their business activities. Then, the firms were asked to indicate whether or not they had ever been directly or indirectly involved in helping a prime contractor fulfill offset obligations. Those who responded affirmatively were instructed to provide more detailed information about the subcontractor's role in meeting the obligation; the possible involvement of a subcontractor's foreign location; a description of the type of activities performed (subcontracting, purchasing, training, etc.); and the subcontractor's overall impression (positive or negative) of being involved in the offset activities.

Those companies who indicated they had never been directly or indirectly involved in helping a prime contractor to fulfill offset obligations were asked if they had ever been affected as the result of an offset obligation entered into by a prime contractor.

Like the prime contractors, the first tier subcontractors were asked to provide detailed employment data for 1998-2002. They were then asked to attribute any marked increases or decreases in employment to a number of factors, including many unrelated to offsets, such as costs of doing business, difficulties hiring and retaining employees, outsourcing, fair trade issues, tax incentives, research and development, intellectual property rights, and mergers.

Finally, each subcontractor provided contact information for their top ten subcontractors (by value) that contributed to the defense contracts carried out for the specified prime contractor(s) during 1998-2002. BIS then used this information to mail survey letters to companies which comprise the second tier of the subcontractor base (minus duplicate company names). This same process was then completed for the third tier of subcontractors.

In total, 1,712 surveys were mailed to subcontractors in the three tiers. For the purposes of this analysis, second- and third-tier companies have been combined. Six-hundred eighty-five responses were received: 13 from prime contractors, 286 from first tier subcontractors, and 386 second and third tier subcontractors.

1.3 Offsets Defined

There are several basic terms used in discussions of offsets in defense trade. For more definitions and an illustrative example of an offset arrangement, please see the glossary and offset example in the appendix.

Offsets: Compensation practices required as a condition of purchase in either government-to-government or commercial sales of "defense articles" and/or "defense services" as defined by the Arms Export Control Act (22 U.S.C. § 2751, et seq.) and the International Traffic in Arms Regulations (22 C.F.R. §§ 120-130).

Direct Offsets: Contractual arrangements that involve defense articles and services referenced in the sales agreement for military exports. These transactions are directly related to the defense items or services exported by the defense firm and are usually in the form of co-production, subcontracting, technology transfer, training, production, licensed production, or financing activities.

Indirect Offsets: Contractual arrangements that involve defense goods and services unrelated to the exports referenced in the sales agreement. These transactions are not directly related to the defense items or services exported by the defense firm. The kinds of offsets that are considered "indirect" include purchases, investment, training, financing activities, marketing/exporting assistance, and technology transfer.

Co-production: Overseas production based upon government-to-government agreement that permits a foreign government or producer(s) to acquire the technical information to manufacture all or part of a U.S. origin defense article. Co-production includes government-to-government licensed production, but excludes licensed production based upon direct commercial arrangements by U.S. manufacturers.

Licensed Production: Overseas production of a U.S.-origin defense article based upon transfer of technical information under direct commercial arrangements between a U.S. manufacturer and a foreign government or producer.

Subcontractor Production: Overseas production of a part or component of a U.S.-origin defense article. The subcontract does not necessarily involve license of technical information

and is usually a direct commercial arrangement between the defense prime contractor and a foreign producer.

Overseas Investment: Investment arising from an offset agreement, often taking the form of capital dedicated to establishing or expanding a subsidiary or joint venture in the foreign country.

Technology Transfer: Transfer of technology that occurs as a result of an offset agreement and that may take the form of research and development conducted abroad, technical assistance provided to the subsidiary or joint venture of overseas investment, or other activities under direct commercial arrangement between the defense prime contractor and a foreign entity.

1.4 Outline of Report

Following this introduction chapter, the report is divided into three main chapters and Appendices.

Chapter 2 – Legislation Parts A & B: Defense Trade Data and Related Offsets, 1998-2002. This section includes an analysis of the aggregate, average, and median value of U.S. defense exports and related offset agreements.

Chapter 3 – Legislation Part C: Industry Survey Responses – Involvement in and Views of Offsets. This section includes analysis of the survey data received from prime contractors, first tier subcontractors, and second and third tier subcontractors. It includes a review of subcontractor involvement in offset activities, types of activities performed, and company perspectives on the impacts of offsets. It also includes a review of company perspectives on the offset impacts on subcontractors not involved in offset agreements.

Chapter 4 – Legislation Part C: Employment Impacts. This section analyzes prime contractor and subcontractor employment over the 1998-2002 period. It also analyzes employment impacts on subcontractors from offsets and other economic factors, as well as trends by SIC code and positive/negative perspectives on offsets.

Appendices:

Appendix A: Section 7 of the Defense Production Act Reauthorization of 2003

Appendix B: Section 309 of the Defense Production Act of 1950, as Amended

Appendix C: U.S. Department of Commerce Regulations Regarding Reporting of Offset Activity

Appendix D: Executive Order 12919

Appendix E: Defense Offsets Disclosure Act of 1999

Appendix F: Prime Contractor Survey

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Appendix H: Glossary and Offset Example

Appendix I: Partial List of U.S. Government Offset Reports

Appendix J: Office of Strategic Industries and Economic Security Publication List

2. Legislation Parts A & B: 1998-2002 Defense Trade Data and Related Offsets

Section 7 of the 2003 Defense Production Act Reauthorization requires BIS to conduct an examination of the employment impacts of offsets on domestic contractors and lower-tier subcontractors. This chapter focuses on two of the three requirements of the section:

> (A) Detail the number of foreign contracts involving domestic contractors that use offsets, industrial participation agreements, or similar arrangements during the preceding 5-year period;
>
> (B) Calculate the aggregate, median, and mean values of the contracts and the offsets, industrial participation agreements, and similar arrangements during the preceding 5-year period.

1.1 U.S. Defense Export Contracts Involving Offset Agreements

When U.S. defense prime contractors sell defense systems and services to foreign governments they are almost always required to develop, enter into and implement an offset (defined here to include industrial participation or similar agreements) with the foreign government or their representative. These agreements stipulate the overall percentage of direct and indirect offset compensation the U.S. firm must fulfill over the life of the agreement. U.S. contractors are often not allowed to bid on foreign defense contracts unless an offset package is simultaneously presented with the defense system proposal for review by the foreign government. While foreign defense ministries review the prime contractor's defense system bid proposals, the foreign economic and trade ministries generally review, approve and monitor contractor offset agreement proposals.

According to data collected by BIS for its annual report to Congress on offsets in defense trade, U.S. prime contractors reported a total of 203 individual defense contracts involving offset agreements for 1998-2002. Table 2-1 shows the distribution of contracts and the number of U.S. contractors involved by year.

Table 2-1: Number of Defense Contracts and Prime Contractors, by Year and Total, 1998-2002						
	1998	**1999**	**2000**	**2001**	**2002**	**Total**
Defense Contracts With Related Offset Agreements	44	45	38	35	41	203
Number of U.S. Prime Contractors	11	10	8	11	12	21

Source: U.S. Department of Commerce/BIS Offsets Database

2.2 Aggregate, Median, and Mean Values of the Contracts and Offset Agreements

During the five-year period of 1998-2002, U.S. defense contractors documented exports of defense products and services totaling over $28.6 billion (see Table 2-2). This number includes only exports which have a corresponding offset agreement. Exports rose from approximately $3.3 billion in 1998 to about $7.4 billion in 2002. This was a 124 percent gain for the period.

Table 2-2: Defense Export Contract Value by Year and Total, 1998-2002 (in $ millions)	
Year	**Export Value**
1998	$3,257.8
1999	$4,681.2
2000	$6,278.3
2001	$7,039.2
2002	$7,406.2
TOTAL	**$28,662.7**

Source: U.S. Department of Commerce/BIS Offsets Database

Further analysis of the export data provides a mean export value of U.S. defense systems (with accompanying offset agreements) for the five-year period of over $141 million for the 203 individual export contracts. The median value of these sales was $35 million (see Table 2-3).

Table 2-3: Defense Export Data – Total, Median, and Average Value, 1998-2002 (in $ millions)	
Total Value	$28,662.7
Median Value	$35.0
Average Value	$141.2

Source: U.S. Department of Commerce/BIS Offsets Database

2.3 Offset Agreement Data

During the five-year period of 1998-2002, U.S. defense contractors documented offset agreements related to defense contracts of almost $22.8 billion (see Table 2-4). This is 79.5 percent of the value of the corresponding defense exports for the same five-year period. The value of offset agreements rose from $1.85 billion in 1998 to $6.09 billion in 2002, an increase of 230 percent for the period.

