

**DEFENSE INDUSTRIAL BASE ASSESSMENT:
Bare Printed Circuit Board Manufacturers****SCOPE OF ASSESSMENT**

The U.S. Department of Commerce, Bureau of Industry and Security (BIS), Office of Technology Evaluation, in coordination with the United States Navy, Naval Surface Warfare Center, Crane Division (NSWC Crane) is conducting an assessment of the U.S. industrial base for manufacturing bare printed circuit board products. The primary goal of this study is to assist the U.S. defense community in understanding the health and competitiveness of organizations manufacturing bare printed circuit boards for commercial and U.S. Government applications at facilities located in the United States.

The Secretary of the Navy is the Department of Defense (DOD) Defense Executive Agent for printed circuit board technology. NSWC Crane is the DOD Executive Agent technical lead for printed circuit board and interconnect technology. NSWC Crane provides acquisition engineering, in-service engineering, and technical support for sensors, electronics, electronic warfare, and special warfare weapons.

RESPONSE TO THIS SURVEY IS REQUIRED BY LAW

A response to this survey is required by law (50 U.S.C. App. Sec. 4555). Failure to respond can result in a maximum fine of \$10,000, imprisonment of up to one year, or both. Information furnished herewith is deemed confidential and will not be published or disclosed except in accordance with Section 705 of the Defense Production Act of 1950, as amended (50 U.S.C App. Sec. 4555). Section 705 prohibits the publication or disclosure of this information unless the President determines that its withholding is contrary to the national defense. Information will not be shared with any non-government entity, other than in aggregate form. The information will be protected pursuant to the appropriate exemptions from disclosure under the Freedom of Information Act (FOIA), should it be the subject of a FOIA request.

Notwithstanding any other provision of law, no person is required to respond to nor shall a person be subject to a penalty for failure to comply with a collection of information subject to the requirements of the Paperwork Reduction Act unless that collection of information displays a currently valid OMB Control Number.

BURDEN ESTIMATE AND REQUEST FOR COMMENT

Public reporting burden for this collection of information is estimated to average 13 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information to BIS Information Collection Officer, Room 6883, Bureau of Industry and Security, U.S. Department of Commerce, Washington, D.C. 20230, and to the Office of Management and Budget, Paperwork Reduction Project (OMB Control No. 0694-0119), Washington, D.C. 20503.

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Section I: General Instructions

- A. Your facility is required to complete this bare printed circuit board survey using an Excel template, which can be downloaded from the BIS website: <http://bis.doc.gov/printedcircuitboards>. If you are not able to download the survey document, at your request BIS staff will e-mail the Excel survey template directly to you.
- For your convenience, a PDF version of the survey containing required drop-down content is available on the BIS website to aid internal data collection. DO NOT SUBMIT the PDF version of the survey as your response to BIS. Should this occur, your facility will be required to resubmit the survey in the requested Excel format.
- B. Respond to every question. Surveys that are not fully completed will be returned for completion. Use the comment boxes to provide any information to supplement responses provided in the survey form. Make sure to record a complete answer in the cell provided, even if the cell does not appear to expand to fit all the information.
- DO NOT CUT AND PASTE RESPONSES WITHIN THIS SURVEY.** Survey inputs should be completed by typing in responses or through use of a drop-down menu. The use of cut and paste can corrupt the survey template. If your survey response is corrupted as a result of cut and paste responses, a new survey will be sent to your organization for immediate completion.
- C. **Do not disclose any Classified Information in this survey form.**
- D. Estimates may be furnished in select instances but in sections that do not explicitly allow estimates you must contact BIS survey support staff before including estimates.
- E. Upon completion of the survey, final review, and certification on the final page, **transmit the survey via e-mail to:** printedcircuitboards@bis.doc.gov.
- To arrange for the completed survey to be delivered on CD-ROM or DVD disc by private carrier, contact BIS survey staff.
- F. Questions related to this Excel survey should be directed to: printedcircuitboards@bis.doc.gov.
- E-mail is the preferred method of contact.
- You may also speak with a member of the BIS survey support staff by calling 202-482-6339.
- G. For questions related to the overall scope of this Defense Industrial Base assessment, contact:
- Brad Botwin, Director, Industrial Studies
Office of Technology Evaluation, Room 1093
U.S. Department of Commerce
1401 Constitution Avenue, NW
Washington, DC 20230
- DO NOT submit completed surveys to Mr. Botwin's postal or e-mail address; all surveys must be submitted electronically to printedcircuitboards@bis.doc.gov.

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Section II: Definitions	
Term	Definition
Applied Research	Systematic study to gain knowledge or understanding necessary to determine the means by which a recognized and specific need may be met. This activity includes work leading to the production of useful materials, devices, and systems or methods, including design, development, and improvement of prototypes and new processes.
Authorizing Official	Executive officer or other representative of the corporation, division, business unit and/or facility who has the authority to execute this survey on behalf of the designated facility.
Bare Printed Circuit Board	A completed, tested circuit board ready to be populated with components to create a working system.
Basic Research	Systematic, scientific study directed toward greater knowledge or understanding of the fundamental aspects of phenomena and of observable facts.
Board Thickness	The overall thickness of the base material, all conductive material deposited thereon, and solder mask.
Commercial and Government Entity (CAGE) Code	Commercial and Government Entity (CAGE) Code identifies companies doing or wishing to do business with the U.S. Federal Government. The code is used to support mechanized government systems and provides a standardized method of identifying a given facility at a specific location. Find CAGE codes at https://cage.dla.mil/search/begin_search.aspx .
Commercially Sensitive Information (CSI)	Privileged or proprietary information which, if compromised through alteration, corruption, loss, misuse, or unauthorized disclosure, could cause serious harm to the organization owning it.
Customer	Any organization (external or internal entity) for which your company manufactures bare circuit board products.
Data Universal Numbering System (DUNS)	A nine-digit numbering system that uniquely identifies an individual business. Find DUNS numbers at http://fedgov.dnb.com/webform .
Export Controls	1) Regulations administered by the Bureau of Industry and Security (BIS), U.S. Department of Commerce governing the export of dual-use technologies; 2) International Traffic in Arms Regulations (ITAR) administered by the U.S. Department of State governing products and services provided specifically for defense applications.
External Cloud Service Provider	A service model in which a company employs an external third-party service provider to maintain, manage, and back up business data at a remote location away from the company's operating facilities. The use of shared third-party storage infrastructure by businesses can reduce capital, operations, storage, and security requirements, significantly lowering costs. Data is transmitted between the company and the cloud service provider via networks as needed.
External Data Storage Provider	A business that provides external data storage services to your company for data that is not currently held in your company's main data network work systems.
Flex	A flexible circuit board with printed circuitry on flexible base material consisting of one or more layers.
Full Time Equivalent (FTE) Employees	Employees who work for 40 hours in a normal work week. Convert part-time employees into "full time equivalents" by taking their work hours as a fraction of 40 hours.
Microvia	A conductive hole with a diameter of 0.005" or less that connects layers of a multi-layer printed circuit board. Microvias are used in blind and buried vias, but not for through-the-board connections. The term is often used to refer to any small geometry connection holes created by laser drilling.
North American Industry Classification System (NAICS) Code	North American Industry Classification System (NAICS) codes identify the category of product(s) or service(s) provided by an organization. Find NAICS codes at http://www.census.gov/epcd/www/naics.html .
Planarization	Planarization is a mechanical sanding/polishing process to create a flat or planar surface across copper conductor on circuit boards.
Pre-Preg	A sheet of base dielectric laminate incorporating reinforcing material (typically glass fabric/mat, or aramid fabric/mat) impregnated with a resin cured to an intermediate stage (i.e. B-stage resin) where it is not fully cured.
Product/Process Development	Conceptualization and development of a product prior to the production of the product for customers.
Qualified Manufacturers' List (QML)	A list of manufacturers who have had their products examined and tested and who have satisfied all applicable U.S. Department of Defense qualification requirements for that product.
Qualified Products List (QPL)	A list of products, or family of products, that have met the qualification requirements set forth in the applicable specification, including appropriate product identification, tests or qualification reference, and the name and plant address of the manufacturer and authorized distributor.
Rigid	A rigid circuit board composed of resin and reinforcing material such as fiberglass that contains an electric conductor in a defined path to connect with devices and terminal connectors.
Rigid-Flex	One or more rigid circuit boards connected by a flexible circuit board.
Service	An intangible product (contrasted to a good, which is a tangible product). Services typically cannot be stored or transported, are instantly perishable, and come into existence at the time they are bought and consumed.
Single Source	An organization that is designated as the only accepted source for the supply of parts, components, materials, or services, even though other sources with equivalent technical know-how and production capability may exist.
Sole Source	An organization that is the only source for the supply of parts, components, materials, or services. No alternative U.S. or non-U.S. based suppliers exist other than the current supplier.
Supplier	An entity from which your facility obtains inputs. A supplier may be another firm with which you have a contractual relationship, or it may be another facility owned by the same parent organization. The inputs may be goods or services.
United States	The "United States" or "U.S." includes the 50 states, Puerto Rico, the District of Columbia, the island of Guam, the Trust Territories, and the U.S. Virgin Islands.
Via	A plated feed-through hole that is used to route a trace vertically in the board from one layer to another. Vias are not used as connecting devices for component leads or for anchoring reinforcing material.
Via Structure	A description of vias (including microvias) incorporated in a multilayer circuit board product.

