

## DEFENSE INDUSTRIAL BASE ASSESSMENT: U.S. Space Industry 'Deep Dive'

### U.S. Government Survey



#### SCOPE OF ASSESSMENT

The U.S. Department of Commerce, Bureau of Industry and Security (BIS), Office of Technology Evaluation (OTE), in coordination with the U.S. Air Force, the National Aeronautics and Space Administration (NASA), and the National Reconnaissance Office (NRO), is conducting an industrial base survey and assessment of the U.S. space industry. Your organization has been identified as a direct and/or indirect supplier of products and/or services to the U.S. Government for space-related applications.

The principal goal of this assessment is to gain an understanding of the intricate supply chain network supporting the development, production and sustainment of products and services across the defense, intelligence, civil and commercial space sectors. The data will also be used to understand the multi-tier structure of the U.S. space industry, its interdependencies, and the commonality of suppliers and products across programs and agencies. Historically, the U.S. Government has had limited visibility into the issues and challenges facing the lower tiers of the space industrial base. Through the data collected in this survey, agencies will be better informed in order to develop targeted planning, acquisition, and investment strategies to ensure the ability of the industry to support critical defense and civil missions and programs. In addition, this survey will allow you to highlight your organization's unique skills and capabilities to the U.S. Government.

#### RESPONSE TO THIS SURVEY IS REQUIRED BY LAW

A response to this survey is required by law (50 U.S.C. app. Sec. 2155). 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 Information furnished herewith is deemed confidential and will not be published or disclosed except in accordance with Section 705 of the Defense Production Act of 1950, as amended (50 U.S.C App.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. 2155). 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 14 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.

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

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**Important Note:**

The drop-down menus in Sections 3-6 are based on your responses to prior sections. In order for them to work properly, you must complete Sections 3-6 in order.

**Section I GENERAL INSTRUCTIONS**

- A. Your organization is required to complete this survey using an Excel template, which can be downloaded from the U.S. Department of Commerce, Bureau of Industry and Security (BIS) website: [www.bis.doc.gov/SpaceDeepDiveGovt](http://www.bis.doc.gov/SpaceDeepDiveGovt). At your request, survey support staff will e-mail the Excel survey template directly to your organization. For your convenience, a PDF version of the survey is available on the BIS website to aid internal data collection. DO NOT submit the PDF version of your organization's response to BIS.
- B. Respond to every question. Surveys that are not fully completed will be returned for completion. Use 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 COPY AND PASTE RESPONSES WITHIN THIS SURVEY.** Survey inputs should be made manually, by typing in responses or by use of a drop-down menu. The use of copy and paste can corrupt the survey template. If your survey response is corrupted as a result of copy and paste responses, a new survey will be sent to you for immediate completion.
- C. **Do not disclose any classified information in this survey form.** However, aggregated employment, R&D expenditures, etc. are permitted.
- D. If information is not available from your organization's records in the form requested, you may furnish estimates.
- E. In some questions on this survey, definitions of terms are included in comment boxes. These are noted by the small red triangle in the upper-right corner of a relevant box. To see the definition, move your mouse over the box with the red triangle.
- F. Questions related to this Excel survey should be directed to:  
[SpaceDeepDiveGovt@bis.doc.gov](mailto:SpaceDeepDiveGovt@bis.doc.gov) (E-mail is the preferred method of contact).
- You may also direct your questions to:  
Jason Bolton, Trade and Industry Analyst, (202) 482-5936  
Justyna Modzelewska, Trade and Industry Analyst, (202) 482-5415
- G. Upon completion, review and certification of the Excel survey, transmit the survey via e-mail attachment to:  
[SpaceDeepDiveGovt@bis.doc.gov](mailto:SpaceDeepDiveGovt@bis.doc.gov). Be sure to retain a copy for your records.
- H. For questions related to the overall scope of this 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  
  
To contact Mr. Botwin, please call (202) 482-7808.  
  
DO NOT submit completed surveys to Mr. Botwin's postal or personal e-mail address; all surveys must be submitted electronically to [SpaceDeepDiveGovt@bis.doc.gov](mailto:SpaceDeepDiveGovt@bis.doc.gov)

| 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 of the organization or business unit or other individual who has the authority to execute this survey on behalf of the organization.  |             |
| Basic Research   | Systematic, scientific study directed toward greater knowledge or understanding of the fundamental aspects of phenomena and of observable facts.  |             |
| 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 <a href="http://www.logisticsinformationservice.dla.mil/BINCS/begin_search.aspx">http://www.logisticsinformationservice.dla.mil/BINCS/begin_search.aspx</a> |             |
| Component  | Any raw material, substance, piece, part, software, firmware, labeling, or assembly which is intended to be included as part of the finished, packaged, and labeled device.   |             |
| Cost-Plus Contract   | A contractor is paid for all of its allowed expenses to a set limit plus additional payment to allow for a profit. Also referred to as a cost reimbursement contract.   |             |
| Counterfeit  | For the purpose of this survey, a counterfeit is a part, material, or other product that is not genuine because it 1) is an unauthorized copy; 2) does not conform to original design, model, and/or performance standards; 3) is not produced by the original manufacturer or is produced by unauthorized contractors; 4) is off-specification, defective, or used product sold as "new" or working; or 5) has incorrect or false markings and/or documentation.       |             |
| Customer   | An entity to which an organization directly delivers the product or service that the facility produces. A customer may be another company or another facility owned by the same parent organization. The customer may be the end user for the item but often will be an intermediate link in the supply chain, adding additional value before transferring the item to yet another customer.  |             |
| Data Universal Numbering System (DUNS)                     | A nine-digit numbering system that uniquely identifies an individual businesses. Find DUNS numbers at <a href="http://fedgov.dnb.com/webform">http://fedgov.dnb.com/webform</a>   |             |
| Distributor  | An entity that buys noncompeting products or product lines, warehouses them, and resells them to retailers or direct to the end users or customers.   |             |
| Finished Product   | Any product, or accessory to any product, that is suitable for use or capable of functioning, whether or not it is packaged or labeled.   |             |
| Firm-Fixed-Price (FFP) Contract                            | Contract price is the price bid, with no incentives or fees added. Cost responsibility is placed wholly on the contractor.  |             |
| 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.   |             |
| Indefinite-Quantity Contract                               | A contract that provides for furnishing an indefinite quantity, within stated limits, of specified supplies or services, during specified contract period, with deliveries to be scheduled by the timely placement of orders upon the contractor.   |             |
| Indefinite-Delivery Contract                               | A type of contract used when the exact time of delivery is not known.   |             |
| Labor-Hours Contract                                       | A variation of the time-and-materials contract, differing only in that materials are not supplied by the contractor.  |             |
| Manufacturer   | An organization that uses labor and capital to convert raw materials into finished or semifinished goods. For the purpose of this survey, manufacturing includes integration and assembly.  |             |
| Manufacturing Material                                     | Any material or substance used in or used to facilitate the manufacturing process, a concomitant constituent, or a byproduct constituent produced during the manufacturing process, which is present in or on the finished device/product.  |             |
| 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 your organization. Find NAICS codes at <a href="http://www.census.gov/epcd/www/naics.html">http://www.census.gov/epcd/www/naics.html</a>  |             |
| Precious Metals  | Metals that have high economic value due to their rarity. Most commonly gold, silver, platinum, and palladium.  |             |
| Product/Process Development                                | Conceptualization and development of a product prior to the production of the product for customers.  |             |
| Rare Earth Element   | A category that includes element numbers 57-71 of the periodic table (lanthanum, cerium, praseodymium, neodymium, promethium, samarium, europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium, and ytterbium) as well as yttrium (39) and scandium (21).  |             |
| Requirements Contract                                      | An indefinite-delivery type contract that provides for filling all actual purchase requirements of specific supplies or services of designated activities during a specified contract period with deliveries to be scheduled by the timely placement of orders upon the contractor.   |             |
| 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  | A 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.  |             |

|   |   |
|---|---|
| Space-Related   | Any product, service, or object that is a) used in or launched into space; b) used to directly or indirectly support space applications from Earth; and/or c) used to manufacture any product that is used in space or directly supports space applications. The product, service, or object does not have to be specifically intended to support space applications. |
| STEM  | STEM stands for Science, Technology, Engineering and Mathematics.   |
| Supplier  | An entity from which your organization 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.   |
| Time-and-Materials Contracts  | A time-and-materials contract may be used only when it is not possible at the time of placing the contract to estimate accurately the extent or duration of the work or to anticipate costs with any reasonable degree of confidence.   |
| 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.  |
| Utilization Rate  | The fraction of an organization's potential output that is actually being used in current production, where potential output is based on a 7 day-a-week, 3x8-hour shift production schedule.  |
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**Section III Respondent Profile**

Your organization has been identified by the United States Government as a direct or indirect supplier of products and/or services used for space-related activities.

For the purposes of this survey, a product is a tangible good. A service is an intangible item or process which includes, but is not limited to, distribution, inspection, maintenance, management, material preparation, design, research and development, testing, etc.

If you feel your organization should be exempt from this survey, please e-mail your request, with your reasoning, to [SpaceDeepDiveGovt@bis.doc.gov](mailto:SpaceDeepDiveGovt@bis.doc.gov).

|  |  |
|--|--|
| A. Select the description that best identifies your organization:                                  |  |
| From the list below, identify any of the market segments that your organization currently serves:  |  |
| Aircraft   |  |
| Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) |  |
| Electronics  |  |
| B. Energy  |  |
| Ground Vehicles (Military)   |  |
| Healthcare   |  |
| Missiles   |  |
| Ships  |  |
| Space  |  |
| Other (specify)  |  |

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**Section 1.a****Organization Information**

|   |   |       |              |                |       |  |
|---|---|-------|--------------|----------------|-------|--|
| Provide the following information for the level at which your organization is responding to this survey (Corporate/Whole Organization or Business Unit/Division). |   |       |              |                |       |  |
| A.  | Organization Name   |       |              |                |       |  |
|   | Business Unit/Division Name (if applicable)                         |       |              |                |       |  |
|   | Street Address  |       |              |                |       |  |
|   | City  |       |              |                |       |  |
|   | State   |       |              |                |       |  |
|   | Zip Code  |       |              |                |       |  |
|   | Website   |       |              |                |       |  |
|   | Phone Number  |       |              |                |       |  |
|   | Primary DUNS Code for this Level (nine-digit number with no dashes) |       |              |                |       |  |
| B.  | Point of Contact regarding this survey:                             |       |              |                |       |  |
|   | Name  | Title | Phone Number | E-mail Address | State |  |
|   |   |       |              |                |       |  |
| Comments  |   |       |              |                |       |  |
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**Section 1.b Organization Information (cont.)**

Please provide the following identification codes (see definitions), as applicable, to your organization.

\*Find your organization's Commercial and Government Entity (CAGE) Codes at [http://www.logisticsinformationservice.dla.mil/BINCS/begin\\_search.aspx](http://www.logisticsinformationservice.dla.mil/BINCS/begin_search.aspx)

\*\*Find your organization's North American Industry Classification System (NAICS) codes at <http://www.census.gov/epcd/www/naics.html>

|    |  |                      |                           |                      |  |
|----|--|----------------------|---------------------------|----------------------|--|
| A. | Commercial and Government Entity (CAGE) Code(s)* | <input type="text"/> | NAICS (6-digit) Code(s)** | <input type="text"/> |  |
|    |  | <input type="text"/> |                           | <input type="text"/> |  |
|    |  | <input type="text"/> |                           | <input type="text"/> |  |
|    |  | <input type="text"/> |                           | <input type="text"/> |  |
|    |  | <input type="text"/> |                           | <input type="text"/> |  |
|    |  | <input type="text"/> |                           | <input type="text"/> |  |
|    |  | <input type="text"/> |                           | <input type="text"/> |  |
|    |  | <input type="text"/> |                           | <input type="text"/> |  |
|    |  | <input type="text"/> |                           | <input type="text"/> |  |
|    |  | <input type="text"/> |                           | <input type="text"/> |  |

Comments:

|                    |   |
|--------------------|---|
| <b>Section 1.c</b> | <b>Organization Information (cont.)</b> |
|--------------------|---|

|          |   |  |
|----------|---|--|
|          | From the list below, select all applicable business lines your organization currently performs. Select <b>one</b> business line as your "primary business line." Identify all other business lines your organization currently performs as "additional business lines." |  |
|          | Distribution/brokerage/reseller/retail  |  |
|          | Inspection and quality control  |  |
|          | Integration (product, systems integration)  |  |
|          | Information technology (software, hardware, installation)   |  |
|          | Maintenance/aftermarket/repair/refurbishing services  |  |
|          | Manufacturing (including assembly)  |  |
| A.       | Manufacturing systems development and management  |  |
|          | Material finishing (machining, coating, plating, heat treating, etc.)   |  |
|          | Material preparation (casting, forming, molding, forging, etc.)   |  |
|          | Product and design engineering (tooling, new processes, etc.)   |  |
|          | Professional services (legal, accounting, consulting, etc.)   |  |
|          | Research and development  |  |
|          | Raw materials provider  |  |
|          | Testing/evaluation/validation   |  |
|          | Provider of services not specified on this list   |  |
| Comments |   |  |

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

Identify your organization's five most recent **space-related U.S.** mergers, acquisitions, and divestitures from 2009 to date, if applicable. Record the merged/acquired/divested organization's name(s) and location, the year the merger/acquisition/divestiture occurred, and the primary objective of the merger/acquisition.

|    |    | Organization Name | Type of Activity | State | Year | Primary Objective |
|----|----|-------------------|------------------|-------|------|-------------------|
| A. | 1. |                   |                  |       |      |                   |
|    | 2. |                   |                  |       |      |                   |
|    | 3. |                   |                  |       |      |                   |
|    | 4. |                   |                  |       |      |                   |
|    | 5. |                   |                  |       |      |                   |

Identify your organization's five most recent **space-related non-U.S.** mergers, acquisitions, and divestitures from 2009 to date, if applicable. Record the merged/acquired/divested organization's name(s) and location, the year the merger/acquisition/divestiture occurred, and the primary objective of the merger/acquisition.

|    |    | Organization Name | Type of Activity | Country | Year | Primary Objective |
|----|----|-------------------|------------------|---------|------|-------------------|
| B. | 1. |                   |                  |         |      |                   |
|    | 2. |                   |                  |         |      |                   |
|    | 3. |                   |                  |         |      |                   |
|    | 4. |                   |                  |         |      |                   |
|    | 5. |                   |                  |         |      |                   |

Identify your organization's current **space-related** joint venture relationships, including public/private R&D partnerships. Provide the name of the organization/entity involved, indicate whether it is a U.S. or non-U.S. enterprise, and provide a description of the joint venture's purpose (e.g. patent licensing, co-production, product integration, after-market support, etc.).

|    |    | Organization/Entity Name | U.S./Non-U.S. | Primary Objective of Relationship |
|----|----|--------------------------|---------------|-----------------------------------|
| C. | 1. |                          |               |                                   |
|    | 2. |                          |               |                                   |
|    | 3. |                          |               |                                   |
|    | 4. |                          |               |                                   |
|    | 5. |                          |               |                                   |

Comments:

**Section 3.a****Space-Related Product and Service Segments**

In Section 3, your organization will be asked to identify the products and services it manufactures, distributes, and/or provides. For the purpose of this survey, space-related products and services have been divided into 16 general segments, as detailed below. To ensure the accurate documentation of your organization's capabilities, products that your organization manufactures for integration into other items (that you do not sell separately to external customers) **should be identified** in the appropriate section.