Table 2-4: Total Value of Offset Agreements -1998-2002 (in $ millions)	
Year	**Offset Agreements Value**
1998	$1,846.6
1999	$3,851.4
2000	$5,498.1
2001	$5,497.3
2002	$6,094.8
TOTAL	**$22,788.2**

Source: U.S. Department of Commerce/BIS Offsets Database

Further analysis of the offset agreement data provides a mean offset value for the five-year period of over $112 million for the 203 offset agreements. The median value of these agreements was $23.6 million (see Table 2-5).

Table 2-5: Offset Agreement Data – Total, Median, and Average Value, 1998-2002 (in $ millions)	
Total Offset Value	$22,788.2
Median Value	$23.6
Average Value	$112.3

Source: U.S. Department of Commerce/BIS Offsets Database

Offset values, as a percentage of defense sales, vary by year. This percentage is primarily dependent on the offset policies and requirements of individual foreign governments purchasing defense systems. The more industrialized nations in Europe and elsewhere have traditionally demanded higher percentages of offsets as compensation, pushing offset percentages closer to 100 percent of the contract value. Less industrialized countries generally require offsets valued at 50-60 percent of the contract value; however, this percentage has been increasing steadily over time, as less industrialized nations improve their ability to absorb industrial offsets. Nations are also sharing information and experiences with offset agreements and offset transactions, further adding to foreign offset demands.

Table 2-6 summarizes offset activity as a percent of defense exports for 1998-2002. In 1998, offsets as a percent of exports was 56.7 percent. This rose to a high of 87.6 percent in 2000. In 2002, the percentage dropped to 82.3 percent.

Table 2-6: Export Contracts, Offset Agreements, and Offset Percentages			
	Export Contracts (in $ millions)	**Offsets Agreements (in $ millions)**	**Offsets as % of Exports**
1998	$3,257.8	$1,846.6	56.7%
1999	$4,681.2	$3,851.4	82.3%
2000	$6,278.3	$5,498.1	87.6%
2001	$7,039.2	$5,497.3	78.1%
2002	$7,406.2	$6,094.8	82.3%
Total	**$28,662.7**	**$22,788.2**	**79.5%**

Source: U.S. Department of Commerce/BIS Offsets Database

Offset agreements provide the defense contractor with a specified time period in which to fulfill its commitment to the foreign government or their representative. This period of time varies by

individual agreement and country (see Table 2-7). In 1998, firms had an average of 83 months (almost seven years) to fulfill their offset obligations. By 2002, this average rose to 85 months.

Table 2-7: Average Term of Offsets Agreements, in Months, 1998-2002

Year	Average Term - Months
1998	83
1999	76
2000	79
2001	82
2002	85

Source: U.S. Department of Commerce/BIS Offsets Database

2.4 Chapter Findings

U.S. Defense Export Contracts Involving Offset Agreements

- U.S. prime contractors reported a total of 203 individual defense export contracts involving offset agreements for 1998-2002, totaling over $28.6 billion.
- Exports rose from approximately $3.3 billion in 1998 to about $7.4 billion in 2002. This was a 124 percent gain for the period.
- The mean export value of U.S. defense systems for the five-year period was $141 million for the 203 export contracts. The median value of these sales was $35 million.

Offset Agreement Data

- Prime contractors documented offset agreements related to defense contracts of almost $22.8 billion. This is 79.5 percent of the value of the corresponding defense exports for the same five-year period.
- The value of offset agreements rose from $1.85 billion in 1998 to $6.09 billion in 2002, an increase of 230 percent for the period.
- The mean offset value for the five-year period was over $112 million for the 203 offset agreements. The median value of these agreements was $23.6 million.

- In 1998, offsets as a percent of exports was 56.7 percent. This rose to a high of 87.6 percent in 2000. In 2002, the percentage dropped to 82.3 percent.

3. Legislation Part C: Industry Survey Responses – Involvement and Views on Offsets

Section 7 of the 2003 Defense Production Act Reauthorization requires BIS to conduct an examination of the employment impacts of offsets on domestic contractors and lower-tier subcontractors. This chapter focuses on the third requirement of that section:

> (C) Describe the impact of international or foreign sales of United States defense products and related offsets, industrial participation agreements, and similar arrangements on domestic prime contractors and, to the extent practicable, the first 3 tiers of domestic contractors and subcontractors during the preceding 5-year period in terms of domestic employment, including any job losses, on an annual basis.

To obtain the needed information to answer this statutory requirement, BIS developed a multi-phase survey process to gather data from almost all U.S. defense prime contractors that had offset activity during 2002 and a representative sample of subcontractors to those prime contractors, at the first, second and third tiers of the industrial base.

As described in the report introduction, the 13 prime contractors each provided BIS with a listing of up to 1,000 of their top suppliers for a mix of weapon systems (land, sea, and air) selected by BIS. From that master list of subcontractors, BIS selected a sample and mailed a short survey to those subcontractors to gather information on their experiences with offsets and their employment levels for the 1998-2002 period.

BIS mailed a total of 1,729 surveys to prime contractors and their subcontractors, including 66 surveys mailed to foreign firms who were listed as first tier suppliers to prime contractors. A total of 685 responses (39.6 percent) were received by the June 1, 2004 submission deadline; this total includes 16 foreign responses (see Table 3-1).[9] The June 1 deadline date was used to provide BIS with sufficient time to tabulate and analyze the data received and draft a report for Congress by the August completion date.

[9] The 685 surveys received are a representative sample of the entire population of subcontractors and prime contractors supporting the U.S. defense industrial base.

Table 3-1: Industry Surveys Mailed, Received, and Response Rate		
Surveys Mailed	**Responses Received**	**Response Rate**
1,729	685	39.6%

Source: U.S. Dept. of Commerce/BIS Supplemental Offsets Survey

In terms of company responses, BIS received a representative mix from all segments of the industrial base. See Table 3-2 for the breakout of prime contractors, first tier, and second and third tier subcontractors.

Table 3-2: Composition of Survey Responses By Tier		
Prime Contractors	**First Tier Subcontractors**	**Second & Third Tier Subcontractors**
13	286	386

Source: U.S. Dept. of Commerce/BIS Supplemental Offsets Survey
Note: The first tier results include 16 responses from foreign firms.

The subcontractor responses also provided a mix from 41 different states. The top 10 states with survey respondents are listed in Table 3-3, with California and Connecticut having 152 and 62 respondents respectively.

Table 3-3: Subcontractor Responses by State	
State	**# of Respondents**
California	152
Connecticut	62
Michigan	47
New York	47
Pennsylvania	31
Ohio	31
Texas	29
Massachusetts	24
New Jersey	22
Arizona	21

Source: U.S. Dept. of Commerce/BIS Supplemental Offsets Survey

In terms of size of the survey respondents by employment, BIS received a wide range of responses to its survey, as detailed in Table 3-4. For the 13 prime contractors, the smallest firm had 1,170 employees in 2002, while the largest had 119,608 employees. The average employment for the prime contractors was approximately 24,903 per firm.

The first tier suppliers ranged from 3 employees up to 71,265, with an average of 888 employees per firm. The second and third tier subcontractors ranged in size from 1 employee to 127,000. The average size of second and third tier subcontractors was 659 employees.

Table 3-4: Total Employment and Employment Ranges, 2002, By Tier

	Total Employment, 2002	Employment Ranges, 2002		Average Employment, 2002
		Smallest	Largest	
Prime Contractors	423,355	1,170	119,608	24,903
First Tier	254,091	3	71,265	888
Second and Third Tiers	254,300	1	*127,000	659

Source: U.S. Dept. of Commerce/BIS Supplemental Offsets Survey
*One large supplier of basic materials was listed as a third tier supplier. The next largest company in the third tier had 25,010 employees.

From an industrial base standpoint, the survey responses provided a representative mix of subcontractors in the industrial base which support the needs of the defense prime contractors. Table 3-5 lists the 28 industry sectors (Standard Industrial Classification Code – SIC Code) represented in our survey responses (10 or more responses). The three digit code represents an industry group within the SIC system. Each respondent was allowed to provide one or more SIC codes in order to fully capture the firm's overall industrial capabilities.

The industry group most represented by the survey was Aircraft and Parts (SIC 372), with 188 respondents, followed by Miscellaneous Industrial and Commercial Machinery and Equipment (SIC 359), with 103 respondents, and Electronic Components and Accessories (SIC 367), with 76 respondents.