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Section III: Respondent Profile

A.	Select the description that best identifies your organization:	<div>← Corporation Non-Profit University USG Agency Other</div>		
B.	What capabilities does this facility have related to the production of bare printed circuit boards?	Design Capability	Manufacture Capability	Assembly Capability
If your organization has multiple facilities in the United States that manufacture bare printed circuit boards you must provide separate survey responses for each facility. Indicate at right the description that best describes your organization's circuit board manufacturing structure.				
1. Organization has a single facility, which is located in the U.S. 2. Organization has multiple facilities, but only one bare circuit board manufacturing facility in the U.S. 3. Organization has multiple facilities in the U.S. with bare circuit board manufacturing capabilities.				
If your organization does not manufacture bare printed circuit boards in the U.S., contact BIS survey staff at printedcircuitboards@bis.doc.gov .				
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Section 1a: Organization Information

A.	Provide the following information for this facility.				
	Facility/Organization Name				
	Street Address				
	City				
	State				
	Zip Code				
	Website				
	Phone Number				
	Primary CAGE Code				
B.	Provide the following information for your parent organization(s), if applicable. If not applicable, insert "NA" in the Parent Name box.				
		Parent Organization			
	Parent Name				
	Street Address				
	City				
	State/Province				
	Country				
	Postal Code/Zip Code				
	Parent Primary CAGE Code				
C.	Is your organization publicly traded or privately held?			If your organization is publicly traded, identify its stock ticker symbol.	
D.	Point of Contact regarding this survey:				
	Name	Title	Phone Number	E-mail Address	State
Comments:					
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Section 1b: Organization Information (continued)

Identify and rank in descending order all entities that directly or indirectly own or have beneficial ownership of five percent or more of your organization (including parent companies and others):						
A.	Entity Name	Percent of Company Held	Street Address	City	State/Region	Country
Please provide the following identification codes (see definitions), as applicable, to this facility.						
B.	Data Universal Numbering System (DUNS) Code(s)		NAICS (6-digit) Code(s)			
Find DUNS numbers at: http://fedgov.dnb.com/webform		Find NAICS codes at: http://www.census.gov/epcd/www/naics.html				
Indicate if your organization qualifies as any of the following types of business:						
C.	1 A small business enterprise (as defined by the Small Business Administration)					
	2 8(a) Firm (as defined by the Small Business Administration)					
	3 A historically underutilized business zone (HUBZone)					
	4 A minority-owned business					
	5 A woman-owned business					
	6 A veteran-owned or service-disabled veteran-owned business					
Comments:						
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Section 1c: Organization Information (continued)

A.	Estimate the percentage of this facility's bare printed circuit board sales attributable to COMMERCIAL end uses:		
	Estimate the percentage of this facility's bare printed circuit board sales attributable to DEFENSE end uses:		

Commercial Market Segments

B.	From the list below, estimate the percentage of this facility's bare circuit board sales attributable to each COMMERCIAL end use.			
	Commercial End Use	% of Bare Circuit Board Sales	Commercial End Use	% of Bare Circuit Board Sales
	Aerospace		Industrial Electronics	
	Automotive		Medical/Healthcare	
	Communications		Marine (surface and underwater)	
	Computers/Business Equipment		Space	
	Consumer Goods		Other	(specify here)

Defense Market Segments

C.	From the list below, estimate the percentage of this facility's bare circuit board sales attributable to each DEFENSE end use.			
	Defense End Use	% of Bare Circuit Board Sales	Defense End Use	% of Bare Circuit Board Sales
	Aerospace		Missiles	
	Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR)		Marine (surface and underwater)	
	Electronics		Space	
	Ground Vehicles		Other	(specify here)

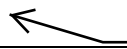
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Section 2: Mergers, Acquisitions, Divestitures, and Joint Ventures

Mergers, Acquisitions, Divestitures						
How many mergers, acquisitions, and divestitures has your organization had since 2012? <input type="text"/>						
Identify and describe your organization's five most recent mergers, acquisitions, and divestitures, if applicable.						
A.	Organization Name	Type of Activity	Country	Year	Primary Objective	Explain
1.						<div>Access to government contracts</div> <div>Access to intellectual property</div> <div>Bankruptcy restructuring/litigation</div> <div>Broaden customer base</div> <div>Develop new capabilities</div> <div>Overcome market entry barrier/Geopolitical concerns</div> <div>R&D access/coordination</div> <div>Reduce Costs</div> <div>Tax-related</div> <div>Vertical integration</div> <div>Other objective/purpose (Explain)</div>
2.						
3.						
4.						
5.						
Joint Ventures						
How many joint ventures does your organization currently participate in? <input type="text"/>						
Identify your organization's current joint venture relationships, including public/private R&D partnerships. Be sure to explain the joint venture's purpose (e.g. patent licensing, co-production, product integration, after-market support, etc.):						
B.	Organization/Entity Name	Country	Year Initiated	Primary Purpose of Relationship	Explain	
1.					<div>Access to financial resources</div> <div>Access to suppliers</div> <div>Access to technological resources</div> <div>Creation of new technologies</div> <div>Improved access to foreign markets</div> <div>Improved access to U.S. markets</div> <div>Product improvements</div> <div>Reduced costs</div> <div>Reduced lead times</div> <div>Risk sharing</div> <div>Shared/improved technology or skills</div> <div>Other objective/purpose (Explain)</div>	
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						
11.						
12.						
13.						
14.						
15.						
Comments: <input type="text"/>						
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Section 3a: Customers