Please note that your organization may be indirectly supporting space-related applications even though you may not consider your products and/or services space-related. In these circumstances, you must still identify the products and/or services that you manufacture, distribute, and/or provide in the subsequent section.

Finally, if your organization's specific product and/or service is not listed in our survey, please identify it in the 'Other' boxes provided in the most appropriate product and/or service segment.

The list below contains clickable links that can move you to a particular product and/or service segment. You may skip to the section with the products/services that pertain to your organization, but be sure to review all segments to ensure you do not omit any required information.

|                   |   |
|-------------------|---|
| <a href="#">A</a> | Spacecraft & Launch Vehicles  |
| <a href="#">B</a> | Propulsion Systems & Fuels  |
| <a href="#">C</a> | Navigation & Control  |
| <a href="#">D</a> | Communications Systems  |
| <a href="#">E</a> | Space Survivability, Environmental Control/Monitoring, and Life Support |
| <a href="#">F</a> | Payload Instruments & Measurement Tools                                 |
| <a href="#">G</a> | Ground Systems  |
| <a href="#">H</a> | Non-Earth Based Surface Systems   |
| <a href="#">I</a> | Power Sources & Energy Storage  |
| <a href="#">J</a> | Electronic Equipment  |
| <a href="#">K</a> | Computer Hardware & Robotics  |
| <a href="#">L</a> | Software  |
| <a href="#">M</a> | Materials, Structures, and Mechanical Systems                           |
| <a href="#">N</a> | Manufacturing Tools & Specialty Equipment                               |
| <a href="#">O</a> | Services  |
| <a href="#">P</a> | Research & Development  |

**Section 3.b Products and Services**

Identify any of the products and/or services your organization manufactures or distributes below. For each product/service area selected, provide a brief description of the specific items your organization manufactures or distributes. To the best of your knowledge, indicate whether your organization is the sole U.S.-based or global manufacturer/distributor of any specific items in each product/service area. If so, describe them in the appropriate box.

Note: Services and research & development areas are listed in Section 3.i.

**A: Spacecraft & Launch Vehicles**

| Product Area | Manufacture/<br>Distribute? | Product Description(s)   | Sole Manufacturer/<br>Distributor? | Sole Manufactured/Distributed Product(s) |
|--------------|-----------------------------|--|------------------------------------|--|
| A1           |                             | Astronomical satellites  |                                    |  |
| A2           |                             | Atmospheric balloon packages   |                                    |  |
| A3           |                             | Atmospheric probes   |                                    |  |
| A4           |                             | Communications satellites  |                                    |  |
| A5           |                             | Earth observation satellites (excluding meteorological, remote sensing, and imaging) |                                    |  |
| A6           |                             | Landers  |                                    |  |
| A7           |                             | Manned spacecraft  |                                    |  |
| A8           |                             | Meteorological satellites  |                                    |  |
| A9           |                             | Microsatellites  |                                    |  |
| A10          |                             | Navigation satellites  |                                    |  |
| A11          |                             | Remote sensing and imaging satellites  |                                    |  |
| A12          |                             | Satellite or spacecraft buses  |                                    |  |
| A13          |                             | Search and rescue satellites   |                                    |  |
| A14          |                             | Space habitats   |                                    |  |
| A15          |                             | Surface penetrators  |                                    |  |
| A16          |                             | Surface rovers   |                                    |  |
| A17          |                             | Unmanned space exploration spacecraft  |                                    |  |
| A18          |                             | Small launch vehicles (<2,000 kg payload)  |                                    |  |
| A19          |                             | Medium launch vehicles (2,000 - 20,000 kg payload)                                   |                                    |  |
| A20          |                             | Heavy launch vehicles (20,000 - 50,000 kg payload)                                   |                                    |  |
| A21          |                             | Super-heavy launch vehicles (50,000 kg+ payload)                                     |                                    |  |
| A22          |                             | Other spacecraft/launch vehicles   |                                    |  |

**B: Propulsion Systems & Fuels**

| Product Area | Manufacture/<br>Distribute? | Product Description(s)   | Sole Manufacturer/<br>Distributor? | Sole Manufactured/Distributed Product(s) |
|--------------|-----------------------------|--|------------------------------------|--|
| B1           |                             | Casings  |                                    |  |
| B2           |                             | Chambers   |                                    |  |
| B3           |                             | Cold gas propulsion systems and their components                                   |                                    |  |
| B4           |                             | Cryo fuel transfer, storage, and equipment   |                                    |  |
| B5           |                             | Hybrid rocket motors, engines, and their components (including HTPB-based systems) |                                    |  |
| B6           |                             | Igniters   |                                    |  |
| B7           |                             | Ion propulsion systems and their components  |                                    |  |
| B8           |                             | Liquid rocket motors, engines, and their components                                |                                    |  |
| B9           |                             | Non-Toxic Monopropellant propulsion systems and their components                   |                                    |  |
| B10          |                             | Nozzles  |                                    |  |
| B11          |                             | Nuclear thermal electric propulsion systems and components                         |                                    |  |
| B12          |                             | Propellant tanks   |                                    |  |
| B13          |                             | Solar electric propulsion systems and their components                             |                                    |  |
| B14          |                             | Solid rocket motors, engines, and their components                                 |                                    |  |
| B15          |                             | Thermal electric propulsion systems and their components                           |                                    |  |
| B16          |                             | Thrusters not specified above  |                                    |  |
| B17          |                             | Other space-related propulsion systems   |                                    |  |
| B18          |                             | Cutting, lubricating, and hydraulic oils and greases                               |                                    |  |
| B19          |                             | Fuel oils  |                                    |  |
| B20          |                             | HTPB (Hydroxyl-Terminated Polybutadiene) fuel                                      |                                    |  |
| B21          |                             | LO2/LCH4 (Liquid Oxygen/Liquid Methane) fuel                                       |                                    |  |
| B22          |                             | LOX/LH2 (Liquid Oxygen/Liquid Hydrogen) fuel                                       |                                    |  |
| B23          |                             | Other liquid propellants and fuels - petroleum-based (and constituent ingredients) |                                    |  |
| B24          |                             | Solid fuels (and constituent ingredients)  |                                    |  |
| B25          |                             | Other space-related fuels  |                                    |  |
| Comments:    |                             |  |                                    |  |

**Section 3.c Products and Services (cont.)**

Identify any of the products and/or services your organization manufactures or distributes below. For each product/service area selected, provide a brief description of the specific items your organization manufactures or distributes. To the best of your knowledge, indicate whether your organization is the sole U.S.-based or global manufacturer/distributor of any specific items in each product/service area. If so, describe them in the appropriate box.

Note: Services and reserach & development areas are listed in Section 3.1.

**C: Navigation & Control**

| Product Area | Manufacture/<br>Distribute? | Product Description(s)  | Sole Manufacturer/<br>Distributor? | Sole Manufactured/Distributed Product(s) |
|--------------|-----------------------------|---|------------------------------------|--|
| C1           |                             | Accelerometers  |                                    |  |
| C2           |                             | Actuators   |                                    |  |
| C3           |                             | Altitude determination and control equipment and components         |                                    |  |
| C4           |                             | Altitude determination and control sensors (including altimeters)   |                                    |  |
| C5           |                             | Earth sensors   |                                    |  |
| C6           |                             | Entry, descent, and landing systems                                 |                                    |  |
| C7           |                             | Gimbal systems and equipment  |                                    |  |
| C8           |                             | GPS equipment   |                                    |  |
| C9           |                             | Guidance, navigation, and control equipment and components          |                                    |  |
| C10          |                             | Gyroscopes  |                                    |  |
| C11          |                             | Hazard detection and avoidance systems                              |                                    |  |
| C12          |                             | Inertial navigations systems  |                                    |  |
| C13          |                             | Light Detection and Ranging (LIDAR) systems                         |                                    |  |
| C14          |                             | Radar systems   |                                    |  |
| C15          |                             | Reaction/momentum wheels  |                                    |  |
| C16          |                             | Rendezvous and docking systems                                      |                                    |  |
| C17          |                             | Space object capturing systems                                      |                                    |  |
| C18          |                             | Star trackers   |                                    |  |
| C19          |                             | Sun sensors   |                                    |  |
| C20          |                             | Telemetry equipment and components                                  |                                    |  |
| C21          |                             | Thrust control systems  |                                    |  |
| C22          |                             | Other space-related navigation and control equipment and components |                                    |  |

**D: Communications Systems**

| Product Area | Manufacture/<br>Distribute? | Product Description(s)   | Sole Manufacturer/<br>Distributor? | Sole Manufactured/Distributed Product(s) |
|--------------|-----------------------------|--|------------------------------------|--|
| D1           |                             | Antennas/antenna systems   |                                    |  |
| D2           |                             | Communications security/cryptologic equipment                                |                                    |  |
| D3           |                             | Delay tolerant networking  |                                    |  |
| D4           |                             | Lunar wireless network   |                                    |  |
| D5           |                             | Microwave systems  |                                    |  |
| D6           |                             | Multiplexers and demultiplexers  |                                    |  |
| D7           |                             | Optical communications systems and components (excluding fiber optic cables) |                                    |  |
| D8           |                             | Relay equipment  |                                    |  |
| D9           |                             | Routers  |                                    |  |
| D10          |                             | Signal amplifiers  |                                    |  |
| D11          |                             | Signal converters  |                                    |  |
| D12          |                             | Signal receivers and transmitters  |                                    |  |
| D13          |                             | Transponders   |                                    |  |
| D14          |                             | Other space-related communications equipment and components                  |                                    |  |

Comments:

**Section 3.d Products and Services (cont.)**

Identify any of the products and/or services your organization manufactures or distributes below. For each product/service area selected, provide a brief description of the specific items your organization manufactures or distributes. To the best of your knowledge, indicate whether your organization is the sole U.S.-based or global manufacturer/distributor of any specific items in each product/service area. If so, describe them in the appropriate box.

Note: Services and research & development areas are listed in Section 3.i.

**E: Space Survivability, Environmental Control/Monitoring, and Life Support**

| Product Area | Manufacture/<br>Distribute? | Product Description(s)  | Sole Manufacturer/<br>Distributor? | Sole Manufactured/Distributed Product(s) |
|--------------|-----------------------------|---|------------------------------------|--|
| E1           |                             | Ablative armor/plating  |                                    |  |
| E2           |                             | Atmospheric monitoring  |                                    |  |
| E3           |                             | Biocides  |                                    |  |
| E4           |                             | Bonding systems   |                                    |  |
| E5           |                             | CO2 removal and recovery systems                                      |                                    |  |
| E6           |                             | Cooling systems   |                                    |  |
| E7           |                             | Cryogenics/cryo-coolers   |                                    |  |
| E8           |                             | Damage protection systems   |                                    |  |
| E9           |                             | H2O removal and recovery systems                                      |                                    |  |
| E10          |                             | Heat shields  |                                    |  |
| E11          |                             | Heaters and radiators   |                                    |  |
| E12          |                             | High pressure oxygen supplies   |                                    |  |
| E13          |                             | Hygiene and waste removal and recovery systems                        |                                    |  |
| E14          |                             | Insulation  |                                    |  |
| E15          |                             | Oxygen supply systems (including recovery and filtration equipment)   |                                    |  |
| E16          |                             | Pressure control equipment  |                                    |  |
| E17          |                             | Radiation shielding systems   |                                    |  |
| E18          |                             | Space safety/abort systems (destruct receivers, escape systems, etc.) |                                    |  |
| E19          |                             | Space suits and related equipment                                     |                                    |  |
| E20          |                             | Spacecraft airlocks   |                                    |  |
| E21          |                             | Thermal monitoring  |                                    |  |
| E22          |                             | Other space survivability systems or components                       |                                    |  |

**F: Payload Instruments & Measurement Tools**

| Product Area | Manufacture/<br>Distribute? | Product Description(s)   | Sole Manufacturer/<br>Distributor? | Sole Manufactured/Distributed Product(s) |
|--------------|-----------------------------|--|------------------------------------|--|
| F1           |                             | Atomic clocks  |                                    |  |
| F2           |                             | Bulk plasma  |                                    |  |
| F3           |                             | Chemical analysis instruments  |                                    |  |
| F4           |                             | Cosmic ray sensors (1 MeV)   |                                    |  |
| F5           |                             | Electric field sensors   |                                    |  |
| F6           |                             | Electrical and electrical properties testing and measurement instruments |                                    |  |
| F7           |                             | Energetic neutral imaging systems  |                                    |  |
| F8           |                             | Environmental chambers and related measuring equipment                   |                                    |  |
| F9           |                             | Filtered photometers   |                                    |  |
| F10          |                             | Gas chromatograph  |                                    |  |
| F11          |                             | Geophysical instruments  |                                    |  |
| F12          |                             | Heavy atom detectors   |                                    |  |
| F13          |                             | High energy particle sensors (30 KeV - 2 MeV)                            |                                    |  |
| F14          |                             | Hyper-spectral detectors   |                                    |  |
| F15          |                             | Infrared detectors   |                                    |  |
| F16          |                             | Low energy particle sensors (100 eV)                                     |                                    |  |
| F17          |                             | Low noise high frame rate detectors                                      |                                    |  |
| F18          |                             | LWIR detectors   |                                    |  |
| F19          |                             | Magnetic field sensors and magnetometers                                 |                                    |  |
| F20          |                             | Meteorological instruments and apparatus                                 |                                    |  |
| F21          |                             | Microwave detectors  |                                    |  |
| F22          |                             | Miscellaneous laboratory equipment and supplies                          |                                    |  |
| F23          |                             | Multi-spectral detectors   |                                    |  |
| F24          |                             | MWIR detectors   |                                    |  |
| F25          |                             | Near-IR visible detectors  |                                    |  |
| F26          |                             | Nuclear detectors  |                                    |  |
| F27          |                             | Physical properties testing and inspection equipment                     |                                    |  |
| F28          |                             | Radiometers  |                                    |  |
| F29          |                             | Single photon detectors  |                                    |  |
| F30          |                             | Spectrometers  |                                    |  |
| F31          |                             | SWIR detectors   |                                    |  |
| F32          |                             | Synthetic aperture radar systems   |                                    |  |
| F33          |                             | Telescopes   |                                    |  |
| F34          |                             | Visible detectors  |                                    |  |
| F35          |                             | X-ray optics   |                                    |  |
| F36          |                             | Other space-related instruments or sensors                               |                                    |  |
| Comments:    |                             |  |                                    |  |

**Section 3.e Products and Services (cont.)**

Identify any of the products and/or services your organization manufactures or distributes below. For each product/service area selected, provide a brief description of the specific items your organization manufactures or distributes. To the best of your knowledge, indicate whether your organization is the sole U.S.-based or global manufacturer/distributor of any specific items in each product/service area. If so, describe them in the appropriate box.