Table 3-5: Subcontractor Responses by Standard Industrial Classification Codes		
SIC Code	**Industry Group**	**Number of Respondents**
372	Aircraft and Parts	188
359	Miscellaneous Industrial and Commercial Machinery and Equip.	103
367	Electronic Components and Accessories	76
347	Coating, Engraving, and Allied Services	37
505	Metals and Minerals, Except Petroleum	35
349	Miscellaneous Fabricated Metal Products	32
336	Nonferrous Foundries (Castings)	32
332	Iron and Steel Foundries	32
346	Metal Forgings and Stampings	31
354	Metalworking Machinery and Equipment	30
381	Search and Navigation Equipment	26
335	Rolling, Drawing and Extruding of Nonferrous Metals	26
356	General Industrial Machinery and Equipment	24
508	Machinery, Equipment, and Supplies, Wholesale Trade	23
362	Electrical Industrial Apparatus	23
331	Steel Works, Blast Furnaces, and Rolling and Finishing Mills	21
506	Electrical Goods, Wholesale Trade	20
339	Miscellaneous Primary Metal Products	19
873	Research, Development, and Testing Services	18
366	Communications Equipment	18
345	Screw Machine Products, and Bolts, Nuts, Screws, etc.	18
344	Fabricated Structural Metal Products	17
376	Guided Missiles and Space Vehicles and Parts	16
382	Lab. Apparatus, Analytical, Optical, Measuring Instruments, etc.	15
308	Miscellaneous Plastic Products	14
369	Miscellaneous Electrical Machinery, Equipment and Supplies	11
334	Secondary Smelting and Refining of Nonferrous Metals	11
357	Computer and Office Equipment	10

Source: U.S. Department of Commerce/BIS Supplemental Offsets Survey

3.1 Involvement in Offsets

The remainder of this chapter will focus on subcontractor involvement in and experience with offsets. The subcontractors were asked to indicate whether or not they were directly or indirectly involved in helping a U.S. defense prime contractor fulfill its offset obligations. The results from this question are shown in Table 3-6.

Table 3-6: Involvement in Offsets, By Tier

	All Subcontractors		First Tier		Second & Third Tiers	
Involved	104	15.5%	70	24.5%	34	8.8%
Not Involved	485	72.1%	181	63.3%	304	78.8%
Uncertain	83	12.4%	35	12.2%	48	12.4%
Total	672	100%	286	100%	386	100%

Source: U.S. Dept. of Commerce/BIS Supplemental Offsets Survey

For all tiers of the subcontractor base, 104 companies, or 15.5 percent of all subcontractor respondents, indicated that they were involved in offsets. First tier respondents were more likely than second and third tier respondents to respond that they were involved in fulfilling offsets. This reflects the direct relationship between prime contractors and their first tier suppliers in meeting offset obligations.

The majority of subcontractors indicated they were not involved in offsets (485, or 72.1 percent of all subcontractors). Nearly 79 percent of the second and third tier respondents said they did not participate in offsets. Phone conversations with respondents during the survey process also confirmed that a major portion of the subcontractors at all tiers were not familiar with offsets in defense trade.

Another 83 subcontractors, or 12.4 percent of all responding companies, were uncertain about their involvement with offsets. In total, over 84 percent of the firms who responded to the survey were uncertain or not involved in offset activities.

Sixteen foreign subcontractors from ten countries (Australia, Belgium, Canada, France, Greece, Israel, Italy, Taiwan, Turkey, and the United Kingdom) responded to the BIS survey. Thirteen of the 16 firms stated that they were involved in offset activities. Three of the firms said that they were not involved in offsets. All of these foreign firms were first tier subcontractors.

3.2 Offset Activities Involving Foreign Subsidiaries

Seventeen subcontractors who were involved in fulfilling offsets indicated that they had offset activities that involved their foreign subsidiaries (newly created or established). Of these, twelve were first tier subcontractors and five were from the second or third tier. Each firm was asked to mention the country(ies) in which their subsidiaries were located. A breakdown of the foreign subsidiary data is listed in Table 3-7.

Table 3-7: Location of Foreign Subsidiaries Used to Fulfill Offsets

Country	Number of Times Mentioned
United Kingdom	8
Germany	3
Italy	2
The Netherlands	2
Australia	1
Belgium	1
Canada	1
France	1
Israel	1
Poland	1
Turkey	1
Total	**22**

Source: U.S. Dept. of Commerce/BIS Supplemental Offsets Survey

There were a total of 22 subsidiaries identified in 11 countries. The United Kingdom is the leading location of foreign subsidiaries involved in offsets; it was mentioned eight times. Germany is second, with companies identifying it as the location of three subsidiaries. The data also shows a strong preference for subsidiaries in European nations (18 of 22 mentions), countries that impose the highest levels of offset requirements.

The companies that responded that they were involved in fulfilling offsets were also asked to provide information on the types of activities being conducted with foreign and domestic subsidiaries in connection with a prime contractor's offset agreement. However, the question was widely misunderstood, leading to over-reporting in the foreign subsidiaries column. The data and BIS follow-up interviews with subcontractors suggest that the foreign subsidiaries heading was mistaken for "activities with, from, or to foreign companies" in countries to fulfill

offset obligations of U.S. prime contractors. Therefore, the numbers presented in Table 3-8 are the combined results for all activities to fulfill offset obligations.

Table 3-8: Activities Performed by Subcontractors in Connection with a Prime Contractors' Offset Agreements

Activities	# of Companies
Subcontracting	61
Purchases	25
Co-production	21
Other	20
Technology Transfer	19
Training	18
Licensed Production	17
Overseas Investment	2

Source: U.S. Dept. of Commerce/BIS Supplemental Offsets Survey

Subcontracting

Of the 61 companies indicating that "subcontracting" was one way in which they helped fulfill an offset agreement, 38 are from the first tier and 23 from tiers two and three of the industrial base. The responses were categorized by each company's Standard Industrial Classification (SIC) code. The top five SIC codes involved (by number of responses) in subcontracting as a means to fulfill offset agreements are listed in Table 3-9.

The majority of U.S. defense exports (by value) reported to BIS involve aircraft, and the top SIC code for subcontracting involves aircraft and parts. Other top subcontracted products included industrial machinery, fabricated metal products and electronic components and accessories.

Table 3-9: Companies Indicating "Subcontracting" as Means of Fulfilling Offset Agreements by SIC Code		
Rank	**SIC Code and Description**	**# of Resp.**
1	SIC 372 Aircraft and Parts	22
2	SIC 367 Electronic Components and Accessories	8
3	SIC 359 Miscellaneous Industrial and Commercial Machinery Equip.	7
4	SIC 335 Rolling, Drawing, and Extruding of Nonferrous Metals	6
5	SIC 349 Miscellaneous Fabricated Metal Products	5
	SIC 381 Search & Navigation Equipment	5
	SIC 505 Metals and Minerals, Except Petroleum	5

Source: U.S. Dept. of Commerce/BIS Supplemental Offsets Survey

Co-Production

A total of 21 companies indicated that they used "co-production" as one way of fulfilling offset agreements. Of these 21 companies, 12 were first tier subcontractors, and nine were second and third tier subcontractors. The seven most common SIC codes these companies indicated are listed in Table 3-10.

Table 3-10: Companies Indicating "Co-Production" as Means of Fulfilling Offset Agreements by SIC Code		
Rank	**SIC Code and Description**	**# of Resp.**
1	SIC 372 Aircraft and Parts	9
2	SIC 334 Secondary Smelting and Refining of Nonferrous Metal	3
	SIC 349 Miscellaneous Fabricated Metal Products	3
	SIC 367 Electronic Components and Accessories	3
3	SIC 359 Miscellaneous Industrial and Commercial Equipment	2
	SIC 381 Search & Navigation Equipment	2
4	SIC 376 Guided Missiles and Space Vehicles and Parts	1

Source: U.S. Dept. of Commerce/BIS Supplemental Offsets Survey

Similar to subcontracting, the most common type of co-production included aircraft and parts, fabricated metal products, and electronic components and accessories.

Licensed Production

Thirteen first tier companies and four second and third tier companies, or 17 companies in total, indicated that they used "licensed production" as a means of fulfilling offset agreements. The seven most common SIC codes for these companies are listed in Table 3-11.

Table 3-11: Companies Indicating "Licensed Production" as Means of Fulfilling Offset Agreements by SIC Code

Rank	SIC Code and Industry Group	# of Resp.
1	SIC 372 Aircraft and Parts	6
2	SIC 367 Electronic Components and Accessories	4
3	SIC 357 Computer and Office Equipment	3
4	SIC 348 Ordnance And Accessories, Except Vehicles And	2
	SIC 366 Communications Equipment	2
	SIC 381 Search & Navigation Equipment	2
5	SIC 373 Ship and Boat Building and Repairing	1

Source: U.S. Dept. of Commerce/BIS Supplemental Offsets Survey

Again, aircraft and parts was the top type of licensed product used to fulfill offset agreements. This was closely followed by electronic components and accessories, computer and office equipment, and search and navigation equipment.

Purchases

Twenty-five companies in total indicated that they used "purchases" as a way to fulfill offset agreements. Of these, 16 were first tier subcontractors and nine were second and third tier subcontractors. The six most common SIC codes for these companies are listed in Table 3-12.