A.	Select the primary method this facility uses to find business opportunities with the U.S. Government:				<div>Prime contractors Federal web site DOD Queries Word of Mouth Other</div>
	Explain:				
B.	Since 2012 has this facility rejected business opportunities due to any of the following?				
		-Yes/No-	Explain		
	Circuit board panel production run too small				
	Insufficient order frequency				
	Insufficient dollar value of job				
	Insufficient dollar value of recurring business opportunity				
	Complexity of job				
	Customer credit rating				
C.	Identify this facility's top 5 U.S. and top 5 non-U.S. direct customers by sales for the past four years. A direct customer is the immediate entity to which you sell your products/services. Customers can include other business units/divisions within your parent organization. Indicate the type of customer and their location.				
	Top U.S.-Based Customers				
	Customer Name	Type of Customer	Primary End Use	Customer City	Customer State
1.					
2.					
3.					
4.					
5.					
		<div>Commercial Government Defense Government Non-Defense University/Non-Profit Other</div>			
	Top Non-U.S.-Based Customers				
	Customer Name	Type of Customer	Primary End Use	Customer City	Customer Country
1.					
2.					
3.					
4.					
5.					
			<div>Aerospace Automotive C4ISR Communications Computers/Business Equipment Consumer Goods Electronics Ground Vehicles Industrial Electronics Marine (surface and underwater) Medical/Healthcare Missiles Space Other</div>		
	Comments:				
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Section 3b: Competitors

For each of the following factors, indicate whether bare circuit board manufacturers located inside the U.S. or outside the U.S. possess the competitive advantage.				
Factor		Location with Advantage	Explain	
A.	Labor Costs	<div>U.S. Non-U.S. None Unknown</div>		
	Environmental Compliance Costs			
	Material Costs			
	Equipment Costs			
	Building Space Costs			
	R&D Costs			
	Supply of Skilled Workers			
	Export Controls			
	Overall Finished Board Price			
	Quality			
	Performance			
	Lead Time			
	Reduced Process Variability			
	Reduced Cost			
	Safety Requirements			
	Increased Yield			
	Other	(specify here)		
	Other	(specify here)		

Identify your organization's leading U.S. and non-U.S. competitors in the manufacture of bare circuit boards, and select their primary competitive attribute.					
Top U.S. Competitors					
	Competitor Name	State	Primary Competitive Attribute	Explain	
B.	1			<div>Price Quality Delivery Time Reliability Financing Range of Capabilities Receipt of Government Subsidies Other</div>	
	2				
	3				
	4				
	5				
Top Non-U.S. Competitors					
	Competitor Name	Country	Primary Competitive Attribute	Explain	
	1				
	2				
	3				
	4				
	5				

Comments:	
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Section 4a: Participation in USG Programs

USG Agency Support							
A.	Identify the USG agencies supported by this facility since 2012. If you support an agency not already listed, indicate which agency in the "Other" box.						
	U.S. Air Force		Department of Homeland Security (DHS)		Other	(select from dropdown)	
	U.S. Army		National Aeronautics & Space Administration (NASA)		Other	(select from dropdown)	
	U.S. Navy		National Oceanic & Atmospheric Administration (NOAA)		Other	(select from dropdown)	
	U.S. Marine Corps		Department of Energy (DOE)		Other	(specify here)	
	U.S. Intelligence Community (such as CIA, NSA, NRO, NSA)		Missile Defense Agency (MDA)		Other	(specify here)	
USG Program Identification							
B.	Estimate the total number of USG programs this facility has directly or indirectly supported since 2012.						
	Identify the USG programs this facility has supported since 2012, and indicate which types of bare circuit boards this facility has manufactured for each program.						
	USG Program Name	U.S. Government Agency	Bare Circuit Board Type Supporting USG Program				
			Rigid	Flex	Rigid-Flex		
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
Comments:							

U.S. Air Force

U.S. Army

U.S. Navy

U.S. Marine Corps

U.S. Intelligence Community (such as CIA, NSA, NRO, NSA)

DHS - Department of Homeland Security

NASA - National Aeronautics & Space Administration

NOAA - National Oceanic & Atmospheric Administration

DOE - Department of Energy

MDA - Missile Defense Agency

DARPA - Defense Advanced Research Projects Agency

USDA - Department of Agriculture

DOC - Department of Commerce

HHS - Department of Health and Human Services

State Department

Justice Department

Transportation Department

EPA - Environmental Protection Agency

FCC - Federal Communications Commission

NRC - Nuclear Regulatory Commission

VA - Department of Veterans Affairs

White House





Other

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Section 4b: USG Interactions

A.	Does this facility consider itself dependent on U.S. Government programs for its continued viability?			<div>← Yes No</div>	
	Explain				
	If this facility's bare circuit board manufacturing supports USG programs, whether directly or indirectly, are the associated manufacturing lines integrated with, or separate from, its commercial manufacturing lines?			<div>← Integrated Separate Not Applicable</div>	
	Explain				
Identify impacts that a sudden change in direct and/or indirect U.S. Government defense demand for electronic products containing bare circuit boards would likely have on your organization and provide an explanation where applicable.					
Business Operation		Impact of sudden DECREASE in USG Defense Demand	Impact of sudden INCREASE in USG Defense Demand	Explanation	
B.	Capital Expenditures				
	Research & Development Expenditures				
	Participation in USG Contracts				
	Product/Service Costs				
	Organization Viability/Solvency				
	Personnel with Key Skills				
	Number of Product/Service Lines				
	Pursuit of Non-U.S. Customers				
	Level of Key Production Equipment				
	Movement of Operations to Non-U.S. Locations				
	Other	(specify here)			
	Other	(specify here)			
Comments:					
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Section 5a: Manufacturing Capabilities