Note: Services and reserach & development areas are listed in Section 3.i.

| <b>G: Ground Systems</b> |                             |   |                                    |  |
|--------------------------|-----------------------------|---|------------------------------------|--|
| Product Area             | Manufacture/<br>Distribute? | Product Description(s)  | Sole Manufacturer/<br>Distributor? | Sole Manufactured/Distributed Product(s) |
| G1                       |                             | Ground antennas   |                                    |  |
| G2                       |                             | Ground-based communications equipment (terminals, relays, etc.) |                                    |  |
| G3                       |                             | Ground tracking, telemetry, and control equipment               |                                    |  |
| G4                       |                             | Simulation and/or training machines                             |                                    |  |
| G5                       |                             | Other space-related ground systems                              |                                    |  |

| <b>H: Non-Earth Based Surface Systems</b> |                             |   |                                    |  |
|---|-----------------------------|---|------------------------------------|--|
| Product Area                              | Manufacture/<br>Distribute? | Product Description(s)                              | Sole Manufacturer/<br>Distributor? | Sole Manufactured/Distributed Product(s) |
| H1  |                             | Dust management systems (mitigation and removal)    |                                    |  |
| H2  |                             | Dust tolerant connectors                            |                                    |  |
| H3  |                             | Lunar excavation                                    |                                    |  |
| H4  |                             | Mineral mapping systems                             |                                    |  |
| H5  |                             | Oxygen and water extraction from regolith           |                                    |  |
| H6  |                             | Regolith excavation and handling                    |                                    |  |
| H7  |                             | Surface habitation systems and equipment            |                                    |  |
| H8  |                             | Volatile (H, C, N, He) extraction from regolith     |                                    |  |
| H9  |                             | Other non-Earth based surface systems and equipment |                                    |  |

| <b>I: Power Sources &amp; Energy Storage</b> |                             |   |                                    |  |
|--|-----------------------------|---|------------------------------------|--|
| Product Area                                 | Manufacture/<br>Distribute? | Product Description(s)  | Sole Manufacturer/<br>Distributor? | Sole Manufactured/Distributed Product(s) |
| I1   |                             | Batteries (lithium ion, nickel hydrogen, nickel cadmium, silver zinc, etc.) |                                    |  |
| I2   |                             | Electrical converters   |                                    |  |
| I3   |                             | Fuel cell power units and components  |                                    |  |
| I4   |                             | Generators  |                                    |  |
| I5   |                             | Other energy storage devices  |                                    |  |
| I6   |                             | Nuclear fission power systems   |                                    |  |
| I7   |                             | Radioisotope thermoelectric generators                                      |                                    |  |
| I8   |                             | Radioactive materials for use in power generation                           |                                    |  |
| I9   |                             | Solar electrical power systems, equipment, and components                   |                                    |  |
| I10  |                             | Transformers  |                                    |  |
| I11  |                             | Wires and cables (electrical)   |                                    |  |
| I12  |                             | Other space-related power sources/energy storage systems                    |                                    |  |

Comments:

**Section 3.f Products and Services (cont.)**

Identify any of the products and/or services your organization manufactures or distributes below. For each product/service area selected, provide a brief description of the specific items your organization manufactures or distributes. To the best of your knowledge, indicate whether your organization is the sole U.S.-based or global manufacturer/distributor of any specific items in each product/service area. If so, describe them in the appropriate box.

Note: Services and reserach & development areas are listed in Section 3.i.

**J: Electronic Equipment**

| Product Area | Manufacture/<br>Distribute? | Product Description(s)  | Sole Manufacturer/<br>Distributor? | Sole Manufactured/Distributed Product(s) |
|--------------|-----------------------------|---|------------------------------------|--|
| J1           |                             | Application-specific integrated circuits (ASICs)              |                                    |  |
| J2           |                             | Attenuators   |                                    |  |
| J3           |                             | Capacitors  |                                    |  |
| J4           |                             | Charge couple devices   |                                    |  |
| J5           |                             | Circuit boards  |                                    |  |
| J6           |                             | Circuit breakers  |                                    |  |
| J7           |                             | Coils and transformers  |                                    |  |
| J8           |                             | Connectors  |                                    |  |
| J9           |                             | Diodes  |                                    |  |
| J10          |                             | Electrical insulators   |                                    |  |
| J11          |                             | Electron tubes  |                                    |  |
| J12          |                             | Fiber optics (conductors, cables, switches, assemblies, etc.) |                                    |  |
| J13          |                             | Field programmable gate arrays                                |                                    |  |
| J14          |                             | Filters and networks  |                                    |  |
| J15          |                             | Fuses, arrestors, absorbers, and protectors                   |                                    |  |
| J16          |                             | Inductors   |                                    |  |
| J17          |                             | Integrated circuits/semiconductors (excluding ASICs)          |                                    |  |
| J18          |                             | Large format focal plane arrays                               |                                    |  |
| J19          |                             | Lasers and laser systems                                      |                                    |  |
| J20          |                             | Lugs, terminals, and terminal strips                          |                                    |  |
| J21          |                             | Memory  |                                    |  |
| J22          |                             | Modulators/demodulators                                       |                                    |  |
| J23          |                             | Non-volatile memory   |                                    |  |
| J24          |                             | Optoelectronic devices and associated equipment               |                                    |  |
| J25          |                             | Oscillators and piezoelectric crystals                        |                                    |  |
| J26          |                             | Radiation hardened/tolerant electronics                       |                                    |  |
| J27          |                             | Relays and solenoids  |                                    |  |
| J28          |                             | Resistors   |                                    |  |
| J29          |                             | Signal/function generators (radio frequency, microwave, etc.) |                                    |  |
| J30          |                             | Switches (coaxial, radio frequency, video, etc.)              |                                    |  |
| J31          |                             | Synchros and resolvers  |                                    |  |
| J32          |                             | Transistors   |                                    |  |
| J33          |                             | Traveling wave tubes, amplifiers                              |                                    |  |
| J34          |                             | Other space-related electronic equipment                      |                                    |  |

**K: Computer Hardware & Robotics**

| Product Area | Manufacture/<br>Distribute? | Product Description(s)                                    | Sole Manufacturer/<br>Distributor? | Sole Manufactured/Distributed Product(s) |
|--------------|-----------------------------|---|------------------------------------|--|
| K1           |                             | Computers and data processing equipment                   |                                    |  |
| K2           |                             | Data handling and input/output storage devices            |                                    |  |
| K3           |                             | Data terminal equipment                                   |                                    |  |
| K4           |                             | Displays/monitors   |                                    |  |
| K5           |                             | Fault tolerant computing                                  |                                    |  |
| K6           |                             | High dexterity manipulation systems                       |                                    |  |
| K7           |                             | High performance super computers                          |                                    |  |
| K8           |                             | Robotics and autonomous systems                           |                                    |  |
| K9           |                             | Other space-related computer hardware and robotic systems |                                    |  |

**L: Software**

| Product Area | Manufacture/<br>Distribute? | Product Description(s)                        | Sole Manufacturer/<br>Distributor? | Sole Manufactured/Distributed Product(s) |
|--------------|-----------------------------|---|------------------------------------|--|
| L1           |                             | Communications software                       |                                    |  |
| L2           |                             | Data mining and knowledge management software |                                    |  |
| L3           |                             | Environmental control and monitoring software |                                    |  |
| L4           |                             | Ground system software                        |                                    |  |
| L5           |                             | Mission automation and execution software     |                                    |  |

**Section 3.g Products and Services (cont.)**

Identify any of the products and/or services your organization manufactures or distributes below. For each product/service area selected, provide a brief description of the specific items your organization manufactures or distributes. To the best of your knowledge, indicate whether your organization is the sole U.S.-based or global manufacturer/distributor of any specific items in each product/service area. If so, describe them in the appropriate box.

Note: Services and research & development areas are listed in Section 3.i.

| <b>M: Materials, Structures, and Mechanical Systems</b> |  |                        |                                    |  |  |
|---|--|------------------------|------------------------------------|--|--|
| Product Area  | Manufacture/<br>Distribute?  | Product Description(s) | Sole Manufacturer/<br>Distributor? | Sole Manufactured/Distributed Product(s) |  |
| M1  | Bars and rods (specify materials to the right)   |                        |                                    |  |  |
| M2  | Plates, sheets, etc. (specify materials to the right)  |                        |                                    |  |  |
| M3  | Pipes and tubes (specify materials to the right)   |                        |                                    |  |  |
| M4  | Precious metals (specify materials to the right)   |                        |                                    |  |  |
| M5  | Rare Earth Elements (specify materials to the right)   |                        |                                    |  |  |
| M6  | Carbon fiber materials   |                        |                                    |  |  |
| M7  | Other fiber based materials (including rayon, nylon, etc.)   |                        |                                    |  |  |
| M8  | Composite materials  |                        |                                    |  |  |
| M9  | Dust resistant coatings  |                        |                                    |  |  |
| M10   | Optical coatings   |                        |                                    |  |  |
| M11   | Protective coatings  |                        |                                    |  |  |
| M12   | Thermal coatings   |                        |                                    |  |  |
| M13   | Other types of coatings  |                        |                                    |  |  |
| M14   | Adhesives  |                        |                                    |  |  |
| M15   | Chemicals  |                        |                                    |  |  |
| M16   | Gases and pressurants (N, He, etc.)  |                        |                                    |  |  |
| M17   | Inks   |                        |                                    |  |  |
| M18   | Resins   |                        |                                    |  |  |
| M19   | Sealants   |                        |                                    |  |  |
| M20   | Solvents   |                        |                                    |  |  |
| M21   | Substrates   |                        |                                    |  |  |
| M22   | Struts   |                        |                                    |  |  |
| M23   | Fairings and skirts  |                        |                                    |  |  |
| M24   | Spacecraft panels  |                        |                                    |  |  |
| M25   | Cover glass  |                        |                                    |  |  |
| M26   | Spacecraft windows or window materials   |                        |                                    |  |  |
| M27   | Beryllium-based structures   |                        |                                    |  |  |
| M28   | Carbon fiber-based structures  |                        |                                    |  |  |
| M29   | Composite-based structures   |                        |                                    |  |  |
| M30   | Other lightweight material-based structures  |                        |                                    |  |  |
| M31   | Glass fabricated structures not specified elsewhere (glass laminates, nanostructures, etc.)        |                        |                                    |  |  |
| M32   | Plastic fabricated structures not specified elsewhere (plastic moldings, cellular materials, etc.) |                        |                                    |  |  |
| M33   | Rubber fabricated structures not specified elsewhere (moldings, foam, etc.)                        |                        |                                    |  |  |
| M34   | Structures created through additive manufacturing processes  |                        |                                    |  |  |
| M35   | Bearings   |                        |                                    |  |  |
| M36   | Castings   |                        |                                    |  |  |
| M37   | Compressors and vacuum pumps   |                        |                                    |  |  |
| M38   | Couplings, connectors, and fittings  |                        |                                    |  |  |
| M39   | Dampers  |                        |                                    |  |  |
| M40   | Fasteners (screws, nuts, bolts, clips, brackets, rivets, etc.)                                     |                        |                                    |  |  |
| M41   | Forgings   |                        |                                    |  |  |
| M42   | Gaskets (o-rings, washers, etc.)   |                        |                                    |  |  |
| M43   | Gears and gear boxes   |                        |                                    |  |  |
| M44   | Hydraulics, valves, actuators, pumps   |                        |                                    |  |  |
| M45   | Landing gear or systems  |                        |                                    |  |  |
| M46   | Magnets  |                        |                                    |  |  |
| M47   | Mirrors  |                        |                                    |  |  |
| M48   | Precision machined parts   |                        |                                    |  |  |
| M49   | Pyrotechnics, cartridge and propellant actuated devices  |                        |                                    |  |  |
| M50   | Semi-finished machined parts   |                        |                                    |  |  |
| M51   | Specialty storage devices or containers  |                        |                                    |  |  |
| M52   | Springs and wire forms   |                        |                                    |  |  |
| M53   | Wire and cables (non-electrical)   |                        |                                    |  |  |
| M54   | Other space-related materials, structures, or mechanical systems                                   |                        |                                    |  |  |

Comments:

**Section 3.h Products and Services (cont.)**

Identify any of the products and/or services your organization manufactures or distributes below. For each product/service area selected, provide a brief description of the specific items your organization manufactures or distributes. To the best of your knowledge, indicate whether your organization is the sole U.S.-based or global manufacturer/distributor of any specific items in each product/service area. If so, describe them in the appropriate box.

Note: Services and reserach & development areas are listed in Section 3.i.