Table 3-12: Companies Indicating "Purchases" as Means of Fulfilling Offset Agreements by SIC Code

Rank	SIC Code and Industry Group	# of Resp.
1	SIC 372 Aircraft and Parts	7
2	SIC 381 Search & Navigation Equipment	6
3	SIC 367 Electronic Components and Accessories	5
4	SIC 334 Secondary Smelting and Refining of Nonferrous Metal	3
5	SIC 362 Electrical Industrial Apparatus	2
	SIC 737 Computer Programming, Data Processing	2

Source: U.S. Dept. of Commerce/BIS Supplemental Offsets Survey

The type of firms that used purchases to fulfill offsets included aircraft and parts, search and navigation equipment, and electronic components and accessories, and secondary smelting and refining of nonferrous metal.

Technology Transfer

Nineteen companies indicated that they used "technology transfer" as one means of fulfilling offset agreements. Of these firms, 15 were first tier subcontractors and four were second and third tier subcontractors. The eight most common SIC codes for these companies are listed in Table 3-13.

Table 3-13: Companies Indicating "Technology Transfer" as Means of Fulfilling Offset Agreements by SIC Code

Rank	SIC Code and Industry Group	# of Resp.
1	SIC 372 Aircraft and Parts	8
2	SIC 381 Search & Navigation Equipment	6
3	SIC 367 Electronic Components and Accessories	4
4	SIC 334 Secondary Smelting and Refining of Nonferrous Metals	2
	SIC 349 Miscellaneous Fabricated Metal Products	2
	SIC 362 Electrical Industrial Apparatus	2
	SIC 737 Computer Programming, Data Processing and Other Computer Related Services	2
5	SIC 596 Non-store Retailers	1

Source: U.S. Dept. of Commerce/BIS Supplemental Offsets Survey

Firms that used technology transfer to fulfill offsets are similar in their activities to firms that used purchases to fulfill offsets. Aircraft and parts, search and navigation equipment, and electronic components and accessories were the top three types of firms involved with technology transfer.

Overseas Investment

Very few companies indicated that they used "overseas investment" as a means of fulfilling offset agreements - one first tier subcontractor and one second tier subcontractor. The SIC Codes for these companies are listed below, in Table 3-14.

Table 3-14: Companies Indicating "Overseas Investment" as Means of Fulfilling Offset Agreements by SIC Code		
Rank	**SIC Code and Industry Group**	**# of Resp.**
1	SIC 359 Miscellaneous Industrial And Commercial	1
2	SIC 366 Communications Equipment	1
3	SIC 367 Electronic Components and Accessories	1

Source: U.S. Dept. of Commerce/BIS Supplemental Offsets Survey

Other

There were 20 companies that indicated that they used "other" ways (e.g., research and development or establishing local repair capability) to fulfill offset agreements. Of these companies, nine were first tier subcontractors, and 11 were second and third tier subcontractors. The nine most common SIC codes for companies indicating "other" are listed in Table 3-15, with aircraft and parts and iron and steel foundries ranked one and two respectively.

Table 3-15: Companies Indicating "Other" as Means of Fulfilling Offset Agreements by SIC Code		
Rank	**SIC Code and Industry Group**	**# of Resp.**
1	SIC 372 Aircraft and Parts	6
2	SIC 332 Iron and Steel Foundries	3
3	SIC 305 Gaskets, Packing, And Sealing Devices And Rubber	2
	SIC 346 Metal Forgings and Stampings	2
	SIC 349 Miscellaneous Fabricated Metal Products	2
	SIC 359 Miscellaneous Industrial and Commercial Machinery and Equipment	2
	SIC 366 Communications Equipment	2
	SIC 376 Guided Missiles and Space Vehicles and Parts	2
4	SIC 239 Miscellaneous Fabricated Textile Products	1

Source: U.S. Dept. of Commerce/BIS Supplemental Offsets Survey

Training

Eighteen companies indicated that they used "training" programs to meet an offset requirement. Fifteen of these companies were first tier subcontractors, and the remainder were in the second and third tiers. Table 3-16 highlights the responses, with aircraft and parts and search and navigation equipment firms ranked one and two respectively.

Table 3-16: Companies Indicating "Training" as Means of Fulfilling Offset Agreements by SIC Code

Rank	SIC Code and Description	# of Resp.
1	SIC 372 Aircraft and Parts	8
2	SIC 381 Search & Navigation Equipment	6
3	SIC 367 Electronic Components and Accessories	3
4	SIC 348 Ordnance And Accessories, Except Vehicles And	2
	SIC 349 Miscellaneous Fabricated Metal Products	2
	SIC 366 Communications Equipment	2
5	SIC 871 Engineering, Architectural, and Surveying	1

Source: U.S. Dept. of Commerce/BIS Supplemental Offsets Survey

3.3 Positive or Negative Experiences with Offsets

The survey asked companies which had indicated that they were involved in offsets whether they benefited from, or were negatively affected by, offset agreements. Respondents were allowed to select both answers, if applicable. As shown in Table 3-17, a slight majority of firms (53 of 104) indicated that offsets had had a positive impact on their operations; 28 cited negative impacts. Another nine respondents indicated that offsets had both positive and negative impacts, and 14 of 104 firms did not respond.

Table 3-17: Impact of Offsets on Subcontractors Involved in Offsets

Positive	Negative	Positive & Negative	No Answer
53 (51.0%)	28 (26.9%)	9 (8.7%)	14 (13.5%)

Source: U.S. Dept. of Commerce/BIS Supplemental Offsets Survey

3.4 Non-Involvement in Offset Activities

The 485 subcontractors who indicated they were not directly or indirectly involved in offsets were asked whether they benefited from or were negatively affected by offset agreements entered into by prime contractors that they supply. The majority of firms (374) did not respond; 40 of those who were not involved in offset activities said that their firm had benefited from offsets in defense trade, and 71 indicated that they had been negatively affected by defense prime contractors' offset agreements.

The 83 companies which indicated in survey question number one (Section 3.1) that they were uncertain whether or not they had been involved in offsets responded to the same questions regarding negative or positive impacts from prime contract offset agreements; 19 indicated that they were positively affected by offsets, and 14 said they were negatively affected. Fifty did not respond. Table 3-18 highlights these results.

Table 3-18: Comments on Prime Contractor Offset Agreements

	Companies that were Not Directly Involved	Companies that were Uncertain of Involvement
Positive Views	40/485 = 8.3%	19/83 = 22.9%
Negative Views	71/485 = 14.6%	14/83 = 16.9%
No response	374/485= 77.1%	50/83 = 60.2%

Source: U.S. Dept. of Commerce/BIS Supplemental Offsets Survey

3.5 Chapter Findings

- For all tiers of the subcontractor base, 104 companies, or 15.5 percent of all subcontractor respondents, indicated that they were involved in offsets. First tier respondents were more likely than second and third tier respondents to respond that they were involved in offsets.

- The majority of subcontractors indicated that they were not involved in offsets (485, or 72.1 percent of all subcontractors). The second and third tier respondents were most likely to indicate they were not involved in offsets; 78.8 percent of these firms said they didn't participate in offsets.

- Sixteen foreign subcontractors from ten countries responded to the BIS survey. Thirteen of the 16 firms stated that they were involved in offset activities.

Involvement in Offsets

- Subcontracting – Sixty-one companies (38 first tier, 23 second and third tier) indicated that subcontracting was one way in which they helped fulfill an offset agreement. The top SIC code for subcontracting involves aircraft and parts. Other top subcontracted products included industrial machinery, fabricated metal products, and electronic components and accessories.

- Co-Production - A total of 21 companies indicated that they used co-production as one way of fulfilling offset agreements. Of these 21 companies, 12 were first tier subcontractors, and nine were second and third tier subcontractors. Similar to subcontracting, the most popular type of co-production included aircraft and parts, fabricated metal products, and electronic components and accessories.

- Licensed Production - Thirteen first tier companies and four second and third tier companies, or 17 companies in total, indicated that they used licensed production as a means of fulfilling offset agreements. Again, aircraft and parts was the top type of licensed product. This was closely followed by electronic components and accessories, computer and office equipment, and search and navigation equipment.

- Purchases - Twenty-five companies (16 first tier, 9 second and third tier) in total indicated that they used purchases as a way to fulfill offset agreements. The types of firms that used purchases to fulfill offsets included aircraft and parts, search and navigation equipment, and electronic components and accessories, and secondary smelting and refining of nonferrous metal.

- Technology Transfer - Of the 19 companies who used this method, 15 were first tier subcontractors and four were second and third tier subcontractors. Aircraft and parts, search and navigation equipment, and electronic components and accessories were the top three types of firms involved.