Identify the types of bare circuit boards that this facility is currently capable of manufacturing:								
				Tin-Lead		Lead-Free		
A.	Rigid Conventional Board (single-sided or double-sided)							
	Rigid Multilayer Board							
	Rigid High Speed Boards			<div>Yes No</div>		<div>Yes No</div>		
	Rigid High Frequency Boards							
	Rigid Microwave Boards							
	Flexible Conventional Board (single-sided or double-sided)							
	Flexible Multilayer Board							
	Flexible High Speed Boards							
	Flexible High Frequency Boards							
	Flexible Microwave Boards							
Rigid-Flex Hybrid Boards								
Integrated Circuit Package Substrates								
B. What is the minimum inner layer (core) thickness of circuit board components that this facility can produce?				What is the maximum bare circuit board thickness that this facility can achieve?				
C. Does this facility manufacture printed electronics (PE)?				"Printed Electronics" refers to the use of additive printing methods on flexible substrates such as plastic, paper, epoxy-fiberglass, textiles, and other electronic devices such as discrete electronic component, sensors, and others.				
If yes, identify the PE business activities this facility engages in:				Explain:				
If yes, identify the PE business sectors this facility supports:				Explain:				
				<div> <div> R&D Only Limited Production Full Production Other (explain) </div> </div>				
D. For each type of bare circuit board layer listed below, identify this facility's standard and minimum trace widths, based on specified copper conductor weights:								
Trace Width (in inches)								
		0.25 oz copper	0.5 oz copper	1 oz copper	2 oz copper	3-5 oz copper	6-10 oz copper	10+ oz copper
External Layer: Standard								
External Layer: Minimum								
Internal Layer: Standard								
Internal Layer: Minimum								
E. For each type of bare circuit board layer listed below, identify this facility's standard and minimum space widths, based on specified copper conductor weights:								
Space Width (in inches)								
		0.25 oz copper	0.5 oz copper	1 oz copper	2 oz copper	3-5 oz copper	6-10 oz copper	10+ oz copper
External Layer: Standard								
External Layer: Minimum								
Internal Layer: Standard								
Internal Layer: Minimum								
Comments:								

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Section 5b: Manufacturing Capabilities (continued)

Identify the bare circuit board manufacturing processes that this facility is capable of employing:						
A.	Process	Capable of Using	Currently Use	Process	Capable of Using	Currently Use
	Photo imaging			Thermal management structures		
	Direct imaging			Automated electroless copper plating		
	Screen printing			Automated electrolytic copper plating		
	Controlled drilling/milling			Direct metallization plating		
	Laser ablation			Hot air solder level tin-lead		
	Fully additive plating			Hot air solder level lead-free		
	Z-axis interconnect technology			LPI solder mask		
	Embedded devices (e.g. resistors, capacitors, etc.)			Dry film solder mask		
	Opto-electronic structures			Other	(specify here)	

Identify this facility's maximum capability for each of the following bare circuit board production factors:		
Factor	Maximum per Board	Explanation
B. Circuit layers		
Sequential laminations		
Impedance structures		
Stacked micro vias		
Staggered micro vias		


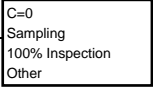
Identify where the bare circuit board via fill and planarization manufacturing activities are performed for this facility:			
	-Yes/No-	Process Method	Explanation
C. This facility			
Other company-owned U.S. facilities			
Other company-owned non-U.S. facilities			
Contractor-operated U.S. facilities			
Contractor-operated non-U.S. facilities			

Identify which of following processes associated with via structures this facility is capable of performing:						
D.	Via Formation	-Yes/No-	Via Formation	-Yes/No-	Drilling Process	Maximum aspect ratio
	Etchback		Plasma etch		Laser-formed micro via	
	Chemical smear removal		Laser via formation		Mechanically drilled via: through-board	
	Micro-via solid copper fill		Nonconductive via fill		Mechanically drilled via: controlled-depth	

Comments:	
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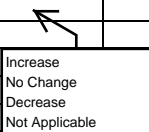
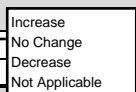
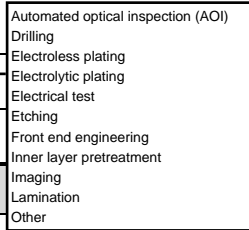
Section 5c: Manufacturing Standards

Identify the standards that this facility currently employs and indicate whether you have a formal certification or apply the standards informally.					
Standard		Use	Explain		
A.	MIL-PRF 55110				
	MIL-PRF 50884				
	MIL-PRF 31032				
	ISO 9001				
	AS 9100				
	NADCAP				
	IPC 1071				
	IPC 6011				
	IPC 6012				
	IPC 6013				
	IPC 6015				
	IPC 6016				
	IPC 6017				
	IPC 6018				
	Other	(specify here)			
	Other	(specify here)			
	B.	Does this facility have an active technical review board?			
		Explain:			
C.	Identify the primary final circuit board inspection method this facility uses to assure that manufactured products meet performance requirements.				
	Explain:		Are first article inspection capabilities at this facility compliant with AS 9102?		
D.	Identify the forms of testing that this facility uses in manufacturing to assure performance and adherence to operational requirements.				
	Testing Form		-Yes/No-	Testing Form	-Yes/No-
	Flying Probe			Impedance Testing with Plots	
	Bed-of-Nails			Interconnect Stress Testing (IST)	
	Isolation 250 Volts DC, 100 MegaOhm Minimum			Highly Accelerated Stress Testing (HAST)	
	Continuity 10 Volts DC, 10 Ohm Maximum			Highly Accelerated Life Testing (HALT)	
	Test all end points, no phase testing			Highly Accelerated Thermal Shock (HATS)	
E.	Does this facility use Statistical Process Control with TrueChem or equivalent software specifically to control and automate the management of chemistries, coatings, and associated bare circuit board production processes?				
	Does this facility employ Material Requirements Planning (MRP) software in the operation of its bare circuit board manufacturing facilities in the U.S.?				
Comments:					
BUSINESS CONFIDENTIAL - Per Section 705(d) of the Defense Production Act					

Section 5d: Manufacturing Production & Capacity

For each of the years 2012-2015, estimate the average weekly number of inner layers (cores) and completed circuit board panels that this facility manufactured:									
Inner Layer (Core): A sheet of copper clad dielectric with one or both sides bearing circuit patterns.									
Panel: A. (1) a double-sided or single-sided rigid structure (double-sided or single-sided panel) or (2) two or more inner cores laminated together forming a multilayered, rigid structure (multilayer panel).									
		2012	2013	2014	2015				
Average Weekly Inner Layers (Cores) Manufactured									
Average Weekly Panels Manufactured									
Identify the bare circuit board panel sizes that this facility can produce with its current manufacturing equipment:									
Panel Size:		24x36	24x30	21x24	18x24	12x24	12x18	9x12	Other
Capability:									
Explain:		<div><div>Yes</div><div>No</div></div>							
C. Estimate the 2015 rated weekly manufacturing capacity of this facility in units:						Inner Layers (Cores)	Panels		
How many 8-hour production shifts does this facility typically operate per day?									
How many 8-hour production shifts per day COULD this facility operate practically?									
D. How many 8-hour front-end engineering shifts does this facility typically operate per day?									
How many 8-hour front-end engineering shifts per day COULD this facility operate practically?									
Explain:									
Estimate this facility's average manufacturing utilization rate for each of the years 2012-2015, as a percentage of production possible under a 7 day-per-week, 24-hour-per-day operation.									
Note: a 100% utilization rate equals full operation with no downtime beyond that necessary for maintenance									
E.		2012	2013	2014	2015				
Examples: Assuming little maintenance downtime, one 8-hour shift, 5 days per week is approximately 25% capacity utilization; two 8-hour shifts, 7 days per week is approximately 65% capacity utilization.									
Estimate how many weeks it would take to raise this facility's production from current levels to 100% capacity utilization: If this facility already operates at 100% capacity utilization, respond with a "0".									
F. Estimate how many weeks it would take to raise this facility's production from current levels to 150% of your current capacity utilization:									
Explain:									
Identify which of the factors below would limit this facility's ability to raise its bare circuit board manufacturing utilization rate to 100% (maximum current capacity) and to 150% (50% increase from current maximum capacity) to meet a surge in demand.									
Factor		Scenario:		Explanation					
		100%	150%						
G.	1	Amount of equipment							
	2	Availability of equipment							
	3	Manufacturing space							
	4	Availability or cost of workforce							
	5	Quality control							
	6	Availability of input materials							
	7	Other (specify in explanation)							
Comments:									
BUSINESS CONFIDENTIAL - Per Section 705(d) of the Defense Production Act									