**N: Manufacturing Tools & Specialty Equipment**

| Product Area | Manufacture/<br>Distribute? | Product Description(s)  | Sole Manufacturer/<br>Distributor? | Sole Manufactured/Distributed Product(s) |
|--------------|-----------------------------|---|------------------------------------|--|
| N1           |                             | Bending and forming machines  |                                    |  |
| N2           |                             | Boring, broaching, drilling, and tapping machines                             |                                    |  |
| N3           |                             | Chemical production machinery   |                                    |  |
| N4           |                             | Clean work stations, controlled environments and related equipment            |                                    |  |
| N5           |                             | Computer Numerical Control (CNC) systems                                      |                                    |  |
| N6           |                             | Electrical and ultrasonic erosion machines                                    |                                    |  |
| N7           |                             | Filament winding machines   |                                    |  |
| N8           |                             | Five-axis machine tools   |                                    |  |
| N9           |                             | Forging machinery   |                                    |  |
| N10          |                             | Foundry machinery   |                                    |  |
| N11          |                             | Gear cutting and finishing machines   |                                    |  |
| N12          |                             | Grinding machines   |                                    |  |
| N13          |                             | Hydraulic, pneumatic, and mechanical presses                                  |                                    |  |
| N14          |                             | Lathes  |                                    |  |
| N15          |                             | Lubrication and fuel dispensing equipment                                     |                                    |  |
| N16          |                             | Metal heat treating and non-thermal treating equipment                        |                                    |  |
| N17          |                             | Milling machines  |                                    |  |
| N18          |                             | Rocket maintenance, repair, and checkout specialized equipment                |                                    |  |
| N19          |                             | Rolling and drawing machines  |                                    |  |
| N20          |                             | Semiconductor, microcircuit, and printed circuitboard manufacturing machinery |                                    |  |
| N21          |                             | Space vehicle maintenance, repair, and checkout specialized equipment         |                                    |  |
| N22          |                             | Test stands   |                                    |  |
| N23          |                             | Thermal vacuum chambers   |                                    |  |
| N24          |                             | Tooling kits and equipment  |                                    |  |
| N25          |                             | Welding, soldering, riveting and brazing equipment                            |                                    |  |
| N26          |                             | Wind tunnels  |                                    |  |
| N27          |                             | Wire and ribbon forming machines  |                                    |  |
| N28          |                             | Other machinery utilized for space-related manufacturing/servicing            |                                    |  |
| Comments:    |                             |   |                                    |  |

**Section 3.i Products and Services (cont.)**

Identify any of the services your organization provides below. For each service or R&D area selected, provide a brief description of the specific items your organization provides. To the best of your knowledge, indicate whether your organization is the sole U.S.-based or global provider of any specific items in each product/service area. If so, describe them in the appropriate box.

| O: Services               |                  |  |                |                          |
|---------------------------|------------------|--|----------------|--------------------------|
| Service Area              | Provide Service? | Service Description(s)   | Sole Provider? | Sole Service(s) Provided |
| O1                        |                  | Analysis, fusion, or visualization of data derived from space (including electro-optical imagery, data from satellite sensors, etc.) |                |                          |
| O2                        |                  | Calibration of space-related equipment   |                |                          |
| O3                        |                  | Coating services   |                |                          |
| O4                        |                  | Commercial satellite operation   |                |                          |
| O5                        |                  | Communications and broadcast services  |                |                          |
| O6                        |                  | Data storage and handling services   |                |                          |
| O7                        |                  | Encryption and secure communication services   |                |                          |
| O8                        |                  | Friction stir welding and spun form domes  |                |                          |
| O9                        |                  | Ground support and operations services   |                |                          |
| O10                       |                  | Heat treatment services  |                |                          |
| O11                       |                  | Information and software assurance (including verification and validation)   |                |                          |
| O12                       |                  | Launch support services  |                |                          |
| O13                       |                  | Logistics services   |                |                          |
| O14                       |                  | Machining services (includes cutting, boring, grinding, etc.)  |                |                          |
| O15                       |                  | Maintenance, repair, and rebuilding services   |                |                          |
| O16                       |                  | Materials testing  |                |                          |
| O17                       |                  | Plating services   |                |                          |
| O18                       |                  | Priming and painting services  |                |                          |
| O19                       |                  | Product assurance, quality control services  |                |                          |
| O20                       |                  | Professional services  |                |                          |
| O21                       |                  | Program management and support services  |                |                          |
| O22                       |                  | Program review/development services  |                |                          |
| O23                       |                  | Provision of data derived from space (including electro-optical imagery, remote sensing, etc.)                                       |                |                          |
| O24                       |                  | Safety and mission assurance services  |                |                          |
| O25                       |                  | Software and algorithm development services  |                |                          |
| O26                       |                  | Space crew operations and training   |                |                          |
| O27                       |                  | Space launch services  |                |                          |
| O28                       |                  | Space medicine   |                |                          |
| O29                       |                  | Space vehicle handling and servicing   |                |                          |
| O30                       |                  | Space-related design and engineering services  |                |                          |
| O31                       |                  | Specification development services   |                |                          |
| O32                       |                  | Systems engineering  |                |                          |
| O33                       |                  | Testing or inspection of space-related equipment (includes inspection, simulation, vibration testing, acoustics testing, etc.)       |                |                          |
| O34                       |                  | Other space-related services   |                |                          |
| P: Research & Development |                  |  |                |                          |
| R&D Focus                 | Provide R&D?     | R&D Description  |                |                          |
| P1                        |                  | Atmospheric/suborbital research  |                |                          |
| P2                        |                  | Biomedical research  |                |                          |
| P3                        |                  | Communications and navigation  |                |                          |
| P4                        |                  | Entry, descent, and landing systems  |                |                          |
| P5                        |                  | Ground and launch systems processing   |                |                          |
| P6                        |                  | Human exploration destination systems  |                |                          |
| P7                        |                  | In-space propulsion  |                |                          |
| P8                        |                  | Launch propulsion systems  |                |                          |
| P9                        |                  | Materials  |                |                          |
| P10                       |                  | Mechanical Systems   |                |                          |

|   |  |  |  |  |
|---|--|--|--|--|
| P11   | Modeling, simulation, information technology, and processing |  |  |  |
| P12   | Nanotechnology   |  |  |  |
| P13   | Payloads, science instruments, and sensor systems            |  |  |  |
| P14   | Propellants and fuels  |  |  |  |
| P15   | Robotics and autonomous systems                              |  |  |  |
| P16   | Space power and energy storage                               |  |  |  |
| P17   | Space survivability, life support, and habitation systems    |  |  |  |
| P18   | Structures   |  |  |  |
| P19   | Theoretical and scientific R&D                               |  |  |  |
| P20   | Thermal management systems                                   |  |  |  |
| P21   | Other space-related research & development area              |  |  |  |
| Comments:   |  |  |  |  |
| <b>BUSINESS CONFIDENTIAL - Per Section 705(d) of the Defense Production Act</b> |  |  |  |  |

**Section 4 Participation in U.S. Government Space Programs**

From the list provided below, identify all the U.S. Government, space-related programs your organization has directly and/or indirectly participated in since 2009. Participation (as a prime contractor, sub-contractor, or other type of support) includes the manufacture/integration of products, distribution of products, performance of manufacturing processes on products, provision of services, the provision of research & development, etc. Next, list the top five product and/or service codes your organization provides for each program you participate in. The product/service drop-down list is based on your responses to Section 3. If your product or service does not appear in the drop-down, ensure that you have identified your organization as a manufacturer, distributor, and/or provider of that product or service in Section 3.

If you participate in a space-related program that is not listed below, you may enter it in the 'Other' section at the bottom. In these cases, identify the relevant agency in the 'U.S. Government Agency' column and then identify the program name in the 'Space Program Name' column.

Not Applicable?

If your organization is not sure of its participation in any U.S. Government space-related programs and has reviewed the list below as confirmation, select "Not Applicable" from the box to the right and skip this section.

Note: For your convenience, you may utilize the built-in filters to isolate particular U.S. Government agencies or programs from the list (press the down facing arrow in the top right corner of the relevant column below).

|    | U.S. Government Agency | Space Program Name   | Participation | Product/Service List Code Supporting Space Programs |   |   |   |   |
|----|------------------------|--|---------------|---|---|---|---|---|
|    |                        |  |               | 1   | 2 | 3 | 4 | 5 |
| 1  | Air Force              | ADAP - Advanced Digital Antenna Production   |               |   |   |   |   |   |
| 2  | Air Force              | AEHF - Advanced Extremely High Frequency   |               |   |   |   |   |   |
| 3  | Air Force              | AEP - Architecture Evolution program   |               |   |   |   |   |   |
| 4  | Air Force              | AFCPPT - Air Force Command Post Terminals  |               |   |   |   |   |   |
| 5  | Air Force              | AFSCN ESD - Air Force Satellite Control Network Electronic Schedule Dissemination 2.7                  |               |   |   |   |   |   |
| 6  | Air Force              | AFSCN ESD - Air Force Satellite Control Network Electronic Schedule Dissemination 3.0                  |               |   |   |   |   |   |
| 7  | Air Force              | AFSCN RBC - Air Force Satellite Control Network Remote Tracking Station Block Change (RBC)             |               |   |   |   |   |   |
| 8  | Air Force              | AFSSS - Air Force Space Surveillance System  |               |   |   |   |   |   |
| 9  | Air Force              | AFWET - Air Force Wideband Enterprise Terminals  |               |   |   |   |   |   |
| 10 | Air Force              | AITG - Airborne Integrated Terminals Group   |               |   |   |   |   |   |
| 11 | Air Force              | ARS - Archival Recorder Systems  |               |   |   |   |   |   |
| 12 | Air Force              | ARTS - Automated Remote Tracking Station   |               |   |   |   |   |   |
| 13 | Air Force              | BMEWS - Ballistic Missile Early Warning System   |               |   |   |   |   |   |
| 14 | Air Force              | CCS - Counter Communications System  |               |   |   |   |   |   |
| 15 | Air Force              | CCS-C - Command & Control System-Consolidated  |               |   |   |   |   |   |
| 16 | Air Force              | CCS-C Block 1 - Command and Control System   |               |   |   |   |   |   |
| 17 | Air Force              | DAGR - Defense Advanced GPS Receiver   |               |   |   |   |   |   |
| 18 | Air Force              | DMSP - Defense Meteorological Satellite Program  |               |   |   |   |   |   |
| 19 | Air Force              | DSCS - Defense Satellite Communications System   |               |   |   |   |   |   |
| 20 | Air Force              | DSP - Defense Support Program  |               |   |   |   |   |   |
| 21 | Air Force              | DWSS - Defense Weather Satellite System  |               |   |   |   |   |   |
| 22 | Air Force              | EELV - Evolved Expendable Launch Vehicles  |               |   |   |   |   |   |
| 23 | Air Force              | EELV Delta IV - Evolved Expendable Launch Vehicles   |               |   |   |   |   |   |
| 24 | Air Force              | Eglin Radar  |               |   |   |   |   |   |
| 25 | Air Force              | Eglin Radar SLEP   |               |   |   |   |   |   |
| 26 | Air Force              | EPS - Enhanced Polar System  |               |   |   |   |   |   |
| 27 | Air Force              | FAB-T - Family of Advanced Beyond Line-of-Sight Terminals (Inc 1)                                      |               |   |   |   |   |   |
| 28 | Air Force              | GBS - Global Broadcast Service   |               |   |   |   |   |   |
| 29 | Air Force              | GBS DECC Transition - Global Satellite Broadcast System Defense Enterprise Computing Center Transition |               |   |   |   |   |   |
| 30 | Air Force              | GEODSS - Ground-Based Electro Optical Deep Space Surveillance  |               |   |   |   |   |   |
| 31 | Air Force              | Globus II  |               |   |   |   |   |   |
| 32 | Air Force              | GMT - Ground Multiband Terminals   |               |   |   |   |   |   |
| 33 | Air Force              | GPS Block IIF  |               |   |   |   |   |   |
| 34 | Air Force              | GPS Block IIR  |               |   |   |   |   |   |
| 35 | Air Force              | GPS IIA  |               |   |   |   |   |   |
| 36 | Air Force              | GPS IIIA   |               |   |   |   |   |   |
| 37 | Air Force              | HUSIR - Haystack Ultra-Wideband Satellite Imaging Radar  |               |   |   |   |   |   |
| 38 | Air Force              | JETSS - Joint Execution and Training System for Space  |               |   |   |   |   |   |
| 39 | Air Force              | JMS - Joint Space Operations Center (JSpOC) Mission System (JMS)                                       |               |   |   |   |   |   |
| 40 | Air Force              | LADO - Launch, Early Orbit, Anomaly, & Disposal Operations   |               |   |   |   |   |   |
| 41 | Air Force              | LIONS - Logistics Information Operations Systems   |               |   |   |   |   |   |