- Overseas Investment - Very few companies indicated that they used overseas investment as a means of fulfilling offset agreements - one first tier subcontractor and one second tier subcontractor.

- Training - Eighteen companies (15 first tier, 3 second and third tier) indicated that they used training programs to meet an offset requirement. Aircraft and parts and search and navigation equipment firms ranked one and two respectively as the most common industries of companies using training as a means to fulfill offsets.

- Other - There were 20 companies (9 first tier, 3 second & third tier) that indicated that they used "other" ways (e.g., research and development, or establishing local repair capability) to fulfill offset agreements. Aircraft and parts and iron and steel foundries ranked one and two respectively as the industries who most often used other means to fulfill offsets.

Positive or Negative Experiences with Offsets

- A slight majority of firms (53 of 104) indicated that they had positive experiences with offsets; 37 described negative experiences. Another nine respondents indicated that offsets had both positive and negative impacts.

Offset Activity Involving Foreign Subsidiaries

- Seventeen subcontractors who were involved in fulfilling offsets indicated that they had offset activities that involved their foreign subsidiaries (newly created or established).

- There were a total of 22 subsidiaries identified in 11 countries. The United Kingdom was the leading location of foreign subsidiaries involved in offsets, with eight mentions.

Non-Involvement in Offset Activities

- The 485 subcontractors who were not involved in offsets were asked whether they benefited from or were negatively affected by offset agreements. The majority of firms (374) did not respond; 40 of the firms said that their firm had benefited from offsets in defense trade, and 71 firms indicated that they had been negatively affected.

- The 83 companies who indicated that they were uncertain whether or not they had been involved in offsets responded to the same question; 19 indicated that they were positively affected by offsets, and 14 said they were negatively affected. Fifty did not respond.

4. Legislation Part C: Employment Impacts

Section 7 of the 2003 Defense Production Act Reauthorization requires BIS to conduct an examination of the employment impacts of offsets on domestic contractors and lower-tier subcontractors. This chapter presents information on the employment effects of offsets in defense trade as set forth in the third requirement of Section 7:

> (C) Describe the impact of international or foreign sales of United States defense products and related offsets, industrial participation agreements, and similar arrangements on domestic prime contractors and, to the extent practicable, the first 3 tiers of domestic contractors and subcontractors during the preceding 5-year period in terms of domestic employment, including any job losses, on an annual basis.

1.1 Prime Contractors

The 13 U.S. prime contractors that responded to the BIS survey were asked to provide their total firm employment for the period 1998-2002.[10] The aggregate figures they provided, highlighted in Table 4-1, were then broken down by "U.S. based" and "foreign-based" employment; "U.S.-defense" and "U.S. -non-defense" workers; and "U.S. -production" and "U.S. -all other" workers.

Total prime contractor employment rose from almost 403 thousand workers in 1998 to more than 423 thousand workers in 2002, a 5.1 percent increase. The average employment for the 13 prime contractors was almost 33 thousand in 2002. Broken down further, the average total employment in 2002 for the top 7 largest prime contractors was nearly 54 thousand workers, while average total employment for the bottom 6 out of 13 prime contractors was almost 8 thousand workers.

The distribution of U.S.-based and foreign-based prime contractor employment shifted slightly over the 5-year period. As a percentage of total prime contractor employment, U.S. employment declined from almost 93.1 percent of the workforce in 1998 to 91.3 percent of the workforce in

[10] Requiring this documentation was authorized under P.L. 108-195, Sec.7(a)(3)(B). BIS was given the authority to request documentation for all of the nearly 700 weapon systems and components contracts detailed in the BIS offset database for the entire five-year period covered by the study (1998-2002). However, after discussions with individual prime contractors, BIS decided that this would impose an unreasonable reporting burden on the companies. Moreover, in the eight month timeframe allowed to complete the assessment for Congress, it would have not been possible to collect, review and analyze data for all of the weapon systems. Therefore, documentation for 2002 was requested for two weapon systems for each company.

2002. Foreign-based prime contractor employment rose from more than 27 thousand, 6.9 percent of workers, in 1998 to more than 36 thousand, 8.7 percent of workers, in 2002.

The proportion of U.S.-defense to U.S.-non-defense workers for the 13 prime contractors changed over the 1998 to 2002 period; while the number of defense workers rose from over 177 thousand to 187 thousand workers, their percentage of the total work force fell, dropping from 79 percent defense workers in 1998 to 74 percent in 2002. The number of U.S.-non-defense workers rose from almost 47 thousand workers in 1998, or 21 percent of the workforce, to over 65 thousand workers, or 26 percent of the workforce, in 2002.

The proportion of U.S.-production to U.S.-all other workers varied little over the 5-year period. In 1998, production workers accounted for 77 percent of the total workforce,, or nearly 184 thousand workers, rising to 78 percent of the total workforce, or nearly 209 thousand workers, in 2002. The number of all other workers changed from over 54 thousand workers, or 23 percent of the workforce, to almost 59 thousand workers, or 22 percent.

Table 4-1: Prime Contractor Employment, 1998-2002 Total and Percent By Categories										
	1998		1999		2000		2001		2002	
Total	**402,889**		**418,053**		**419,123**		**418,410**		**423,355**	
U.S.-Based	374,800	93.1%	389,082	93.2%	388,383	92.7%	385,245	92.1%	386,628	91.3%
Foreign-Based	27,649	6.9%	28,531	6.8%	30,740	7.3%	33,165	7.9%	36,636	8.7%
U.S.-Defense	177,501	79.1%	180,388	79.1%	168,920	71.3%	175,264	71.2%	187,370	74.1%
U.S.-Non-Defense	46,877	20.9%	47,657	20.9%	68,058	28.7%	70,890	28.8%	65,489	25.9%
U.S.-Production	183,756	77.2%	185,184	77.0%	186,533	75.0%	200,795	76.6%	208,969	78.1%
U.S.-All Others	54,252	22.8%	55,216	23.0%	62,013	25.0%	61,347	23.4%	58,577	21.9%

Source: U.S. Dept. of Commerce/BIS Supplemental Offsets Survey

Note: Not all respondents provided detailed breakouts for U.S.-Based Vs. Foreign-Based, U.S. Defense vs. U.S. Non-Defense, and U.S.-Production and U.S. All Others employment.

4.2 Subcontractors – All Tiers

Subcontractors responding to the survey were also asked to provide their employment for the 1998-2002 period as well as employment breakdowns by "U.S.-based" and "foreign-based", "U.S. defense" and "U.S. non-defense", and "U.S. production" and "U.S. all other".

Overall, subcontractor employment grew from almost 419 thousand in 1998 to over 508 thousand in 2002, a 21 percent increase over the five-year period. Employment peaked in 2000 at slightly over 547 thousand workers.

The subcontractors' U.S.-based employment during the period rose, from almost 188 thousand to more than 195 thousand, a 4.2 percent increase. Foreign-based employment during 1998-2002 also increased from almost 100 thousand to over 129 thousand, a 29.7 percent increase. As percentages of the total workforce, U.S.-based employment decreased, from over 65 percent of the total workforce in 1998 to slightly more than 60 percent of the total workforce in 2002; foreign employment increased, from almost 35 percent of the workforce in 1998 to almost 40 percent of the workforce in 2002.

The number of U.S. defense workers employed by subcontractors increased from almost 26 thousand in 1998 to over 30 thousand in 2002, an increase of 18.5 percent. The number of U.S.-non-defense workers also increased, from over 63 thousand in 1998 to over 74 thousand in 2002, a 17.4 percent increase. The ratio of U.S.-defense to U.S.-non-defense workers stayed relatively constant over this period.

Following other trends, the numbers of both U.S.-production and U.S.-all other employment increased from 1998 to 2002. In 1998, there were almost 66 thousand U.S.-production workers and about 32 thousand U.S.-all other workers; in 2002, there were over 77 thousand U.S.-production workers and almost 53 thousand U.S.-non-defense workers. However, the percentage of workers in U.S.-production fell, from almost 68 percent of workers to about 60 percent of workers. In comparison, the number of U.S.-all other workers rose, from over 32 percent of workers to almost 41 percent of workers.