Section 5e: Manufacturing Production & Capacity (continued)

How does this facility anticipate the range of bare circuit board product lines it manufactures will change by 2020?						
Board Type		Anticipated Change	Explain			
A.	Rigid Conventional Board (single-sided or double-sided)					
	Rigid Multilayer Board					
	Rigid High Speed Boards					
	Rigid High Frequency Boards					
	Rigid Microwave Boards					
	Flexible Conventional Board (single-sided or double-sided)					
	Flexible Multilayer Board					
	Flexible High Speed Boards					
	Flexible High Frequency Boards					
	Flexible Microwave Boards					
	Rigid-Flex Hybrid Boards					
Integrated Circuit Package Substrates						
How does this facility anticipate it's front-end engineering processing capabilities will change by 2020?						
B.	End Use	Anticipated Change	Explain			
	Commercial					
	Defense					
C.	1	Does this facility have its own staff on site to perform front-end engineering for manufacturing bare circuit boards?				
	2	Does this facility perform front-end engineering for manufacturing bare circuit boards as a service to other companies that may have bare circuit boards manufactured elsewhere?				
		Does this facility outsource any front-end engineering for bare circuit board products manufactured at this facility?				
		If yes, does your company notify customers in advance that it outsources front-end engineering for manufacturing bare circuit boards?				
		If this facility outsources front-end engineering for bare circuit board products, indicate the country or countries (including the United States) to which this service is outsourced:				
	3	End Use	-Yes/No-	Country 1	Country 2	Country 3
		Commercial				
	Defense					
Identify the three biggest factors causing production bottlenecks at this facility.						
D.	1		Explain:			
	2		Explain:			
	3		Explain:			
	Comments:					

BUSINESS CONFIDENTIAL - Per Section 705(d) of the Defense Production Act

Section 6a: Materials & Equipment

For each of the inputs below, (1) state the number of manufacturers (not distributors) used to source each material; (2) indicate whether or not your organization has experienced sourcing problems (e.g. availability, supply chain disruptions); and (3) identify the principal manufacturers of each material that this facility uses in manufacturing bare circuit boards.

Material	Total Number of Manufacturers Used	Sourcing Problems		Manufacturers	
		Availability is a Concern	Experienced Supply Chain Disruptions Since 2012	Two Principal Manufacturer Names	Country of Manufacture
Laminate for use in rigid conventional boards				1 2	
Laminate for use in rigid multilayer boards				1 2	
Laminate for use in rigid high speed, high frequency, and microwave boards				1 2	
Laminate for use in flex boards				1 2	
Laminate for use in rigid-flex boards				1 2	
Copper foil				1 2	
Other foils				1 2	
A. Embedded passives, formed, resistors, and capacitors (active or passive) - tin-lead				1 2	
Embedded passives, formed, resistors, and capacitors (active or passive) - lead free				1 2	
Through-hole and via preparation for plating material				1 2	
Electrolytic plating material				1 2	
Via fill, conductive, and non-conductive material				1 2	
Solder mask				1 2	
Finish materials				1 2	
Solder				1 2	
Etchant				1 2	
Drill bits				1 2	
Other	(specify here)			1 2	

Comments:

BUSINESS CONFIDENTIAL - Per Section 705(d) of the Defense Production Act

Section 6b: Materials & Equipment (continued)

A.	1	If this facility were no longer able to purchase circuit board laminate from your current suppliers, for how many weeks could you continue normal operations?	
	2	How many weeks would it take this facility to obtain material from a new supplier of laminate?	
	3	Does the reduction in the number of companies in the U.S. that manufacture circuit board laminates and other circuit board-related materials create material supply problems for this facility?	
		Explain:	
4		How confident are you that this facility could obtain on a timely basis the material necessary to rapidly ramp up bare circuit board production in the event of a national emergency?	<div>←</div> <div>Very confident Somewhat confident Not confident Would not be able to</div>
		Explain:	
Which statement best describes this facility's general method for maintaining inventory levels of laminate and related materials required for the production of circuit boards?			
B.		<div>←</div> <div>Minimize on-hand inventory of circuit board production materials. Maintain extra inventory as a buffer against unexpected delays in material shipments and unanticipated new production orders.</div>	
		Explain:	
Does this facility use either of the following practices for assuring the availability of circuit board-related materials?			
C.	1	On-site stocking agreements through which distributors/manufacturers keep a quantity of materials at this facility.	
	2	Local stocking agreements through which distributors/manufacturers maintain supply warehouses in close proximity to this facility.	
		Explain:	
Comments:			
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Section 6c: Materials & Equipment (continued)

From the list below identify how many of each type of equipment this facility has. Then, estimate overall average age, and indicate your primary concern about continued/future use of this equipment							
Equipment		Number of Functioning Units On Site	Estimated Average Age (in years)	Primary Concern	Explain		
Photo film processing				<div style="border: 1px solid black; padding: 5px;"> Availability Cost to replace Time to replace Upgradeability Service Spare parts Other None </div>			
Photo resist application							
Photo resist exposure							
Photo resist exposure-laser							
Photo resist exposure-LED							
Develop etch & strip equipment							
Automatic optical inspection							
Inner layer treatment & layup							
Lamination							
Drilling - mechanical							
A.	Drilling - laser						
	Desmear						
	Electroless copper						
	Electrolytic copper						
	Chemical cleaning						
	Solder mask						
	Final finish						
	Legend print						
	Routing						
	Electrical testing						
	Quality control measurement						
	Via fill						
	Scoring						
	Other	(specify here)					
	Other	(specify here)					
	Other	(specify here)					
					U.S.	Non-U.S.	Explanation
	B.	Has this facility had trouble obtaining parts for U.S. or non-U.S. equipment?					
Has this facility had trouble obtaining service on U.S. or non-U.S. equipment?							
C.	Are there bare circuit board products that this facility is unable to manufacture due to the limitations of installed equipment?				Explain:		
	Have you had or do you anticipate having difficulty obtaining new equipment for manufacturing tin-lead bare circuit boards?				Explain:		
Comments:							

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Section 6d: Materials & Equipment (continued)

A.	Between 2012 and 2015, did this facility encounter product failures that are suspected or confirmed to be attributed to counterfeit materials used in building bare circuit boards?			<div>←</div>		<div>Confirmed Suspected Both No</div>
	If so, identify the types of circuit board materials that were suspected or confirmed to be counterfeit products and explain the impact of the counterfeit.					
	Prepreg		<div>←</div>	Explain:		
	Laminate		<div>Confirmed Suspected Both No</div>	Explain:		
	Soldermask			Explain:		
Other		(specify here)		Explain:		
B.	Does this facility buy materials for the manufacture of bare circuit boards from sources other than the original manufacturer or its authorized distributor?					
	If so, what practices do you regularly use to verify that the materials are genuine and perform to specifications?					
	Systematic testing of inventory					
	Confirm production lots and production dates with the original manufacturer					
	Check authenticity of standards organization certification labels/trademarks					
	Other		(specify here)			
Other		(specify here)				
Comments:						
BUSINESS CONFIDENTIAL - Per Section 705(d) of the Defense Production Act						

Section 7: Sales

Provide this facility's sales information for the 2012-2015 to U.S. and non-U.S. customers.