|     |                        |   |  |  |  |  |  |  |  |
|-----|------------------------|---|--|--|--|--|--|--|--|
| 42  | Air Force              | LTRS - Launch Test Range System   |  |  |  |  |  |  |  |
| 43  | Air Force              | MAGR-2K - Miniaturized Airborne GPS Receiver 2000                                     |  |  |  |  |  |  |  |
| 44  | Air Force              | MARK IVB - Meteorological Data Station  |  |  |  |  |  |  |  |
| 45  | Air Force              | MGUE-GPS User Equipment: Modernized UE  |  |  |  |  |  |  |  |
| 46  | Air Force              | Milstar Satellites  |  |  |  |  |  |  |  |
| 47  | Air Force              | Milstar/DMU II Terminals  |  |  |  |  |  |  |  |
| 48  | Air Force              | Miltar SMCS Satellite Mission Control Subsystem                                       |  |  |  |  |  |  |  |
| 49  | Air Force              | Minotaur-SMC/SDTW Launch Vehicle  |  |  |  |  |  |  |  |
| 50  | Air Force              | MMP-Minuteman MEECN Program   |  |  |  |  |  |  |  |
| 51  | Air Force              | MMSOC-GSA - Multi-Mission Space Operations Center Ground Support Architecture         |  |  |  |  |  |  |  |
| 52  | Air Force              | MOSS - Moron Optical Space Surveillance   |  |  |  |  |  |  |  |
| 53  | Air Force              | NAVSTAR GPS - Navigational Signal Timing and Ranging Global Positioning System        |  |  |  |  |  |  |  |
| 54  | Air Force              | NAVSTAR MUE   |  |  |  |  |  |  |  |
| 55  | Air Force              | NDS - Nuclear Detonation Detection System   |  |  |  |  |  |  |  |
| 56  | Air Force              | NPOESS - National Polar-orbiting Operational Environmental Satellite System           |  |  |  |  |  |  |  |
| 57  | Air Force              | OAS - Orbital Analysis Systems  |  |  |  |  |  |  |  |
| 58  | Air Force              | OCS - GPS Operational Control Segment   |  |  |  |  |  |  |  |
| 59  | Air Force              | OCX - Next Generation Operational Control System                                      |  |  |  |  |  |  |  |
| 60  | Air Force              | OSR - Operational Switch Replacement  |  |  |  |  |  |  |  |
| 61  | Air Force              | PARCS - Perimeter Acquisition Radar Attack Characterization System                    |  |  |  |  |  |  |  |
| 62  | Air Force              | PAWS-PAVE Phased Array Warning System   |  |  |  |  |  |  |  |
| 63  | Air Force              | RAIDRS - Rapid Attack Identification Detection Reporting System                       |  |  |  |  |  |  |  |
| 64  | Air Force              | RSLP - Rocket Systems Launch Program  |  |  |  |  |  |  |  |
| 65  | Air Force              | RSS - Receiving Set Satellite   |  |  |  |  |  |  |  |
| 66  | Air Force              | RSTN - Radio Solar Telescope Network  |  |  |  |  |  |  |  |
| 67  | Air Force              | S2E2 - SBIRS Survivable Endurable Evolution   |  |  |  |  |  |  |  |
| 68  | Air Force              | SBIRS - Space Based Infrared Systems  |  |  |  |  |  |  |  |
| 69  | Air Force              | SBIRS Fixed Sites   |  |  |  |  |  |  |  |
| 70  | Air Force              | SBIRS High-Space Based Infrared System  |  |  |  |  |  |  |  |
| 71  | Air Force              | SBIRS Mobile Vehicles   |  |  |  |  |  |  |  |
| 72  | Air Force              | SBIRS Space Segment   |  |  |  |  |  |  |  |
| 73  | Air Force              | SBSS Blk10 - Space Based Space Surveillance Block 10                                  |  |  |  |  |  |  |  |
| 74  | Air Force              | SCAMP - Single Channel Anti-Jam Man Portable Terminal                                 |  |  |  |  |  |  |  |
| 75  | Air Force              | SMART-T - Secure mobile Anti-Jam Reliable Tactical Terminal                           |  |  |  |  |  |  |  |
| 76  | Air Force              | SOON - Solar Observing Optical Network  |  |  |  |  |  |  |  |
| 77  | Air Force              | Space Fence   |  |  |  |  |  |  |  |
| 78  | Air Force              | SSAEM-Space Situational Awareness Environmental Monitoring                            |  |  |  |  |  |  |  |
| 79  | Air Force              | TacSat-3  |  |  |  |  |  |  |  |
| 80  | Air Force              | VTS-A - Vandenberg Tracking Station-A   |  |  |  |  |  |  |  |
| 81  | Air Force              | WGS Block I - Wideband Global SATCOM  |  |  |  |  |  |  |  |
| 82  | Air Force              | WGS Block II - Wideband Global SATCOM   |  |  |  |  |  |  |  |
| 83  | Air Force              | WGS Block III - Wideband Global SATCOM  |  |  |  |  |  |  |  |
| 84  | Army                   | JTAGS - Joint Tactical Ground Station   |  |  |  |  |  |  |  |
| 85  | Missile Defense Agency | STSS Demonstrators - Space Tracking and Surveillance System                           |  |  |  |  |  |  |  |
| 86  | Missile Defense Agency | STSS-ATRR - Space Tracking and Surveillance System Advanced Technology Risk Reduction |  |  |  |  |  |  |  |
| 87  | NASA                   | 21st Century Ground Systems   |  |  |  |  |  |  |  |
| 88  | NASA                   | ACRIMSAT - Active Cavity Radiometer Irradiance Monitor Satellite                      |  |  |  |  |  |  |  |
| 89  | NASA                   | AIM   |  |  |  |  |  |  |  |
| 90  | NASA                   | AMMOS   |  |  |  |  |  |  |  |
| 91  | NASA                   | Aqua  |  |  |  |  |  |  |  |
| 92  | NASA                   | Aquarius  |  |  |  |  |  |  |  |
| 93  | NASA                   | ARSG - Advanced Stirling Radioisotope Generator                                       |  |  |  |  |  |  |  |
| 94  | NASA                   | ASCENDS - Active Sensing of CO2 Emissions over Nights, Days, and Seasons              |  |  |  |  |  |  |  |
| 95  | NASA                   | ASPERA-3  |  |  |  |  |  |  |  |
| 96  | NASA                   | Astro-H (SXS)   |  |  |  |  |  |  |  |
| 97  | NASA                   | Astrophysics Research Program   |  |  |  |  |  |  |  |
| 98  | NASA                   | Aura  |  |  |  |  |  |  |  |
| 99  | NASA                   | Cassini   |  |  |  |  |  |  |  |
| 100 | NASA                   | Cassini-Huygens   |  |  |  |  |  |  |  |

|     |      |   |  |  |  |  |  |  |  |
|-----|------|---|--|--|--|--|--|--|--|
| 101 | NASA | CCDev - Commercial Crew Development                     |  |  |  |  |  |  |  |
| 102 | NASA | Chandra X-ray Observatory                               |  |  |  |  |  |  |  |
| 103 | NASA | CINDI   |  |  |  |  |  |  |  |
| 104 | NASA | CLARREO   |  |  |  |  |  |  |  |
| 105 | NASA | CloudSat  |  |  |  |  |  |  |  |
| 106 | NASA | Commercial Crew and Cargo Program                       |  |  |  |  |  |  |  |
| 107 | NASA | Constellation Program                                   |  |  |  |  |  |  |  |
| 108 | NASA | Dawn  |  |  |  |  |  |  |  |
| 109 | NASA | DESDynI   |  |  |  |  |  |  |  |
| 110 | NASA | Earth Science Multi-Mission                             |  |  |  |  |  |  |  |
| 111 | NASA | Earth Science Technology                                |  |  |  |  |  |  |  |
| 112 | NASA | EO-1 - Earth Observing-1                                |  |  |  |  |  |  |  |
| 113 | NASA | EPOXI (Was Deep Impact)                                 |  |  |  |  |  |  |  |
| 114 | NASA | Fermi Gamma-ray Space Telescope                         |  |  |  |  |  |  |  |
| 115 | NASA | GALEX   |  |  |  |  |  |  |  |
| 116 | NASA | GEMS - Gravity and Extreme Magnetism                    |  |  |  |  |  |  |  |
| 117 | NASA | Genesis   |  |  |  |  |  |  |  |
| 118 | NASA | Glory Mission   |  |  |  |  |  |  |  |
| 119 | NASA | GPM - Global Precipitation Measurement                  |  |  |  |  |  |  |  |
| 120 | NASA | GRACE   |  |  |  |  |  |  |  |
| 121 | NASA | GRACE FO  |  |  |  |  |  |  |  |
| 122 | NASA | GRAIL   |  |  |  |  |  |  |  |
| 123 | NASA | Heliophysics Research                                   |  |  |  |  |  |  |  |
| 124 | NASA | Herschel Space Observatory                              |  |  |  |  |  |  |  |
| 125 | NASA | Hinode  |  |  |  |  |  |  |  |
| 126 | NASA | Hubble Space Telescope                                  |  |  |  |  |  |  |  |
| 127 | NASA | IBEX  |  |  |  |  |  |  |  |
| 128 | NASA | ICESat-II - Ice, Cloud, and land Elevation Satellite    |  |  |  |  |  |  |  |
| 129 | NASA | International Space Station Program                     |  |  |  |  |  |  |  |
| 130 | NASA | IRIS - Interface Region Imaging Spectrograph            |  |  |  |  |  |  |  |
| 131 | NASA | Jason-1   |  |  |  |  |  |  |  |
| 132 | NASA | Jason-2   |  |  |  |  |  |  |  |
| 133 | NASA | Jason-3   |  |  |  |  |  |  |  |
| 134 | NASA | Juno  |  |  |  |  |  |  |  |
| 135 | NASA | JWST - James Webb Space Telescope                       |  |  |  |  |  |  |  |
| 136 | NASA | Kepler  |  |  |  |  |  |  |  |
| 137 | NASA | LADEE   |  |  |  |  |  |  |  |
| 138 | NASA | Launch Services Program                                 |  |  |  |  |  |  |  |
| 139 | NASA | LBTI - Large Binocular Telescope Interferometer         |  |  |  |  |  |  |  |
| 140 | NASA | LCROSS - Lunar Crater Observation and Sensing Satellite |  |  |  |  |  |  |  |
| 141 | NASA | LDCM - Landsat Data Continuity Mission                  |  |  |  |  |  |  |  |
| 142 | NASA | LRO - Lunar Reconnaissance Orbiter                      |  |  |  |  |  |  |  |
| 143 | NASA | Mars 2018   |  |  |  |  |  |  |  |
| 144 | NASA | Mars Exploration - 2016                                 |  |  |  |  |  |  |  |
| 145 | NASA | Mars Global Surveyor                                    |  |  |  |  |  |  |  |
| 146 | NASA | Mars Reconnaissance Orbiter                             |  |  |  |  |  |  |  |
| 147 | NASA | MAVEN   |  |  |  |  |  |  |  |
| 148 | NASA | MER - Mars Exploration Rover                            |  |  |  |  |  |  |  |
| 149 | NASA | MESSENGER   |  |  |  |  |  |  |  |
| 150 | NASA | MMS - Magnetospheric Multiscale Mission                 |  |  |  |  |  |  |  |
| 151 | NASA | MSL - Mars Science Laboratory                           |  |  |  |  |  |  |  |
| 152 | NASA | Multit-purpose Crew Vehicle                             |  |  |  |  |  |  |  |
| 153 | NASA | MUSES-C - Hayabusa-U.S.                                 |  |  |  |  |  |  |  |
| 154 | NASA | New Horizons  |  |  |  |  |  |  |  |
| 155 | NASA | New Millennium  |  |  |  |  |  |  |  |
| 156 | NASA | NPP - NPOESS Preparatory Project                        |  |  |  |  |  |  |  |
| 157 | NASA | NuSTAR  |  |  |  |  |  |  |  |
| 158 | NASA | NuSTAR - Nuclear Spectroscopic Telescope Array          |  |  |  |  |  |  |  |
| 159 | NASA | OCO   |  |  |  |  |  |  |  |
| 160 | NASA | OCO-2   |  |  |  |  |  |  |  |
| 161 | NASA | Odyssey   |  |  |  |  |  |  |  |
| 162 | NASA | OSTM  |  |  |  |  |  |  |  |
| 163 | NASA | PACE - Pre-Aerosol, Clouds, and Ecosystem Mission       |  |  |  |  |  |  |  |
| 164 | NASA | Phoenix   |  |  |  |  |  |  |  |



**Section 5.a Critical Suppliers**

For each Product and Service segment (A-P), identify your organization's critical suppliers. Only identify suppliers that support products/services mentioned earlier in the survey (in Section 3). Please list as many suppliers in each section as possible. **Each critical supplier should be indicated in the Product and Service segment for the product/service they supply to your organization** - not the segment you utilize their product/service for. For example: a supplier who provides semiconductors should be identified in segment J: Electronic Equipment, not the segment that the semiconductor integrated into.

Once you have located the appropriate segment for a supplier, identify the supplier's name, the product/service area they provide (from the drop-down menu), and a short description of the specific product/service. Next, identify the product/service area that each item supplied is utilized for (this should be one of the products/services your organization manufactures or provides). In addition, identify the city, state, and country of the supplier and whether this supplier is a single and/or sole source of the product/service in question (see definitions). Finally, identify any U.S. Government space-related programs that each supplier and product/service is used to support by your organization, if applicable.

If a supplier provides more than one product/service area, complete the supplier information on two separate rows and alter the product/service area accordingly.

For the purposes of this survey, a supplier may be, but does not have to be, considered critical if it meets any of the following criteria:

- Is used to support multiple U.S. Government programs;
- Is a sole and/or single source supplier;
- Contributes a significant portion to the end product's value;
- Provides a product/service that has a long lead-time;
- Provides an important obsolete or out of production part; and/or
- Meets any other criteria for criticality that your organization utilizes.

| A: Spacecraft & Launch Vehicles |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
|---------------------------------|-----------------------------------|---------------------|--|---------------|--------------------------------|------------------|-----------------------|-----------------------------------|---|---|---|---|
| Supplier Name                   | Product Area Provided by Supplier | Product Description | Product Area that the Supplied Product is Utilized For | Supplier City | Supplier State (if applicable) | Supplier Country | Single/Sole Supplier? | U.S. Government Program Supported |   |   |   |   |
|                                 |                                   |                     |  |               |                                |                  |                       | 1                                 | 2 | 3 | 4 | 5 |
| 1.                              |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 2.                              |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 3.                              |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 4.                              |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 5.                              |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 6.                              |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 7.                              |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 8.                              |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 9.                              |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 10.                             |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| B: Propulsion Systems & Fuels   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| Supplier Name                   | Product Area Provided by Supplier | Product Description | Product Area that the Supplied Product is Utilized For | Supplier City | Supplier State (if applicable) | Supplier Country | Single/Sole Supplier? | U.S. Government Program Supported |   |   |   |   |
|                                 |                                   |                     |  |               |                                |                  |                       | 1                                 | 2 | 3 | 4 | 5 |
| 1.                              |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 2.                              |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 3.                              |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 4.                              |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 5.                              |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 6.                              |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 7.                              |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 8.                              |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 9.                              |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 10.                             |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| C: Navigation & Control         |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| Supplier Name                   | Product Area Provided by Supplier | Product Description | Product Area that the Supplied Product is Utilized For | Supplier City | Supplier State (if applicable) | Supplier Country | Single/Sole Supplier? | U.S. Government Program Supported |   |   |   |   |
|                                 |                                   |                     |  |               |                                |                  |                       | 1                                 | 2 | 3 | 4 | 5 |
| 1.                              |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 2.                              |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 3.                              |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 4.                              |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 5.                              |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 6.                              |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 7.                              |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 8.                              |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 9.                              |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 10.                             |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| D: Communications Systems       |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| Supplier Name                   | Product Area Provided by Supplier | Product Description | Product Area that the Supplied Product is Utilized For | Supplier City | Supplier State (if applicable) | Supplier Country | Single/Sole Supplier? | U.S. Government Program Supported |   |   |   |   |
|                                 |                                   |                     |  |               |                                |                  |                       | 1                                 | 2 | 3 | 4 | 5 |
| 1.                              |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 2.                              |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 3.                              |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 4.                              |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 5.                              |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 6.                              |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 7.                              |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 8.                              |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 9.                              |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 10.                             |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |

Comments: \_\_\_\_\_

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

Section 5.b Critical Suppliers (cont.)

For each Product and Service segment (A-P), identify your organization's critical suppliers. Only identify suppliers that support products/services mentioned earlier in the survey (in Section 3). Please list as many suppliers in each section as possible. Each critical supplier should be indicated in the Product and Service segment for the product/service they supply to your organization - not the segment you utilize their product/service for. For example: a supplier who provides semiconductors should be identified in segment J: Electronic Equipment, not the segment that the semiconductor integrated into.

Once you have located the appropriate segment for a supplier, identify the supplier's name, the product/service area they provide (from the drop-down menu), and a short description of the specific product/service. Next, identify the product/service area that each item supplied is utilized for (this should be one of the products/services your organization manufactures or provides). In addition, identify the city, state, and country of the supplier and whether this supplier is a single and/or sole source of the product/service in question (see definitions). Finally, identify any U.S. Government space-related programs that each supplier and product/service is used to support by your organization, if applicable.

If a supplier provides more than one product/service area, complete the supplier information on two separate rows and alter the product/service area accordingly.