Table 4-2: First, Second, and Third Tier Subcontractor Employment, 1998-2002 Total and Percent By Categories										
	1998		**1999**		**2000**		**2001**		**2002**	
Total	**418,751**		**443,130**		**547,103**		**529,728**		**508,391**	
U.S.-Based	187,596	65.3%	189,874	67.9%	211,803	62.3%	211,030	61.8%	195,430	60.2%
Foreign-Based	99,727	34.7%	89,854	32.1%	128,247	37.7%	130,246	38.2%	129,379	39.8%
U.S.-Defense	25,617	28.8%	24,835	28.5%	27,176	25.0%	29,909	27.2%	30,354	29.0%
U.S.-Non-Defense	63,392	71.2%	62,320	71.5%	81,417	75.0%	80,062	72.8%	74,429	71.0%
U.S.-Production	65,813	67.6%	65,260	64.2%	77,095	61.6%	79,760	62.0%	77,232	59.5%
U.S.-All Others	31,610	32.4%	36,314	35.8%	48,592	38.4%	48,808	38.0%	52,643	40.5%

Source: U.S. Dept. of Commerce/BIS Supplemental Offsets Survey

Note: Not all respondents provided detailed breakouts for U.S.-Based Vs. Foreign-Based, U.S. Defense vs. U.S. Non-Defense, and U.S.-Production and U.S. All Others employment.

4.3 Subcontractors – First Tier

Analyzing the subcontractor data further, the number of first tier subcontracting workers rose over the period, from about 182 thousand in 1998 to slightly over 254 thousand in 2002 (see Table 4-3). This is almost a 40 percent increase, which is higher than the increase shown by all tiers of subcontractors.

The number of first-tier U.S.-based and foreign-based workers increased during this time period. In 1998, there were over 110 thousand U.S.-based workers and in 2002, there were almost 122 thousand, a 10.2 percent increase; in 1998 there were more than 79 thousand foreign-based workers and in 2002, there were about 109 thousand. During this time, the ratio of U.S.-based workers fell, from over 58 percent in 1998 to about 53 percent in 2002. Conversely, the percentage of foreign-based workers rose, from about 42 percent in 1998 to over 47 percent in 2002.

U.S.-defense employment rose, from almost 17 thousand workers in 1998 to over 19 thousand workers in 2002, a 16.2 percent increase. U.S.-non-defense employment also rose, from almost 41 thousand workers in 1998 to over 53 thousand workers in 2002, a 31.2 percent increase. Proportionally, U.S.-non-defense employment rose slightly, from 71 percent of the workforce in 1998 to over 73 percent of the workforce in 2002. U.S.-defense employment fell slightly in proportion, from about 29 percent of the workforce in 1998 to about 27 percent of the workforce in 2002.

U.S.-production and U.S.-all other employment numbers both rose, from about 45 thousand and over 20 thousand respectively in 1998, to almost 53 thousand and over 32 thousand in 2002. The ratio of U.S.-production workers to U.S.-all other workers fell during this period, from almost 69 percent in 1998 to 62 percent in 2002. The ratio of U.S.-all other workers rose, from over 31 percent in 1998 to 38 percent in 2002.

Table 4-3: First Tier Subcontractor Employment, 1998-2002 Total and Percent By Categories										
	1998		**1999**		**2000**		**2001**		**2002**	
Total	**182,040**		**203,784**		**267,785**		**268,256**		**254,091**	
U.S.-Based	110,312	58.2%	113,467	61.8%	133,939	55.2%	133,929	54.9%	121,563	52.8%
Foreign-Based	79,211	41.8%	70,023	38.2%	108,736	44.8%	109,836	45.1%	108,817	47.2%
U.S.-Defense	16,653	29.1%	15,672	28.2%	17,277	22.8%	19,445	25.2%	19,353	26.6%
U.S.-Non-Defense	40,668	70.9%	39,821	71.8%	58,411	77.2%	57,738	74.8%	53,345	73.4%
U.S.-Production	44,500	68.6%	43,608	63.6%	53,004	59.9%	56,412	61.8%	52,759	62.0%
U.S.-All Others	20,369	31.4%	24,944	36.4%	35,427	40.1%	34,902	38.2%	32,307	38.0%

Source: U.S. Dept. of Commerce/BIS Supplemental Offsets Survey

Note: Not all respondents provided detailed breakouts for U.S.-Based Vs. Foreign-Based, U.S. Defense vs. U.S. Non-Defense, and U.S.-Production and U.S. All Others employment.

4.4 Subcontractors – Second and Third Tiers

The number of total second and third tier subcontracting workers increased 7.4 percent, from almost 237 thousand in 1998 to over 254 thousand in 2002. The increase is well below the 40 percent increase for first tier subcontractors over the same period.

The number of U.S.-based workers decreased, from over 77 thousand in 1998 to almost 74 thousand in 2002, a 4.4 percent drop. The number of foreign-based workers rose very slightly, from over 20 thousand in 1998 to almost 21 thousand in 2002. The proportion of U.S.-based workers to foreign-based workers also declined slightly during this time. U.S.-based workers were 79 percent of the workforce in 1998 and slightly over 78 percent of the workforce in 2002; foreign-based workers were 21 percent of the workforce in 1998 and almost 22 percent of the workforce in 2002.

The number of U.S.-defense workers increased, from about 9 thousand in 1998 to 11 thousand in 2002, a 22.7 percent increase. The number of U.S.-non-defense workers fell, from almost 23 thousand in 1998 to just over 21 thousand in 2002. The proportion of U.S.-defense workers compared to U.S.-non-defense workers rose, from over 28 percent of the workforce in 1998 to over 34 percent of the workforce in 2002. The percentage of U.S.-non-defense workers fell, from about 72 percent in 1998 to almost 66 percent in 2002.

The numbers of U.S.-production and U.S.-all other workers both rose. There were over 21 thousand U.S.-production workers and over 11 thousand U.S.-all other workers in 1998; there were over 24 thousand U.S. production and over 20 thousand U.S. all other workers in 2002, increases of 14.8 percent and 80.9 percent respectively. The ratio of U.S.-production workers to U.S.-all other workers was 65 percent to 35 percent respectively in 1998; it changed to about 55 percent and 45 percent respectively in 2002.

Table 4-4: Second and Third Tier Subcontractor Employment, 1998-2002 Total and Percent By Categories										
	1998		**1999**		**2000**		**2001**		**2002**	
Total	**236,711**		**239,346**		**279,318**		**261,472**		**254,300**	
U.S.-Based	77,284	79.0%	76,407	79.4%	77,864	80.0%	77,101	79.1%	73,867	78.2%
Foreign-Based	20,516	21.0%	19,831	20.6%	19,511	20.0%	20,410	20.9%	20,562	21.8%
U.S.-Defense	8,964	28.3%	9,163	28.9%	9,899	30.1%	10,464	31.9%	11,001	34.3%
U.S.-Non-Defense	22,724	71.7%	22,499	71.1%	23,006	69.9%	22,324	68.1%	21,084	65.7%
U.S.-Production	21,313	65.5%	21,652	65.6%	24,901	65.4%	23,348	62.7%	24,473	54.6%
U.S.-All Others	11,241	34.5%	11,370	34.4%	13,165	34.6%	13,906	37.3%	20,336	45.4%

Source: U.S. Dept. of Commerce/BIS Supplemental Offsets Survey

Note: Not all respondents provided detailed breakouts for U.S.-Based Vs. Foreign-Based, U.S. Defense vs. U.S. Non-Defense, and U.S.-Production and U.S. All Others employment.

4.5 Factors Affecting Employment

In order to determine the subcontractors' perception of the influence of offsets in defense trade on employment, respondents were asked to rank a variety of factors as they related to increases or decreases in U.S. employment between 1998 and 2002. The companies were asked to rank the factors on a scale of 1 to 5, where 1 represents the least impact on employment and 5 represents the greatest impact. Those that indicated that the factor did not apply have been removed from the calculations, as have those who did not rate the factor in question, leaving approximately 435 first, second, and third tier subcontractors that ranked most or all of the factors listed.

Table 4-5 highlights the reasons for decreases in employment and the average ratings for these factors provided by the survey respondents.

Table 4-5: Subcontractors' Reasons for Decreases in U.S. Employment Between 1998 and 2002

Rank	Reasons for Decreases in Employment	Average Numeric Response (1 - 5 scale)		
		All Subs	First Tier	Second & Third Tier
1	Cost of Doing Business	3.24	3.09	3.35
2	Fair Trade	2.64	2.50	2.73
3	Difficulties Hiring and Retaining	2.34	2.91	2.40
4	Foreign Outsourcing	2.32	2.40	2.27
5	Offsets in Defense Trade	2.23	2.47	2.02
6	Transferred Production Overseas	1.99	2.48	2.25
7	Domestic Outsourcing	1.93	2.10	1.78
8	Intellectual Property	1.49	1.57	1.43

Source: U.S. Dept. of Commerce/BIS Supplemental Offsets Survey

The two reasons with the highest average ranking for a drop in employment were the "cost of doing business" and "fair trade." Both factors were reported to have a greater impact on the second and third tier subcontractors than on the first tier.

"Offsets in defense trade" ranked fifth for all subcontractors and were judged to have more of an impact on employment decreases for first tier companies (ranked fourth) than the lower tier subcontractors (ranked sixth).