Note: "U.S." means U.S. domestic sales; "Non-U.S." means export sales from U.S. locations.

Government sales include both direct and indirect sales to government customers. All sales with government end uses should be reported as government sales.

Source of Sales Data:

Reporting Schedule:

Facility
Division/Business Unit
Corporate/Whole Organization

Calendar Year
Fiscal Year

Record in \$ Thousands, e.g. \$12,000.00 = survey input \$12

		2012		2013		2014		2015	
		U.S.	Non-U.S.	U.S.	Non-U.S.	U.S.	Non-U.S.	U.S.	Non-U.S.
A.	Total Sales (in \$)								
	Total Government Sales [as a % of line A]								
B	All Circuit Board-Related Sales - including design, manufacture, and assembly (in \$)								
	All Circuit Board-Related Government Sales [as a % of line B]								
C	Bare Circuit Board Manufacturing Sales - excluding design and assembly (in \$)								
	Bare Circuit Board Government Sales [as a % of line C]								

Comments:

BUSINESS CONFIDENTIAL - Per Section 705(d) of the Defense Production Act

Section 8: Financials

Provide the following financial line items for your facility/organization below.

Note: Facility level data is preferred. If you do not keep this information at a location level, provide data at the closest level available.

Source of Income Statement Items:					
Reporting Schedule:					
Income Statement (Select Line Items)		Record \$ in Thousands, e.g. \$12,000.00 = survey input of \$12			
		2012	2013	2014	2015
A.	Net Sales (and other revenue)				
B.	Cost of Goods Sold				
C.	Total Operating Income (Loss)				
D.	Earnings Before Interest and Taxes				
E.	Net Income				
Source of Balance Sheet Items:					
Reporting Schedule:					
Balance Sheet (Select Line Items)		Record \$ in Thousands, e.g. \$12,000.00 = survey input of \$12			
		2012	2013	2014	2015
A.	Cash				
B.	Inventories				
C.	Total Current Assets				
D.	Total Assets				
E.	Total Current Liabilities				
F.	Total Liabilities				
G.	Retained Earnings				
H.	Total Owner's Equity				
Note: Total Assets must equal Total Liabilities plus Total Owner's Equity					
Comments:					
BUSINESS CONFIDENTIAL - Per Section 705(d) of the Defense Production Act					

Facility
Division/Business Unit
Corporate/Whole Organization

Calendar Year
Fiscal Year

Facility
Division/Business Unit
Corporate/Whole Organization

Calendar Year
Fiscal Year

Section 9a: Research & Development

A.	Does this facility/organization conduct research and development (R&D)?		If No, proceed to Section 10.
----	---	--	-------------------------------

In Question B, record this facility's total dollar R&D expenditure and type of R&D expenditure for each of the years 2012 to 2015.

In Question C, identify this facility's R&D funding sources, by percent of total R&D dollars sourced.

Note: Facility level data is preferred. If you do not keep this information at a facility level, provide data at the closest level available.

		Source of R&D Data:	Facility Division/Business Unit Corporate/Whole Organization			
		Reporting Schedule:				
		Record \$ in Thousands, e.g. \$12,000.00 = survey input of \$12				Calendar Year
			2012	2013	2014	Fiscal Year
B.	1	Total R&D Expenditures				
	2	Basic Research (as a percent of B1)				
	3	Applied Research (as a percent of B1)				
	4	Product/Process Development (as a percent of B1)				
	5	Total of 2, 3, and 4 (must equal 100%)	0%	0%	0%	0%
	6	Bare Circuit Board R&D Expenditures (as a percent of B1)				
	7	Defense-Related Bare Circuit Board R&D Expenditures (as a percent of B1)				
		Record \$ in Thousands, e.g. \$12,000.00 = survey input of \$12				
			2012	2013	2014	2015
C.	1	Total R&D Funding Sources				
	2	Internal/Self-Funded/IRAD (as a percent of C1)				
	3	Total Federal Government (as a percent of C1)				
	4	Total State and Local Government (as a percent of C1)				
	5	Universities - Public and Private (as a percent of C1)				
	6	U.S. Industry, Venture Capital, Non-Profit (as a percent of C1)				
	7	Non-U.S. Investors (as a percent of C1)				
	8	Other (specify here)				
Comments:						

BUSINESS CONFIDENTIAL - Per Section 705(d) of the Defense Production Act

Section 9b: Research & Development (continued)

Identify this facility/organization's anticipated top R&D priorities over the next five years and provide a brief explanation.			
A.		Priority	Description
	1	Ultra smooth copper foil	
	2	Development of very thin unsupported dielectrics	
	3	Enhanced solid copper via fill methods	
	4	Sub-10 micrometer photoresists, etchants	
	5	Printed electronics (additive, 3-D, etc.)	
Identify the key factors driving this facility's investment in research and development and explain how these factors shape this facility's research and development projects.			
B.	Factor		-Yes/No-
	Need for competitive advantage		
	Customer requirements		
	Industry roadmap		
	Other (specify here)		
	Other (specify here)		
From 2012-2015, were your organization's R&D expenditures adversely impacted by reductions in U.S. Government defense spending?			
C.	Explain:		
Are there specific R&D areas related to bare circuit board manufacturing that DOD could support to improve board performance?			
D.	Explain:		
What advanced bare circuit board-related technologies should DOD support in order to better enable manufacturers to meet future national security requirements?			
E.	1	Explain:	
	2	Explain:	
	3	Explain:	
Comments			
BUSINESS CONFIDENTIAL - Per Section 705(d) of the Defense Production Act			

Ultra smooth copper foil
Development of very thin unsupported dielectrics
Enhanced solid copper via fill methods
Sub-10 micrometer photoresists, etchants
Printed electronics (additive, 3-D, etc.)
Stretchable/wearable electronics
Advanced embedded active/passive device methods
Direct IC die-on-board ultra high density interconnects
Other

Section 10: Capital Expenditures

Record this facility's capital expenditures corresponding to the select categories below.

Note: Facility level data is preferred. If you do not keep this information at a location level, provide data at the closest level available.

Facility
Division/Business Unit
Corporate/Whole Organization

Source of Capital Expenditure Data:	
Capital Expenditure Reporting Schedule:	

Calendar Year
Fiscal Year

Capital Expenditure Category		Record \$ in Thousands, e.g. \$12,000.00 = survey input of \$12			
		2012	2013	2014	2015
A	Total Capital Expenditures				
1	Machinery, Equipment, and Vehicles [as a % of A]				
2	IT, Computers, Software [as a % of A]				
3	Land, Buildings, and Leasehold Improvements [as a % of A]				
4	Other (specify)				
5	Other (specify)				
Lines 1 through 5 must total 100%		0%	0%	0%	0%
6	Bare circuit board-related capital expenditures [as a % of A]				

From 2012-2015, were your organization's bare circuit board-related capital expenditures adversely impacted by reductions in U.S. Government defense spending?