For the purposes of this survey, a supplier may be, but does not have to be, considered critical if it meets any of the following criteria:

- Is used to support multiple U.S. Government programs;
- Is a sole and/or single source supplier;
- Contributes a significant portion to the end product's value;
- Provides a product/service that has a long lead-time;
- Provides an important obsolete or out of production part; and/or
- Meets any other criteria for criticality that your organization utilizes.

| E: Space Survivability, Environmental Control/Monitoring, and Life Support |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
|--|-----------------------------------|---------------------|--|---------------|--------------------------------|------------------|-----------------------|-----------------------------------|---|---|---|---|
| Supplier Name  | Product Area Provided by Supplier | Product Description | Product Area that the Supplied Product is Utilized For | Supplier City | Supplier State (if applicable) | Supplier Country | Single/Sole Supplier? | U.S. Government Program Supported |   |   |   |   |
|  |                                   |                     |  |               |                                |                  |                       | 1                                 | 2 | 3 | 4 | 5 |
| 1.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 2.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 3.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 4.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 5.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 6.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 7.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 8.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 9.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 10.  |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |

| F: Payload Instruments & Measurement Tools |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
|--|-----------------------------------|---------------------|--|---------------|--------------------------------|------------------|-----------------------|-----------------------------------|---|---|---|---|
| Supplier Name                              | Product Area Provided by Supplier | Product Description | Product Area that the Supplied Product is Utilized For | Supplier City | Supplier State (if applicable) | Supplier Country | Single/Sole Supplier? | U.S. Government Program Supported |   |   |   |   |
|  |                                   |                     |  |               |                                |                  |                       | 1                                 | 2 | 3 | 4 | 5 |
| 1.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 2.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 3.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 4.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 5.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 6.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 7.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 8.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 9.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 10.  |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |

| G: Ground Systems |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
|-------------------|-----------------------------------|---------------------|--|---------------|--------------------------------|------------------|-----------------------|-----------------------------------|---|---|---|---|
| Supplier Name     | Product Area Provided by Supplier | Product Description | Product Area that the Supplied Product is Utilized For | Supplier City | Supplier State (if applicable) | Supplier Country | Single/Sole Supplier? | U.S. Government Program Supported |   |   |   |   |
|                   |                                   |                     |  |               |                                |                  |                       | 1                                 | 2 | 3 | 4 | 5 |
| 1.                |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 2.                |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 3.                |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 4.                |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 5.                |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 6.                |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 7.                |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 8.                |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 9.                |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 10.               |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |

| H: Non-Earth Based Surface Systems |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
|------------------------------------|-----------------------------------|---------------------|--|---------------|--------------------------------|------------------|-----------------------|-----------------------------------|---|---|---|---|
| Supplier Name                      | Product Area Provided by Supplier | Product Description | Product Area that the Supplied Product is Utilized For | Supplier City | Supplier State (if applicable) | Supplier Country | Single/Sole Supplier? | U.S. Government Program Supported |   |   |   |   |
|                                    |                                   |                     |  |               |                                |                  |                       | 1                                 | 2 | 3 | 4 | 5 |
| 1.                                 |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 2.                                 |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 3.                                 |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 4.                                 |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 5.                                 |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 6.                                 |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 7.                                 |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 8.                                 |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 9.                                 |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |
| 10.                                |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |

Comments:

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

**Section 5.c Critical Suppliers (cont.)**

For each Product and Service segment (A-P), identify your organization's critical suppliers. Only identify suppliers that support products/services mentioned earlier in the survey (in Section 3). Please list as many suppliers in each section as possible. **Each critical supplier should be indicated in the Product and Service segment for the product/service they supply to your organization** - not the segment you utilize their product/service for. For example: a supplier who provides semiconductors should be identified in segment J: Electronic Equipment, not the segment that the semiconductor integrated into.

Once you have located the appropriate segment for a supplier, identify the supplier's name, the product/service area they provide (from the drop-down menu), and a short description of the specific product/service. Next, identify the product/service area that each item supplied is utilized for (this should be one of the products/services your organization manufactures or provides). In addition, identify the city, state, and country of the supplier and whether this supplier is a single and/or sole source of the product/service in question (see definitions). Finally, identify any U.S. Government space-related programs that each supplier and product/service is used to support by your organization, if applicable.

If a supplier provides more than one product/service area, complete the supplier information on two separate rows and alter the product/service area accordingly.

For the purposes of this survey, a supplier may be, but does not have to be, considered critical if it meets any of the following criteria:

- Is used to support multiple U.S. Government programs;
- Is a sole and/or single source supplier;
- Contributes a significant portion to the end product's value;
- Provides a product/service that has a long lead-time;
- Provides an important obsolete or out of production part; and/or
- Meets any other criteria for criticality that your organization utilizes.

| <b>I: Power Sources &amp; Energy Storage</b> |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
|--|-----------------------------------|---------------------|--|---------------|--------------------------------|------------------|-----------------------|-----------------------------------|---|---|---|---|--|--|
| Supplier Name                                | Product Area Provided by Supplier | Product Description | Product Area that the Supplied Product is Utilized For | Supplier City | Supplier State (if applicable) | Supplier Country | Single/Sole Supplier? | U.S. Government Program Supported |   |   |   |   |  |  |
|  |                                   |                     |  |               |                                |                  |                       | 1                                 | 2 | 3 | 4 | 5 |  |  |
| 1.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 2.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 3.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 4.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 5.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 6.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 7.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 8.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 9.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 10.  |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |

  

| <b>J: Electronic Equipment</b> |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
|--------------------------------|-----------------------------------|---------------------|--|---------------|--------------------------------|------------------|-----------------------|-----------------------------------|---|---|---|---|--|--|
| Supplier Name                  | Product Area Provided by Supplier | Product Description | Product Area that the Supplied Product is Utilized For | Supplier City | Supplier State (if applicable) | Supplier Country | Single/Sole Supplier? | U.S. Government Program Supported |   |   |   |   |  |  |
|                                |                                   |                     |  |               |                                |                  |                       | 1                                 | 2 | 3 | 4 | 5 |  |  |
| 1.                             |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 2.                             |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 3.                             |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 4.                             |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 5.                             |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 6.                             |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 7.                             |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 8.                             |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 9.                             |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 10.                            |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |

  

| <b>K: Computer Hardware &amp; Robotics</b> |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
|--|-----------------------------------|---------------------|--|---------------|--------------------------------|------------------|-----------------------|-----------------------------------|---|---|---|---|--|--|
| Supplier Name                              | Product Area Provided by Supplier | Product Description | Product Area that the Supplied Product is Utilized For | Supplier City | Supplier State (if applicable) | Supplier Country | Single/Sole Supplier? | U.S. Government Program Supported |   |   |   |   |  |  |
|  |                                   |                     |  |               |                                |                  |                       | 1                                 | 2 | 3 | 4 | 5 |  |  |
| 1.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 2.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 3.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 4.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 5.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 6.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 7.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 8.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 9.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 10.  |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |

  

| <b>L: Software</b> |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
|--------------------|-----------------------------------|---------------------|--|---------------|--------------------------------|------------------|-----------------------|-----------------------------------|---|---|---|---|--|--|
| Supplier Name      | Product Area Provided by Supplier | Product Description | Product Area that the Supplied Product is Utilized For | Supplier City | Supplier State (if applicable) | Supplier Country | Single/Sole Supplier? | U.S. Government Program Supported |   |   |   |   |  |  |
|                    |                                   |                     |  |               |                                |                  |                       | 1                                 | 2 | 3 | 4 | 5 |  |  |
| 1.                 |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 2.                 |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 3.                 |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 4.                 |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 5.                 |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 6.                 |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 7.                 |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 8.                 |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 9.                 |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 10.                |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |

Comments: \_\_\_\_\_

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

**Section 5.d Critical Suppliers (cont.)**

For each Product and Service segment (A-P), identify your organization's critical suppliers. Only identify suppliers that support products/services mentioned earlier in the survey (in Section 3). Please list as many suppliers in each section as possible. **Each critical supplier should be indicated in the Product and Service segment for the product/service they supply to your organization** - not the segment you utilize their product/service for. For example: a supplier who provides semiconductors should be identified in segment J: Electronic Equipment, not the segment that the semiconductor integrated into.

Once you have located the appropriate segment for a supplier, identify the supplier's name, the product/service area they provide (from the drop-down menu), and a short description of the specific product/service. Next, identify the product/service area that each item supplied is utilized for (this should be one of the products/services your organization manufactures or provides). In addition, identify the city, state, and country of the supplier and whether this supplier is a single and/or sole source of the product/service in question (see definitions). Finally, identify any U.S. Government space-related programs that each supplier and product/service is used to support by your organization, if applicable.

If a supplier provides more than one product/service area, complete the supplier information on two separate rows and alter the product/service area accordingly.

For the purposes of this survey, a supplier may be, but does not have to be, considered critical if it meets any of the following criteria:

- Is used to support multiple U.S. Government programs;
- Is a sole and/or single source supplier;
- Contributes a significant portion to the end product's value;
- Provides a product/service that has a long lead-time;
- Provides an important obsolete or out of production part; and/or
- Meets any other criteria for criticality that your organization utilizes.

| M: Materials, Structures, and Mechanical Systems |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
|--|-----------------------------------|---------------------|--|---------------|--------------------------------|------------------|-----------------------|-----------------------------------|---|---|---|---|--|--|
| Supplier Name                                    | Product Area Provided by Supplier | Product Description | Product Area that the Supplied Product is Utilized For | Supplier City | Supplier State (if applicable) | Supplier Country | Single/Sole Supplier? | U.S. Government Program Supported |   |   |   |   |  |  |
|  |                                   |                     |  |               |                                |                  |                       | 1                                 | 2 | 3 | 4 | 5 |  |  |
| 1.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 2.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 3.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 4.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 5.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 6.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 7.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 8.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 9.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 10.  |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |

| N: Manufacturing Tools & Specialty Equipment |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
|--|-----------------------------------|---------------------|--|---------------|--------------------------------|------------------|-----------------------|-----------------------------------|---|---|---|---|--|--|
| Supplier Name                                | Product Area Provided by Supplier | Product Description | Product Area that the Supplied Product is Utilized For | Supplier City | Supplier State (if applicable) | Supplier Country | Single/Sole Supplier? | U.S. Government Program Supported |   |   |   |   |  |  |
|  |                                   |                     |  |               |                                |                  |                       | 1                                 | 2 | 3 | 4 | 5 |  |  |
| 1.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 2.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 3.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 4.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 5.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 6.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 7.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 8.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 9.   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 10.  |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |

| O: Services   |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
|---------------|-----------------------------------|---------------------|--|---------------|--------------------------------|------------------|-----------------------|-----------------------------------|---|---|---|---|--|--|
| Supplier Name | Service Area Provided by Supplier | Product Description | Product Area that the Supplied Service is Utilized For | Supplier City | Supplier State (if applicable) | Supplier Country | Single/Sole Supplier? | U.S. Government Program Supported |   |   |   |   |  |  |
|               |                                   |                     |  |               |                                |                  |                       | 1                                 | 2 | 3 | 4 | 5 |  |  |
| 1.            |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 2.            |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 3.            |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 4.            |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 5.            |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 6.            |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 7.            |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 8.            |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 9.            |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 10.           |                                   |                     |  |               |                                |                  |                       |                                   |   |   |   |   |  |  |

| P: Research & Development |                               |                     |   |               |                                |                  |                       |                                   |   |   |   |   |  |  |
|---------------------------|-------------------------------|---------------------|---|---------------|--------------------------------|------------------|-----------------------|-----------------------------------|---|---|---|---|--|--|
| Supplier Name             | R&D Area Provided by Supplier | Product Description | Product Area that the R&D is Utilized For | Supplier City | Supplier State (if applicable) | Supplier Country | Single/Sole Supplier? | U.S. Government Program Supported |   |   |   |   |  |  |
|                           |                               |                     |   |               |                                |                  |                       | 1                                 | 2 | 3 | 4 | 5 |  |  |
| 1.                        |                               |                     |   |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 2.                        |                               |                     |   |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 3.                        |                               |                     |   |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 4.                        |                               |                     |   |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 5.                        |                               |                     |   |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 6.                        |                               |                     |   |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 7.                        |                               |                     |   |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 8.                        |                               |                     |   |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 9.                        |                               |                     |   |               |                                |                  |                       |                                   |   |   |   |   |  |  |
| 10.                       |                               |                     |   |               |                                |                  |                       |                                   |   |   |   |   |  |  |

Comments: \_\_\_\_\_

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

**Section 6**

**Top Customers**

Identify your organization's top 20 U.S. and non-U.S. **direct space-related customers** by sales for the 2009-2012 period. A direct customer is the immediate entity you are selling your product/service to. Indicate the type of customer, their location, and whether or not you consider the customer a competitor to your organization. Finally, identify the top five products and/or services your organization provided to each customer.

As a reminder, for the purpose of this survey, space-related is defined as any product, service, or object that is a) used in or launched into space; b) used to directly or indirectly support space applications from Earth; and/or c) used to manufacture any product that is used in space or directly supports space applications. The product, service, or object does not have to be specifically intended to support space applications.

If your organization does not have any space-related customers, you may select "Not Applicable" from the box to the right and skip this section.