Table 4-6: Subcontractors' Reasons for Increases in U.S. Employment Between 1998 and 2002				
		Average Numeric Response (1 -5 scale)		
Rank	Reason for Increases in Employment	All Subs	First Tier	Second & Third Tier
1	New Defense Contracts	3.10	3.31	2.90
2	New Non-Defense Contracts	2.83	2.66	2.94
3	Merger and Acquisition	2.09	2.23	1.97
4	Added R&D	2.05	2.13	1.94
5	Non-Production Employees	2.01	2.01	1.97
6	Bringing In-House	1.89	1.89	1.87
7	Anticipated Future Retirement	1.71	1.66	1.74
8	Tax Incentives	1.68	1.61	1.71
9	Offsets in Defense Trade	1.44	1.39	1.47

Source: U.S. Dept. of Commerce/BIS Supplemental Offsets Survey

Companies were also asked to rank the extent to which they attributed an increase in U.S employment to various factors on a scale of 1 to 5, where 1 represents the least impact on employment and 5 representing the most impact. Table 4-6 shows the potential reasons for increases in employment and the ratings provided by the survey respondents. Those that indicated that any given factor did not apply have been removed from the calculations, as have those who did not rate a particular factor, leaving approximately 370 first, second, and third tier subcontractors that ranked most or all of the factors listed.

The top two reasons given by companies for an increase in employment in the period between 1998 and 2002 were "increased defense related contracts" and "increased non-defense related contracts." First tier companies rated new defense work more highly than did the lower tier subcontractors; in contrast, the lower tier companies ranked new non-defense work slightly higher than did the first tier. Among these nine categories, "offsets in defense trade" was the category deemed least responsible for growth in U.S. subcontractor employment.

4.6 Employment Impact of Involvement/Non-Involvement in Offsets

In order to further examine the impact of offsets on subcontractor employment, we compared survey responses for firms that commented positively and negatively on offsets to determine if there were any trends. The responses in the tables below include only the 199 subcontractors who provided employment data for both 1998 and 2002 and who indicated whether or not they were involved in offsets and also commented positively or negatively on offsets.

Table 4-7 highlights the employment changes for subcontractors that were directly or indirectly involved in fulfilling offsets with the prime contractors. These companies provided either negative or positive responses on the impact of offsets. The data show that for these firms, their opinion of offsets did not correlate with their employment between 1998 and 2002; all of those involved in offsets reported on average a 20 percent positive change in employment. As noted earlier, however, companies rated offsets as having little or no impact on employment growth (ninth out of nine reasons for employment increases).

Table 4-7: Employment Changes for Companies Involved in Offsets

	# of Companies	Employees 1998	Employees 2002	Percent Change
Involved in Offsets with Positive Comment	57	58,246	69,579	19.5%
Involved in Offsets with Negative Comment	36	40,628	49,110	20.9%
Totals for all Companies Involved in Offsets	93	98,874	118,689	20.0%

Source: U.S. Dept. of Commerce/BIS Supplemental Offsets Survey

The employment data for subcontractors not involved in fulfilling offsets with a prime contractor is displayed in Table 4-8. The 36 companies who were not involved in but had positive opinions of offsets experienced a 2.7 percent increase in employment between 1998 and 2002. Those with negative opinions of offsets recorded a 10.9 percent drop in employment for the period.

Overall, employment fell almost 2.9 percent for those companies not involved in offsets, in contrast to the growth experienced by those subcontractors who were involved in offsets.

Table 4-8: Employment Changes for Companies Not Involved in Offsets

	# of Companies	Employees 1998	Employees 2002	Percent Change
Not Involved in Offsets with Positive Comment	36	20,781	21,337	2.7%
Not Involved in Offsets with Negative Comment	70	14,185	12,633	-10.9%
Totals for all Companies Not Involved in Offsets	106	34,966	33,970	-2.9%

Source: U.S. Dept. of Commerce/BIS Supplemental Offsets Survey

Organizing the data differently, Table 4-9 provides employment data for subcontractors with a favorable opinion about offsets, whether they were actually involved or not involved in fulfilling offsets. The data show that subcontractors with favorable opinions about offsets experienced positive employment growth between 1998 and 2002. Those involved in offsets experienced significantly higher growth than those that were not.

Table 4-9: Employment Changes for Companies Expressing Positive Comments

	# of Companies	Employees 1998	Employees 2002	Percent Change
Involved in Offsets with Positive Comment	57	58,246	69,579	19.5%
Not Involved in Offsets with Positive Comment	36	20,781	21,337	2.7%
Totals for all Companies with Positive Comment	93	79,027	90,916	15.0%

Source: U.S. Dept. of Commerce/BIS Supplemental Offsets Survey

Table 4-10 shows employment data for the subcontractors that expressed a negative opinion about offsets, whether they were actually involved or not involved in fulfilling offsets. As a group, those with negative comments showed employment growth of 12.6 percent over the period. However, those that were not involved in offsets saw employment fall almost 11 percent over the period.

Table 4-10: Employment Changes for Companies Expressing Negative Comments

	# of Companies	Employees 1998	Employees 2002	Percent Change
Involved in Offsets with Negative Comment	36	40,628	49,110	20.9%
Not Involved in Offsets with Negative Comment	70	14,185	12,633	-10.9%
Totals for all Companies with Negative Comment	106	54,813	61,743	12.6%

Source: U.S. Dept. of Commerce/BIS Supplemental Offsets Survey

4.7 Employment Impact by SIC Code

In a further effort to examine the impact of offsets on subcontractors' employment levels, we divided the firms that responded positively or negatively regarding offsets by SIC code.

For firms that responded positively about offsets in defense trade (see Table 4-11), the SIC code with the largest number of respondents was SIC 372 (Aircraft and Parts) with 55, SIC 367 (Electronic Components and Accessories) with 24, and SIC 359 (Miscellaneous Industrial and Commercial Machinery and Equipment) with 14.

Table 4-11: SIC Codes for Companies Expressing Positive Comments

SIC Code	Code Description	# of Respondents
221	Broadwoven Fabric Mills, Cotton	2
239	Miscellaneous Fabricated Textile Products	1
289	Miscellaneous Chemical Products	1
305	Gaskets, Packing, And Sealing Devices And Rubber	3
308	Miscellaneous Plastic Products	2
311	Leather Tanning And Finishing	2
322	Glass And Glassware, Pressed Or Blown	6
326	Pottery And Related Products	3
331	Steel Works, Blast Furnaces, and Rolling and Finishing Mills	3
332	Iron and Steel Foundries	1
334	Secondary Smelting and Refining of Nonferrous Metals	4
335	Rolling, Drawing and Extruding of Nonferrous Metals	7
336	Nonferrous Foundries (Castings)	4
342	Cutlery, Handtools, And General Hardware	2
344	Fabricated Structural Metal Products	7
345	Screw Machine Products, and Bolts, Nuts, Screws, etc.	1
346	Metal Forgings and Stampings	6
347	Coating, Engraving, and Allied Services	9
348	Ordnance And Accessories, Except Vehicles And Guided Missiles	3
349	Miscellaneous Fabricated Metal Products	9
351	Engines And Turbines	2
353	Construction, Mining, And Materials Handling	1
354	Metalworking Machinery and Equipment	7
356	General Industrial Machinery and Equipment	4
357	Computer and Office Equipment	6
359	Miscellaneous Industrial and Commercial Machinery and Equip.	14
361	Electric Transmission And Distribution Equipment	3
362	Electrical Industrial Apparatus	1
363	Household Appliances	2

Table 4-11: SIC Codes for Companies Expressing Positive Comments		
SIC Code	**Code Description**	**# of Respondents**
366	Communications Equipment	2
367	Electronic Components and Accessories	24
369	Miscellaneous Electrical Machinery, Equipment and Supplies	5
371	Motor Vehicles And Motor Vehicle Equipment	3
372	Aircraft and Parts	55
376	Guided Missiles and Space Vehicles and Parts	6
379	Miscellaneous Transportation Equipment	6
381	Search and Navigation Equipment	8
382	Lab. Apparatus, Analytical, Optical, Measuring Instruments, etc.	6
421	Trucking And Courier Services, Except Air	1
458	Airports, Flying Fields, And Airport Terminal	2
504	Professional And Commercial Equipment And Supplies	1
505	Metals and Minerals, Except Petroleum	7
506	Electrical Goods, Wholesale Trade	1
507	Hardware, And Plumbing And Heating Equipment	1
508	Machinery, Equipment, and Supplies, Wholesale Trade	2
509	Miscellaneous Durable Goods	1
516	Chemicals And Allied Products	1
596	Nonstore Retailers	1
729	Miscellaneous Personal Services	1
737	Computer Programming, Data Processing, etc.	5
762	Electrical Repair Shops	2
769	Miscellaneous Repair Shops And Related Services	3
871	Engineering, Architectural, And Surveying	3
873	Research, Development, and Testing Services	6
874	Management And Public Relations Services	1
999	Nonclassifiable Establishments	1

Source: U.S. Dept. of Commerce/BIS Supplemental Offsets Survey

For firms that responded negatively about offsets (see Table 4-12), the SIC code with the largest number of respondents was SIC 372 (Aircraft and Parts) with 62, SIC 359 (Miscellaneous Industrial and Commercial Machinery and Equipment) with 22, and SIC 346 (Metal Forgings and Stampings with 13).