B Explain:

Identify your facility/organization's anticipated top bare circuit board-related capital expenditure priorities over the next five years and provide a brief explanation.

Priority		Description
1		
2		
3		
4		
5		

Expanded facility
Equipment for new technologies
Equipment for existing technologies
IT/computers/software
Other

Comments:

BUSINESS CONFIDENTIAL - Per Section 705(d) of the Defense Production Act

Section 11a: Workforce

Record the total number of full time equivalent (FTE) employees in your U.S.-based operations for the 2012-2015 period. Then, estimate the percentage of these employees that perform the occupations indicated in part A, lines a-i

Note: Facility level data is preferred. If you do not keep this information at a location level, provide data at the closest level available.

Source of Workforce Data:					
Reporting Schedule:					
		2012	2013	2014	2015
A	1 Circuit Board-Related Full Time Equivalent (FTE) Employees				
	a Administrative, Management, & Legal Staff [as a % of line 1]				
	b Engineers, Scientists, and R&D Staff [as a % of line 1]				
	c Facility & Maintenance Staff [as a % of line 1]				
	d Information Technology Professionals [as a % of line 1]				
	e Marketing & Sales [as a % of line 1]				
	f Production Line Workers [as a % of line 1]				
	g Testing Operators, Quality Control, and Support Technicians [as a % of line 1]				
	h Other (specify here)				
	i Other (specify here)				
Lines a through i must total 100%		0%	0%	0%	0%

Facility
Division/Business Unit
Corporate/Whole Organization

Calendar Year
Fiscal Year

Does this facility have difficulty hiring and/or retaining any types of employees?
If yes, identify which occupations, type of difficulty, and provide an explanation.

Occupation	Difficulty	Explanation
Chemist		
Chemical Engineer		
Electrical Engineer		
Mechanical Engineer		
Industrial Engineer		
Safety Engineer		
Graphic Arts Engineer		
Process Engineer		
Product Engineer		
CAM Software - Job Tooling Tech		
Imaging Tech		
Silk Screening Tech		
Plating Tech		
Electrical Testing Tech		
Mechanical Drilling Tech		
Laser Drilling Tech		
Testing Tech		
Other (specify here)		

Hiring
Retaining
Both
No

Identify the key workforce issues you anticipate in the next five years.

Issue	-Yes/No-	Explanation
Finding U.S. citizens		
Finding qualified workers		
Finding experienced workers		
Finding workers able to get security clearances		
Attracting workers to location		
Significant portion of workforce retiring		
Employee turnover		
Other (specify here)		
Other (specify here)		


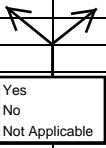
Comments:

BUSINESS CONFIDENTIAL - Per Section 705(d) of the Defense Production Act

Section 11b: Workforce (continued)

What percentage of this facility's technical staff do you expect to retire within the next five years?			
A.	What percentage of this facility's technical staff do you expect to have to replace over the next five years?		
Explain:			
First, estimate the total number of employees you have with each level of work experience and estimate the percentage that are U.S. citizens.			
Then, for each technical role, estimate the number of employees you have with each level of work experience.			
		Applicable Working Experience	
		Over 20 Years	11-20 Years
		6-10 Years	Five or Fewer Years
All Employees	# of Employees		
	% U.S. Citizens		
Note: Double counting is permitted for this section. For example, if an employee serves as both a mechanical drilling tech and a laser drilling tech, the employee would be included in both lines.			
Experience:		Over 20 Years	11-20 Years
		# of Employees	# of Employees
B	Chemist		
	Chemical Engineer		
	Electrical Engineer		
	Mechanical Engineer		
	Industrial Engineer		
	Safety Engineer		
	Graphic Arts Engineer		
	Process Engineer		
	Product Engineer		
	CAM Software - Job Tooling Tech		
	Imaging Tech		
	Silk Screening Tech		
	Plating Tech		
	Electrical Testing Tech		
	Mechanical Drilling Tech		
	Laser Drilling Tech		
	Testing Tech		
	Other	(specify here)	
Comments:			
BUSINESS CONFIDENTIAL - Per Section 705(d) of the Defense Production Act			

Section 12a: Competitive Factors

A.	What is the primary, if any, significant change in operations that is expected at this facility in the next five years?			
	Explain:			
B.	1	Have recent changes in environmental control regulations adversely affected this facility's capability to compete against circuit board manufacturers in other countries?		
		Explain:		
	2	Will environmental regulations force this facility to cease manufacturing tin-lead circuit boards?		
		If yes, what year is this facility expected to cease producing tin-lead circuit boards?		Comments:
	3	Do environmental regulations cause this facility to keep smaller quantities of circuit board manufacturing materials in inventory than what you might otherwise consider optimal?		
		Explain:		
C.	Indicate whether the following factors affect this facility's interest in USG business.			
	Factor	Reduce Interest in USG Business	May Cause Facility to Stop Producing for USG	Explain
	Paperwork/Requirements			
	Slow Payment			
	Small Production Lots			
	Insufficient Profit Margin			
	Infrequent Orders			
	Intellectual Property Protection			
	One-off orders			
	Other (specify here)			
D.	Indicate how DOD requirements to use MIL-PRF-31032 standards affect your costs relative to other existing standards?			
		Estimated Change Relative to MIL-P-50884C	Estimated Change Relative to IPC-6012 Class 3	Explain
	Percentage direct change in fixed costs per slash sheet			
	Percentage change in recurring costs for maintenance			
	Percentage change in administrative cost of compliance			
Comments:				
BUSINESS CONFIDENTIAL - Per Section 705(d) of the Defense Production Act				

None
Expansion
Modernization
Contraction
Potential Closure
Other

Section 12b: Competitive Factors (continued)

A.	To what extent is this facility's continued ability to manufacture bare circuit boards for USG customers dependent on the viability of your commercial circuit board business?			<div>Not at all Somewhat Moderately Significantly Not Applicable</div>	
	Explain				
	To what extent is this facility's continued ability to manufacture bare circuit boards for commercial customers dependent on the viability of your USG business?				
	Explain				
	Is the return-on-investment (ROI) associated with this facility's DEFENSE-RELATED bare circuit board manufacturing business sufficient relative to capital requirements and business risk?				
Is the return-on-investment (ROI) associated with this facility's COMMERCIAL bare circuit board manufacturing business sufficient relative to capital requirements and business risk?					
	Explain				
B.	What level of overall industry consolidation do you expect to occur in the U.S. bare circuit board industry in the next five years?			<div>None Minimal Moderate Major</div>	
	What two key factors do you see driving such a consolidation?	<div>Improved production efficiency Excess production capacity Diminishing commercial orders Increased foreign competition Other</div> <div>Cost reduction Not technologically competitive Shrinking USG orders Larger companies possess market advantages</div>			
	Explain:				
	What level of foreign acquisition of U.S. bare circuit board manufacturers do you expect in the next five years?			<div>None Minimal Moderate Major</div>	
	Explain:				
C.	Which of the following impacts do you anticipate from consolidation in the number of U.S. bare circuit board manufacturing facilities?				
	Impact	-Yes/No-	Explain		
	Fewer U.S. materials manufacturers				
	Greater dependence on non-U.S. materials				
	Higher material costs				
	Pricing advantage for larger board manufacturers				
	Small companies less able to compete				
	Reduced domestic board capability				
	Shrinkage in manufacturing workforce				
	Increased market share for non-U.S. companies				
	Higher prices for bare board customers				
	Other				
	Other				
Comments:					
BUSINESS CONFIDENTIAL - Per Section 705(d) of the Defense Production Act					