**Top U.S.-Based Customers**

|     | Customer Name | Type of Customer | Customer City | Customer State | Competitor? | Product/Service Codes Provided to Customer |   |   |   |   |
|-----|---------------|------------------|---------------|----------------|-------------|--|---|---|---|---|
|     |               |                  |               |                |             | 1  | 2 | 3 | 4 | 5 |
| 1.  |               |                  |               |                |             |  |   |   |   |   |
| 2.  |               |                  |               |                |             |  |   |   |   |   |
| 3.  |               |                  |               |                |             |  |   |   |   |   |
| 4.  |               |                  |               |                |             |  |   |   |   |   |
| 5.  |               |                  |               |                |             |  |   |   |   |   |
| 6.  |               |                  |               |                |             |  |   |   |   |   |
| 7.  |               |                  |               |                |             |  |   |   |   |   |
| 8.  |               |                  |               |                |             |  |   |   |   |   |
| 9.  |               |                  |               |                |             |  |   |   |   |   |
| 10. |               |                  |               |                |             |  |   |   |   |   |
| 11. |               |                  |               |                |             |  |   |   |   |   |
| 12. |               |                  |               |                |             |  |   |   |   |   |
| 13. |               |                  |               |                |             |  |   |   |   |   |
| 14. |               |                  |               |                |             |  |   |   |   |   |
| 15. |               |                  |               |                |             |  |   |   |   |   |
| 16. |               |                  |               |                |             |  |   |   |   |   |
| 17. |               |                  |               |                |             |  |   |   |   |   |
| 18. |               |                  |               |                |             |  |   |   |   |   |
| 19. |               |                  |               |                |             |  |   |   |   |   |
| 20. |               |                  |               |                |             |  |   |   |   |   |

**Top Non-U.S. Based Customers**

|     | Customer Name | Type of Customer | Customer City | Customer Country | Competitor? | Product/Service Codes Provided to Customer |   |   |   |   |
|-----|---------------|------------------|---------------|------------------|-------------|--|---|---|---|---|
|     |               |                  |               |                  |             | 1  | 2 | 3 | 4 | 5 |
| 1.  |               |                  |               |                  |             |  |   |   |   |   |
| 2.  |               |                  |               |                  |             |  |   |   |   |   |
| 3.  |               |                  |               |                  |             |  |   |   |   |   |
| 4.  |               |                  |               |                  |             |  |   |   |   |   |
| 5.  |               |                  |               |                  |             |  |   |   |   |   |
| 6.  |               |                  |               |                  |             |  |   |   |   |   |
| 7.  |               |                  |               |                  |             |  |   |   |   |   |
| 8.  |               |                  |               |                  |             |  |   |   |   |   |
| 9.  |               |                  |               |                  |             |  |   |   |   |   |
| 10. |               |                  |               |                  |             |  |   |   |   |   |
| 11. |               |                  |               |                  |             |  |   |   |   |   |
| 12. |               |                  |               |                  |             |  |   |   |   |   |
| 13. |               |                  |               |                  |             |  |   |   |   |   |
| 14. |               |                  |               |                  |             |  |   |   |   |   |
| 15. |               |                  |               |                  |             |  |   |   |   |   |
| 16. |               |                  |               |                  |             |  |   |   |   |   |
| 17. |               |                  |               |                  |             |  |   |   |   |   |
| 18. |               |                  |               |                  |             |  |   |   |   |   |
| 19. |               |                  |               |                  |             |  |   |   |   |   |
| 20. |               |                  |               |                  |             |  |   |   |   |   |

Comments:

**Section 7****Top Competitors**

Identify your organization's leading U.S. and non-U.S. competitors for **space-related products and/or services**. Indicate their name, the type of competitor, location, and corresponding Product and Service Segment relating to the competition. Note: U.S. Government agencies and centers may be considered competitors.

If your organization does not have competitors for space-related products and/or services, you may select "Not Applicable" from the box to the right and skip this section.

| U.S. Competitors |                    |       |   | Product/Service Segment |   |  |
|------------------|--------------------|-------|---|-------------------------|---|--|
| Competitor Name  | Type of Competitor | State | 1 | 2                       | 3 |  |
| 1.               |                    |       |   |                         |   |  |
| 2.               |                    |       |   |                         |   |  |
| 3.               |                    |       |   |                         |   |  |
| 4.               |                    |       |   |                         |   |  |
| 5.               |                    |       |   |                         |   |  |

  

| Non-U.S. Competitors |                    |         |   | Product/Service Segment |   |  |
|----------------------|--------------------|---------|---|-------------------------|---|--|
| Competitor Name      | Type of Competitor | Country | 1 | 2                       | 3 |  |
| 1.                   |                    |         |   |                         |   |  |
| 2.                   |                    |         |   |                         |   |  |
| 3.                   |                    |         |   |                         |   |  |
| 4.                   |                    |         |   |                         |   |  |
| 5.                   |                    |         |   |                         |   |  |

B. Has your organization been adversely impacted by competition from Federally Funded Research and Development Centers (FFRDCs) and/or U.S. Government agencies? Explain below. If this question is not applicable to your organization, select "Not Applicable" from the box to the right.

|  |  |
|--|--|
|  |  |
|--|--|

|           |  |
|-----------|--|
| Comments: |  |
|-----------|--|

**Section 8.a****Manufacturing Operations**

Section 8 asks questions related to your organization's manufacturing operations.

If your organization manufactures/assembles/integrates one or more of the products in Section 3, you must complete this section.

Based on your responses to Section 3, if your organization is **only** a distributor of products or a service/R&D provider, select "Not Applicable" in the box to the right. You may then skip this section and proceed to Section 9.

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

**Section 8.b Manufacturing Operations**

|    |   |        |  |
|----|---|--------|--|
| A. | Estimate your organization's current "Make/Buy" ratio. In other words, estimate the percentage of dollars spent for work done by your organization's employees ("Make" percentage) vs. the dollars spent for work done by outside contractors ("Buy" percentage). | Make % |  |
|    | Note: "Make" includes internal organization purchasing.   | Buy %  |  |

|    |  |  |
|----|--|--|
| B. | Does your organization maintain an inventory for <b>space-related</b> components, manufacturing materials, and/or finished products? (See definitions) |  |
|    | On average, how many months supply of <b>space-related</b> finished, manufactured products are normally maintained in inventory?                       |  |
|    | On average, how many months supply of <b>space-related</b> components and manufacturing materials products are normally maintained in inventory?       |  |

|    |  |  |
|----|--|--|
| C. | What is the average amount of time it takes to approve or officially certify a new supplier for <b>space-related</b> applications, assuming one was available? |  |
|----|--|--|

|    |  |  |   |
|----|--|--|---|
| D. | Does your organization use any of the elements identified below in its <b>space-related</b> production process or as a component of final products? Identify each. |  |   |
|    | Aluminum   |  | Praseodymium                              |
|    | Antimony   |  | Rare Earth Phosphors                      |
|    | Carbon graphite  |  | Rare Earth Polishing Agent                |
|    | Copper   |  | Samarium                                  |
|    | Dysprosium   |  | Samarium-Cobalt Magnets                   |
|    | Europium   |  | Tantalum                                  |
|    | Gadolinium   |  | Terbium                                   |
|    | Gold   |  | Tin                                       |
|    | Mercury  |  | Titanium                                  |
|    | Neodymium  |  | Tungsten                                  |
|    | Neodymium-Iron-Boron Magnets   |  | Yttrium                                   |
|    | Other Rare Earth Oxide or Chemical (specify)   |  | Other Rare Earth Metal or Alloy (specify) |

|   |        |         |
|---|--------|---------|
| Identify whether your organization's <b>space-related</b> operations have been adversely impacted by any of the following factors related to the elements identified above. Explain your response, identifying the specific elements concerned. |        |         |
| Factor  | Yes/No | Explain |
| Increase in U.S. demand   |        |         |
| Increase in non-U.S. demand   |        |         |
| Decrease in U.S. availability   |        |         |
| Decrease in non-U.S. availability   |        |         |
| Sharp changes in market price   |        |         |
| Other (specify)   |        |         |

|    |  |      |  |
|----|--|------|--|
| F. | Estimate the capacity utilization rate (see definitions) for your organization from 2009-2012. | 2009 |  |
|    |  | 2010 |  |
|    |  | 2011 |  |
|    |  | 2012 |  |

|    |   |  |
|----|---|--|
| F. | Estimate the minimum level of capacity utilization necessary to keep your production costs from changing disproportionately to order volume. Explain your response below. |  |
|    |   |  |

Comments: \_\_\_\_\_

|                  |                                    |
|------------------|------------------------------------|
| <b>Section 9</b> | <b>General Business Operations</b> |
|------------------|------------------------------------|

|    |  |                    |  |
|----|--|--------------------|--|
| A. | Does your organization maintain an internal preferred sub-contractor/supplier program? If "Yes," what percentage of suppliers have preferred status? | Preferred Program? |  |
|    |  | Percentage:        |  |

B. From the drop-downs below, select the predominant type of contract your organization enters into with suppliers and customers for **space-related** products and/or services (See Definitions for an explanation of each type of contract).

|            |  |            |  |
|------------|--|------------|--|
| Suppliers: |  | Customers: |  |
|------------|--|------------|--|

C. From the drop-down below, identify the top three support operations that present challenges when utilizing outside/third-party suppliers for space-related operations. Explain each. Challenges may include lack of qualified vendors, pricing, quality issues, environmental regulations, etc.

|    | Type of Business Support Operation | Explanation of Challenges |
|----|------------------------------------|---------------------------|
| C. |                                    |                           |
|    |                                    |                           |
|    |                                    |                           |

D. From 2009-2012, did your organization encounter counterfeits for any of the following types of products? (see Definitions) Select all that apply.

|    |   |  |  |  |
|----|---|--|--|--|
| D. | Electronics (integrated circuits, circuit boards, discrete electronic components, etc.) |  | Software   |  |
|    | Fasteners   |  | Systems/sub-systems (navigation, communications, propulsion, etc.) |  |
|    | Materials (metals, alloys, elements etc.)   |  | Testing procedures and/or documentation                            |  |
|    | Mechanical systems (hydraulics, gear boxes, etc.)                                       |  | Other types of counterfeits (specify)                              |  |
|    | Power sources or energy storage equipment   |  | Other types of counterfeits (specify)                              |  |

|    |  |  |
|----|--|--|
| E. | Does your organization have a formal, written protocol for handling, documenting, and reporting incidents of counterfeits? |  |
|----|--|--|

|           |  |
|-----------|--|
| Comments: |  |
|-----------|--|

**Section 10 Relationships Other Government Agencies**

|   |   |   |  |
|---|---|---|--|
| To the best of your knowledge, identify any U.S. Government agencies your organization directly and/or indirectly supports from the list below. For each, indicate whether this support is space-related, non-space related, or both. |   |   |  |
|   | Agency  |   | Agency   |
| A.  | Central Intelligence Agency (CIA)   |   | National Geospatial-Intelligence Agency (NGA)                                    |
|   | Defense Advanced Research Projects Agency (DARPA)   |   | National Oceanic and Atmospheric Administration (NOAA)                           |
|   | Director, Defense Research and Engineering (DDR&E)  |   | National Aeronautics and Space Administration (NASA)                             |
|   | Department of Energy (including the National Nuclear Security Administration)   |   | National Reconnaissance Office (NRO)   |
|   | Federal Aviation Administration (FAA)   |   | National Security Agency (NSA)   |
|   | Missile Defense Agency (MDA)  |   | U.S. Air Force (including the Space and Missile Systems Center and AFRL)         |
|   | Other (specify)   |   | U.S. Army (including the Space and Missile Defense Command)                      |
|   | Other (specify)   |   | U.S. Navy (including the Office of Naval Research and Naval Research Laboratory) |
|   | Other (specify)   |   | Other Department of Defense Organizations  |
|   | B.  | Does your organization consider itself dependent upon <b>current U.S. Government space-related programs</b> for its continued viability? Explain your response below. |  |
| <br>  |   |   |  |
| C.  | Estimate the percentage range of compatibility of your current U.S. Government space-related product/service lines with current commercial space applications, if applicable.                   |   |  |
| D.  | Estimate the percentage range of compatibility of all your space-related product/service lines (U.S. Government and commercial) to your non-space related product/service lines, if applicable. |   |  |
| Comments:   |   |   |  |
| <b>BUSINESS CONFIDENTIAL - Per Section 705(d) of the Defense Production Act</b>   |   |   |  |

**Section 11.a****Demand and Production**

|   |   |  |  |  |
|---|---|--|--|--|
| A.  | How vulnerable is your organization to variability in <b>U.S. Government demand</b> , on a scale from 1 to 5 (1 = no vulnerability; 5 = very high vulnerability). Explain your reasoning below. If this is not applicable to your organization, select 'Not Applicable' from the drop-down. |  |  |  |
|   |   |  |  |  |
| B.  | How vulnerable is your organization to variability in <b>commercial demand</b> , on a scale from 1 to 5 (1 = no vulnerability; 5 = very high vulnerability). Explain your response below. If this is not applicable to your organization, select 'Not Applicable' from the drop-down.       |  |  |  |
|   |   |  |  |  |
| C.  | From the list below, select the potential impacts that a sudden decrease in direct and/or indirect U.S. Government <b>space-related</b> demand would have on your organization:   |  |  |  |
|   | Decreased capital expenditures  |  | Pursuit of new product/service lines                 |  |
|   | Decreased research & development expenditures   |  | Pursuit of other non-U.S. customers                  |  |
|   | Disproportionate reduction in sales revenue   |  | Pursuit of other U.S. customers                      |  |
|   | Elimination of all participation in U.S. Government contracts   |  | Reduced participation in U.S. Government contracts   |  |
|   | Increased product/service costs   |  | Reduction or elimination of particular product lines |  |
|   | Loss of organization viability or solvency  |  | Sale of key production equipment                     |  |
|   | Loss of personnel with key skills   |  | Other (specify)                                      |  |
|   | Other (specify)   |  | Other (specify)                                      |  |
|   | Comments:   |  |  |  |
| <b>BUSINESS CONFIDENTIAL - Per Section 705(d) of the Defense Production Act</b> |   |  |  |  |

**Section 11.b Demand and Production (cont.)**

A. Has variability of demand from U.S. Government organizations for **space-related** products/services **adversely impacted** your organization's desire to continue to directly or indirectly serve these customers? Explain your response below.

From 2009-2012, indicate if your organization experienced an increase, decrease, or no change in **space-related** customer demand for the following business lines you selected in Section 1.c, if applicable. Explain your response below.

|  | Your Response From Section 1.c | Change in Customer Demand |
|--|--------------------------------|---------------------------|
| Distribution/brokerage/reseller/retail                                   | 0                              |                           |
| Inspection and quality control   | 0                              |                           |
| Integration (product, systems integration)                               | 0                              |                           |
| Information technology (software, hardware, installation)                | 0                              |                           |
| Maintenance/aftermarket/repair/refurbishing services                     | 0                              |                           |
| Manufacturing (including assembly)                                       | 0                              |                           |
| Manufacturing systems development and management                         | 0                              |                           |
| B. Material finishing (machining, coating, plating, heat treating, etc.) | 0                              |                           |
| Material preparation (casting, forming, molding, forging, etc.)          | 0                              |                           |
| Product and design engineering (tooling, new processes, etc.)            | 0                              |                           |
| Professional services (legal, accounting, consulting, etc.)              | 0                              |                           |
| Research and development   | 0                              |                           |
| Raw materials provider   | 0                              |                           |
| Testing/evaluation/validation  | 0                              |                           |
| Other services not specified elsewhere on this list                      | 0                              |                           |

Comments:

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

**Section 12 Sales**

Provide your organization's 2009-2012 U.S. and non-U.S. sales information and projected 2013-2017 sales trend information. Calendar year data is preferred. Estimates are acceptable.

Note: Ensure your source of sales data is **consistent with your response in the Respondent Profile Section**. In other words, if you have declared this to be a Business Unit/Division-level response, this section should contain Business Unit/Division-level data.