Table 4-12: SIC Codes for Companies Expressing Negative Comments Regarding Offsets		
SIC Code	**Industry Group**	**No. of Respondents**
142	Crushed And Broken Stone, Including Riprap	1
239	Miscellaneous Fabricated Textile Products	2
244	Wood Containers	1

Table 4-12: SIC Codes for Companies Expressing Negative Comments Regarding Offsets		
SIC Code	**Industry Group**	**No. of Respondents**
284	Soap, Detergents, And Cleaning Preparations; Perfumes, Cosmetics, and Other Toilet Preparations	1
289	Miscellaneous Chemical Products	1
305	Gaskets, Packing, And Sealing Devices And Rubber	2
306	Fabricated Rubber Products, Not Elsewhere	2
308	Miscellaneous Plastics Products	1
316	Luggage	1
322	Glass And Glassware, Pressed Or Blown	1
331	Steel Works, Blast Furnaces, And Rolling And Finishing Mills	3
332	Iron And Steel Foundries	3
334	Secondary Smelting And Refining Of Nonferrous Metals	5
335	Rolling, Drawing, And Extruding Of Nonferrous Metals	3
336	Nonferrous Foundries (castings)	2
339	Miscellaneous Primary Metal Products	4
344	Fabricated Structural Metal Products	2
345	Screw Machine Products, And Bolts, Nuts, Screws, Rivets, And Washers	4
346	Metal Forgings And Stampings	5
347	Coating, Engraving, And Allied Services	13
348	Ordnance And Accessories, Except Vehicles And Guided Missiles	6
349	Miscellaneous Fabricated Metal Products	3
351	Engines And Turbines	7
353	Construction, Mining, And Materials Handling	2
354	Metalworking Machinery And Equipment	1
356	General Industrial Machinery And Equipment	8
357	Computer And Office Equipment	4
359	Miscellaneous Industrial And Commercial Machinery and Equipment	4
361	Electric Transmission And Distribution Equipment	22
362	Electrical Industrial Apparatus	1
366	Communications Equipment	3
367	Electronic Components And Accessories	3
372	Aircraft And Parts	7
373	Ship And Boat Building And Repairing	62
374	Railroad Equipment	1
376	Guided Missiles And Space Vehicles And Parts	5
381	Search, Detection, Navigation, Guidance,	8
382	Lab. Apparatus, Analytical, Optical, Measuring Instruments, etc	4
384	Surgical, Medical, And Dental Instruments And Supplies	1
505	Metals And Minerals, Except Petroleum	2

Table 4-12: SIC Codes for Companies Expressing Negative Comments Regarding Offsets		
SIC Code	**Industry Group**	**No. of Respondents**
506	Electrical Goods	3
509	Miscellaneous Durable Goods	4
737	Computer Programming, Data Processing, And Other Computer Related Services	2
762	Electrical Repair Shops	2
769	Miscellaneous Repair Shops And Related Services	1
871	Engineering, Architectural, And Surveying	1
873	Research, Development, And Testing Services	2

Source: U.S. Dept. of Commerce/BIS Supplemental Offsets Survey

Overall, there was no discernible pattern for employment gains and losses by SIC codes based on companies' views (positive or negative) about offsets. Firms in almost all of the represented SIC codes provided both positive and negative comments regarding offsets.

4.8 Chapter Findings

Prime Contractors

- Total prime contractor employment rose from almost 403 thousand workers in 1998 to more than 423 thousand workers in 2002, a 5.1 percent increase. The average employment for the 13 prime contractors was almost 33 thousand in 2002.[11]

- The distribution of U.S.-based and foreign-based prime contractor employment shifted slightly over the 5-year period. U.S. employment went from almost 375 thousand, 93.1 percent of the workforce, in 1998 to nearly 387 thousand, 91.3 percent of the workforce, in 2002. Foreign-based prime contractor employment rose from more than 27 thousand, 6.9 percent of workers, in 1998 to more than 36 thousand, 8.7 percent of workers, in 2002.

[11] Requiring this documentation was authorized under P.L. 108-195, Sec.7(a)(3)(B). BIS was given the authority to request documentation for all of the nearly 700 weapon systems and components contracts detailed in the BIS offset database for the entire five-year period covered by the study (1998-2002). However, after discussions with individual prime contractors, BIS decided that this would impose an unreasonable reporting burden on the companies. Moreover, in the eight month timeframe allowed to complete the assessment for Congress, it would have not been possible to collect, review and analyze data for all of the weapon systems. Therefore, documentation for 2002 was requested for two weapon systems for each company.

- The proportion of U.S.-defense to U.S.-non-defense workers for the 13 prime contractors changed over the 1998 to 2002 period; while the number of defense workers rose from over 177 thousand to 187 thousand workers, their percentage of the total work force fell, dropping from 79 percent defense workers in 1998 to 74 percent in 2002. The number of U.S.-non-defense workers rose from almost 47 thousand workers in 1998, or 21 percent of the workforce, to over 65 thousand workers, or 26 percent of the workforce, in 2002.

- The proportion of U.S.-production to U.S.-all other workers varied little over the 5-year period. In 1998, production workers accounted for 77 percent, or nearly 184 thousand workers, of the total workforce, rising to 78 percent of the total workforce, or nearly 209 thousand workers, in 2002. The number of all other workers went from over 54 thousand workers, or 23 percent of the workforce, to almost 59 thousand workers, or 22 percent.

Subcontractors - All Tiers

- Overall, for the subcontractors surveyed, employment grew from almost 419 thousand in 1998 to over 508 thousand in 2002, a 21 percent increase over the five year period. Employment peaked in 2000 at slightly over 547 thousand workers.

- The subcontractors' U.S.-based employment during the period rose, from almost 188 thousand to more than 195 thousand, a 4.2 percent increase. Foreign-based employment during 1998-2002 increased from almost 100 thousand to over 129 thousand, a 29.7 percent increase. As percentages of the total workforce, U.S.-based employment decreased, from over 65 percent of the total workforce in 1998 to slightly more than 60 percent of the total workforce in 2002; foreign employment increased, from almost 35 percent of the workforce in 1998 to almost 40 percent of the workforce in 2002.

- The number of U.S. defense workers employed by subcontractors increased from almost 26 thousand in 1998 to over 30 thousand in 2002, an increase of 18.5 percent. The number of U.S.-non-defense workers also increased, from over 63 thousand in 1998 to over 74 thousand in 2002, a 17.4 percent increase. The ratio of U.S.-defense to U.S.-non-defense workers stayed relatively constant over this period.

- Following other trends, the numbers of both U.S.-production and U.S.-all other employment increased from 1998 to 2002. In 1998, there were almost 66 thousand U.S.-production workers and about 32 thousand U.S.-all other workers; in 2002, there were over 77 thousand U.S.-production workers and almost 53 thousand U.S.-non-defense workers. However, the percentage of workers in U.S.-production fell, from almost 68 percent of workers to about 60 percent of workers. In comparison, the number of U.S.-all other workers rose, from over 32 percent of workers to 41 percent of workers.

Factors Affecting Subcontractor Employment

- Subcontractors cited "cost of doing business" and "fair trade" as the two most important factors leading to decreases in employment between 1998 and 2002. "Offsets in defense trade" ranked fifth out of eight factors leading to drops in employment.

- Subcontractors indicated that "increased defense related contracts" and "increased non-defense related contracts" were the top two factors leading to increases in employment in the same period. Among nine categories, "offsets in defense trade" was the category deemed least responsible for growth in employment.

- Subcontractors that were involved in helping prime contractors fulfill offset agreements had on average a 20 percent gain in employment over the 5-year period. Firms' positive or negative opinions of offsets did not correlate with changes in employment.

- Subcontractors that were not involved in offsets had an overall employment drop of about 2.5 percent from 1998-2002. Firms with a positive view of offsets gained 2.7 percent; firms with a negative view of offsets recorded a 10.9 percent drop in employment.

- There was no discernible pattern for employment gains or losses by industry sector based on the company's positive or negative views on offsets.