Section 12c: Competitive Factors (continued)

What impact would each of the following potential USG actions have on your business?			
Action		Expected Impact on Organization	Explanation
A.	Increased funding of targeted bare circuit board manufacturing technology R&D		
	DOD requirement that electronic systems (not ITAR controlled) use circuit boards made in manufacturing facilities located in the U.S.		
	DOD adds circuit board laminate and related materials to the Defense National Stockpile		
	USG requirement that circuit boards produced for critical systems be manufactured with laminate and related materials made in the U.S.		
	DOD requirement for designated types of defense systems to use bare circuit boards manufactured in the U.S. by certified "trusted" suppliers		
	DOD requirement that bare circuit board manufacturers of products for designated defense systems be registered on the Qualified Manufacturers List (QML) and/or Qualified Products List (QPL)		
	Other	(specify here)	
	Other	(specify here)	
Comments:			
BUSINESS CONFIDENTIAL - Per Section 705(d) of the Defense Production Act			

Section 13a: Cyber Security

A. Does your organization's internal network connect to the Internet?		Internal Network (drop-down)
B. Indicate who is responsible for your organization's internal IT networks:		
Indicate who is responsible for your organization's external IT networks:		
Does this facility have defined, structured methods for actively protecting the following types of Commercially Sensitive Information (see definitions)?		
Commercially Sensitive Information (CSI) Type		-Yes/No- Explanation
Customer/client information		
Financial information and records		
Human resources information/employee data		
Information subject to export control regulations (EAR and/or ITAR)		
C. Intellectual property related information		
Internal communications including negotiation points, merger and acquisition plans, and/or corporate strategy		
Manufacturing and production line information		
Patent and trademark information		
Regulatory/compliance information		
Research and development (R&D) related information		
Supply chain and sourcing information		
Comments:		
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Internal IT Department
Internal IT Department and U.S. external provider(s)
Internal IT Department and non-U.S. external provider(s)
Internal IT Department and U.S. and non-U.S. external provider(s)
Only U.S. external provider(s)
Only non-U.S. external provider(s)
U.S. and non-U.S. external provider(s)
Not Applicable

Section 13b: Cyber Security (continued)

A.	Have recent cyber incidents across the marketplace caused your organization to increase its information security budget?		
B.	Estimate the percentage of your organization's commercially sensitive information that is stored with:	External Cloud Service Providers	
		External Data Storage Providers	
	Does your organization restrict or prohibit your external cloud service or external data storage provider(s) from storing commercially sensitive information outside of the U.S.?		
C.	Indicate the level of impact each of the following types of events attributed to malicious cyber activity has had on this facility since 2012.		
	Event	Impact Level	Explanation
	User idle time and lost productivity because of downtime or systems performance delays	<div>None Minimal Moderate Major</div>	
	Disruption to normal operations because of system availability problems		
	Damage or theft of IT assets and infrastructure		
	Incurred cost of damage assessment and remediation		
	Business interruption		
	Exfiltration of CSI data		
	Theft of personnel information		
	Damage to software and/or source code		
	Theft of software and/or source code		
	Damage to company production capabilities or systems		
	Destruction of information asset		
	Reputation loss, market share, and brand damages		
	Other	(specify here)	
	Other	(specify here)	
	Other	(specify here)	
	Note: The FBI encourages recipients to report information concerning suspicious or criminal activity to their local FBI field office or the FBI's 24/7 Cyber Watch (CyWatch). Field office contacts can be identified at http://www.fbi.gov/contact-us/field . CyWatch can be contacted by phone at 855-292-3937 or e-mail at CyWatch@ic.fbi.gov . When available, each report submitted should include the date, time, location, type of activity, number of people, and type of equipment used for the activity, the name of the submitting company or organization, and a designated point of contact.		
	Comments:		
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Section 14: Challenges and Outreach

Identify the issues that have or are expected to impact this facility. In column A, identify all issues that currently are affecting your business in an adverse way or that are expected to do so in the future. In column B, rank your top five issues (one being the most important) by selecting numbers one through five, using each rank exactly once. In column C, provide an explanation for the relevant issues.			
Type of Issue	A Impact	B Rank Top 5	C Explanation
Aging equipment, facilities, or infrastructure			
Aging workforce			
Competition - domestic			
Competition - foreign			
Counterfeit parts			
Cyber security	Current	1	
Environmental regulations/remediation - domestic	Future	2	
Environmental regulations/remediation - foreign	Both	3	
Export controls/ITAR & EAR	No	4	
Government acquisition process		5	
Government purchasing volatility			
Government regulatory burden			
Healthcare costs			
Health and safety regulations			
Intellectual property/patent infringement			
Labor availability/costs			
Material input availability			
Obsolescence			
Pension costs			
Proximity to customers			
Proximity to suppliers			
Qualifications/certifications			
Quality of material inputs			
R&D costs			
Reduction in commercial demand			
Reduction in USG demand			
Taxes			
Worker/skills retention			
Other	(specify here)		
There are many federal and state government programs and services available to assist your organization to better compete in the global marketplace. If your organization would like more information regarding these government programs, select the specific areas of interest below. The Commerce Department will follow-up with your organization regarding your selections.			
Continuous Improvement/ Lean Manufacturing		Market Expansion/Business Growth	
Cyber Security		Product Design	
Design for Assembly		Prototyping	
Design for Manufacturability		Quality Management and Control	
Energy and Environmentally Conscious Manufacturing		Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) contracts	
Export Assistance		Supply Chain Optimization	
Export Licensing (ITAR/EAR)		Technology Acceleration	
Government Procurement Guidelines		Vendor/Material Sourcing	
Other	(specify here)	Other	(specify here)
Comments:			
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Section 15: Certification

The undersigned certifies that the information herein supplied in response to this questionnaire is complete and correct to the best of his/her knowledge. It is a criminal offense to willfully make a false statement or representation to any department or agency of the United States Government as to any matter within its jurisdiction (18 U.S.C.A. 1001 (1984 & SUPP. 1197))

Once this survey is complete, submit it via e-mail to: printedcircuitboards@bis.doc.gov. Be sure to retain a copy for your records and to facilitate any necessary edits or clarifications.

Facility Name	
Organization Name	
Organization's Internet Address	
Name of Authorizing Official	
Title of Authorizing Official	
E-mail Address	
Phone Number and Extension	
Date Certified	

In the box below, provide any additional comments or any other information you wish to include regarding this survey assessment.

How many hours did it take to complete this survey?

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