Note: For the purpose of this survey, Foreign Military Sales (FMS) should be considered as U.S. Government Sales and/or U.S. Government Space-Related Sales.

|                       |  |
|-----------------------|--|
| Source of Sales Data: |  |
| Reporting Schedule:   |  |

| "U.S." means U.S. domestic sales; "Non-U.S." means export sales from U.S. locations |   | Record in \$ Thousands, e.g. \$12,000.00 = survey input \$12 |          |      |          |      |          |       |          |           |          |
|---|---|--|----------|------|----------|------|----------|-------|----------|-----------|----------|
|   |   | 2009   |          | 2010 |          | 2011 |          | 2012* |          | 2013-2017 |          |
|   |   | U.S.   | Non-U.S. | U.S. | Non-U.S. | U.S. | Non-U.S. | U.S.  | Non-U.S. | U.S.      | Non-U.S. |
| A.  | Total Sales, all Customers (in \$)                                  |  |          |      |          |      |          |       |          |           |          |
| B.  | Total Non-Government Sales (as a % of part A)                       |  |          |      |          |      |          |       |          |           |          |
| C.  | Total Government Sales (as a % of part A)                           |  |          |      |          |      |          |       |          |           |          |
| D.  | Total Space-Related Sales (in \$)                                   |  |          |      |          |      |          |       |          |           |          |
| E.  | U.S. Government Space-Related, Defense Sales (as a % of part D)     |  |          |      |          |      |          |       |          |           |          |
| F.  | U.S. Government Space-Related, Non-Defense Sales (as a % of part D) |  |          |      |          |      |          |       |          |           |          |
| G.  | Commercial Space-Related Sales (as a % of part D)                   |  |          |      |          |      |          |       |          |           |          |

\* Furnish full year **estimates** for 2012.

|           |  |
|-----------|--|
| Comments: |  |
|-----------|--|

**Section 13****U.S. Export Control Regulations**

|   |   |        |                            |
|---|---|--------|----------------------------|
| A.  | Do you utilize the U.S. export control system (ITAR or EAR) for the export of <b>space-related</b> products and services? Indicate to what extent from the drop-down menu.<br><br>If you do not utilize U.S. export control licenses for <b>space-related</b> products or services, select "No, Not at All" in the box and skip the rest of this section. |        |                            |
| B.  | Has your organization lost export sales opportunities of <b>space-related</b> products or services to non-U.S. competitors because of U.S. export controls (ITAR or EAR)? If "Yes," select the total dollar amount of lost export sales opportunities from 2009-2012.   | Yes/No | Lost Export Sales Estimate |
|   |   |        |                            |
| To the best of your knowledge, have U.S. export control regulations had any of the following impacts on your organization? If "Yes," explain in the box provided. |   |        |                            |
| Impact  |   | Yes/No | Explanation                |
| Altered your organization's space-related research and development expenditures.  |   |        |                            |
| Avoided the export of space-related products or services that are subject to EAR-related controls.  |   |        |                            |
| Avoided the export of space-related products or services that are subject to ITAR-related controls.   |   |        |                            |
| C.  | Caused your organization to abandon or alter the composition of your space-related business lines.  |        |                            |
| Caused your organization to locate or relocate space-related production/R&D facilities outside the United States due to regulatory burdens.                       |   |        |                            |
| Contributed to the creation of non-U.S. companies/business lines in direct competition with your space-related products or services.                              |   |        |                            |
| Incentivized non-U.S. organizations to "design-out" or avoid buying U.S. origin space-related products or services.   |   |        |                            |
| Incentivized non-U.S. organizations to offer "ITAR-free" space-related products or services.  |   |        |                            |
| Comments:   |   |        |                            |
| <b>BUSINESS CONFIDENTIAL - Per Section 705(d) of the Defense Production Act</b>   |   |        |                            |

**Section 14**

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**Section 15.a Research and Development**

In Question A, record your organization's total research and development (R&D) dollar expenditures and type of R&D expenditure. In Question B, identify your organization's R&D funding sources, by percent of total R&D dollars sourced.

Note: If your organization's annual Total R&D Expenditures and Total R&D Funding Sources do not match, explain the discrepancy in the comment box.  
 Note: Ensure your source of R&D data is **consistent with your response in the Respondent Profile Section**. In other words, if you have declared this to be a Business Unit/Division-level response, this section should contain Business Unit/Division-level data.

|   |  |  |      |      |       |
|---|--|--|------|------|-------|
| Source of R&D Data:   |  |  |      |      |       |
| R&D Reporting Schedule:   |  |  |      |      |       |
| R&D Expenditures  |  | <b>Record \$ in Thousands, e.g. \$12,000.00 = survey input of \$12</b> |      |      |       |
|   |  | 2009   | 2010 | 2011 | 2012* |
| A.  | 1. Total R&D Expenditures  |  |      |      |       |
|   | 2. Basic Research (as a percent of 1)                                  |  |      |      |       |
|   | 3. Applied Research (as a percent of 1)                                |  |      |      |       |
|   | 4. Product/Process Development (as a percent of 1)                     |  |      |      |       |
|   | 5. Total of 2 - 4 (must equal 100%)                                    | 0%   | 0%   | 0%   | 0%    |
|   | 6. % of Total R&D Expenditures supporting space-related business lines |  |      |      |       |
| R&D Funding Sources   |  | <b>Record \$ in Thousands, e.g. \$12,000.00 = survey input of \$12</b> |      |      |       |
|   |  | 2009   | 2010 | 2011 | 2012* |
| B.  | 1. Total R&D Funding Sources   |  |      |      |       |
|   | 2. Internal/Self-Funded/IRAD (as a percent of 1)                       |  |      |      |       |
|   | 3. Total Federal Government (as a percent of 1)                        |  |      |      |       |
|   | 4. Total State and Local Government (as a percent of 1)                |  |      |      |       |
|   | 5. Universities - Public and Private (as a percent of 1)               |  |      |      |       |
|   | 6. U.S. Industry, Venture Capital, Non-Profit (as a percent of 1)      |  |      |      |       |
|   | 7. Non-U.S. Investors (as a percent of 1)                              |  |      |      |       |
|   | 8. Other (specify) <input type="text"/>                                |  |      |      |       |
| * Furnish full year <b>estimates</b> for 2012.                                  |  |  |      |      |       |
| Comments:   |  | <input type="text"/>   |      |      |       |
| <b>BUSINESS CONFIDENTIAL - Per Section 705(d) of the Defense Production Act</b> |  |  |      |      |       |

**Section 15.b****Research & Development (cont.)**

|   |   |  |
|---|---|--|
| A.  | From 2009-2012, have your organization's R&D expenditures been adversely impacted by reductions in U.S. Government space-related spending?  |  |
| B.  | Do you anticipate your organization's R&D expenditures to be adversely impacted in the future by reductions in U.S. Government space-related spending? Explain your response below. |  |
|   |   |  |
| Comments:   |   |  |
| <b>BUSINESS CONFIDENTIAL - Per Section 705(d) of the Defense Production Act</b> |   |  |

**Section 16 Capital Expenditures**

Record your organization's capital expenditures corresponding to the select categories below.  
 Note: Ensure your source of capital expenditure data is **consistent with your response in the Respondent Profile**. In other words, if you have declared this to be a Business Unit/Division-level response, this section should contain Business Unit/Division-level data.

|   |  |
|---|--|
| Source of Capital Expenditure Data:     |  |
| Capital Expenditure Reporting Schedule: |  |

| Capital Expenditure Category |  | Record in \$ Thousands, e.g. \$12,000.00 = survey input of \$12 |      |      |       |
|------------------------------|--|---|------|------|-------|
|                              |  | 2009  | 2010 | 2011 | 2012* |
| A.                           | 1. Total Capital Expenditures                                      |   |      |      |       |
|                              | 2. Machinery, Equipment, and Vehicles (as a percent of 1)          |   |      |      |       |
|                              | 3. IT, Computers, Software (as a percent of 1)                     |   |      |      |       |
|                              | 4. Land, Buildings, and Leasehold Improvements (as a percent of 1) |   |      |      |       |
|                              | 5. Other (specify)   |   |      |      |       |
|                              | 6. Other (specify)   |   |      |      |       |

|    |   |  |  |  |  |
|----|---|--|--|--|--|
| B. | % of Total Capital Expenditures supporting space-related business lines |  |  |  |  |
|----|---|--|--|--|--|

|    |  |  |
|----|--|--|
| C. | From 2009-2012, have your organization's capital expenditures been adversely impacted by reductions in U.S. Government space-related spending? |  |
|----|--|--|

|    |   |  |
|----|---|--|
| D. | Do you anticipate your organization's capital expenditures to be adversely impacted in the future by reductions in U.S. Government space-related spending? Explain your response below. |  |
|    |   |  |

Identify any unique or critical equipment, infrastructure, and/or facilities owned and/or operated by your organization (e.g. space environmental simulation facilities, wind tunnels, rocket test equipment, etc.) for **space-related** applications. Provide a brief description of each.

| Type of Equipment, Infrastructure, or Facility |    | Description |
|--|----|-------------|
| E.   | 1. |             |
|  | 2. |             |
|  | 3. |             |
|  | 4. |             |
|  | 5. |             |

\* Furnish full year **estimates** for 2012.

|           |  |
|-----------|--|
| Comments: |  |
|-----------|--|

**Section 17.a Employment**

Record the total number of full-time equivalent (FTE) employees in your U.S.-based operations for the 2009-2012 period. Then, estimate the percentage of these employees that perform the professional occupations indicated in parts b-j.

Do not double count personnel who may perform cross-operational roles. Estimates are encouraged.

Note: Ensure your source of employment data is **consistent with your response to Respondent Profile**. In other words, if you have declared this to be a Business Unit/Division-level response, this section should contain Business Unit/Division-level data.

|   |  |      |      |      |       |
|---|--|------|------|------|-------|
| Source of Workforce Data:   |  |      |      |      |       |
| Reporting Schedule:   |  |      |      |      |       |
| Professional Occupations  |  | 2009 | 2010 | 2011 | 2012* |
| A.  | a. Total Full Time Equivalent (FTE) Employees  |      |      |      |       |
|   | b. Administrative, Management, & Legal Staff (as a % of a)   |      |      |      |       |
|   | c. Facility & Maintenance Staff (as a % of a)  |      |      |      |       |
|   | d. Information Technology Professionals (as a % of a)  |      |      |      |       |
|   | e. Marketing & Sales (as a % of a)   |      |      |      |       |
|   | f. Engineers, Scientists, and R&D Staff (as a % of a)  |      |      |      |       |
|   | g. Production Line Workers (as a % of a)   |      |      |      |       |
|   | h. Testing Operators, Quality Control, & Support Technicians (as a % of a)   |      |      |      |       |
|   | i. Other (specify)   |      |      |      |       |
|   | j. Other (specify)   |      |      |      |       |
| B.  | Estimate the percentage of your total FTEs that currently work on <b>space-related</b> products/services:                                    |      |      |      |       |
| C.  | Estimate the percentage of your total FTEs that perform functions that are Science, Technology, Engineering, and Mathematics (STEM)-related: |      |      |      |       |
| * Furnish full year <b>estimates</b> for 2012.                                  |  |      |      |      |       |
| Comments:   |  |      |      |      |       |
| <b>BUSINESS CONFIDENTIAL - Per Section 705(d) of the Defense Production Act</b> |  |      |      |      |       |

**Section 17.b Employment (cont.)**

Provide the number of your organization's current engineers, scientists, and R&D staff that fall within the functions and age ranges listed in the table below.

|    |   | < 30 Years Old | 30 to 40 Years Old | 40 to 50 Years Old | 50 to 60 Years Old | > 60 Years Old |
|----|---|----------------|--------------------|--------------------|--------------------|----------------|
| A. | a. U.S. Citizens - Engineers, Scientists, and R&D Staff     |                |                    |                    |                    |                |
|    | b. Non-U.S. Citizens - Engineers, Scientists, and R&D Staff |                |                    |                    |                    |                |

B. Indicate how many unfilled vacancies your organization currently has for the following types of positions:

- Engineers, Scientists, and R&D Staff
- Production Line Workers
- Testing Operators, Quality Control, & Support Technicians

Please explain any difficulties in filling these vacancies below.

Identify any unique **space-related** skills and/or competencies that your organization may have. Identify the general type of skill and/or competency from the drop-down menu then describe it in the right hand box.

|    |    | Type of Skill or Competency | Explanation |
|----|----|-----------------------------|-------------|
| C. | 1. |                             |             |
|    | 2. |                             |             |
|    | 3. |                             |             |
|    | 4. |                             |             |
|    | 5. |                             |             |

Comments:

**Section 18 Obstacles Affecting Long-Term Viability**

|  |  |  |   |  |
|--|--|--|---|--|
| Identify the top five issues and challenges affecting the long-term viability of your organization's product line(s) or service(s). Select five of the issues/challenges below, ranking them 1 to 5, with 1 being your top concern.  |  |  |   |  |
| A.   | Barriers to entry in the commercial space market   |  | Labor Costs   |  |
|  | Buy American Act Waivers   |  | Pension Costs   |  |
|  | Counterfeit Parts  |  | Proposed cuts to U.S. Government space programs   |  |
|  | Difficulty presenting new, innovative products to the U.S. Government  |  | Proximity to Customer   |  |
|  | Domestic Competition   |  | Proximity to Supplier   |  |
|  | Environmental Regulations/Remediation  |  | Qualifications/Certifications   |  |
|  | Export Controls/ITAR Regulations   |  | R&D Costs   |  |
|  | Foreign Competition  |  | Skills Retention  |  |
|  | Foreign Subsidies/Import Restrictions  |  | Taxes   |  |
|  | Government Acquisition Process   |  | U.S. Material Availability  |  |
|  | Government Purchasing Volatility   |  | U.S. Supplier Reliability   |  |
|  | Government Regulatory Burden   |  | Variability of Demand   |  |
|  | Healthcare   |  | Other (specify)   |  |
|  | Non-U.S. Material Availability   |  | Other (specify)   |  |
|  | Non-U.S. Supplier Reliability  |  | Other (specify)   |  |
| 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. |  |  |   |  |
| B.   | Business development (joint ventures, new markets, etc.)   |  | Patents and trademarks  |  |
|  | Energy and environmentally conscious manufacturing   |  | Product/service development (including manufacturing standards, processes, and practices)         |  |
|  | Export licensing (ITAR/EAR)  |  | R&D programs  |  |
|  | Financing (access to capital, loans, etc.)   |  | Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) contracts |  |
|  | Global export opportunities  |  | Training Opportunities  |  |
|  | Government procurement guidelines and e-commerce   |  | Country Commercial Guides (specify countries in box)  |  |
|  | Manufacturing technology development (including acquiring, licensing, and/or commercializing federally developed technologies) |  | Other (specify)   |  |
|  | Marketing assessment skills  |  | Other (specify)   |  |
| Comments:  |  |  |   |  |

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**Section 19**

**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))

|                                 |  |
|---------------------------------|--|
| 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? |  |
|---|--|

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