

U.S. CIVIL SPACE INDUSTRIAL BASE ASSESSMENT**SCOPE OF ASSESSMENT**

The U.S. Department of Commerce, Bureau of Industry and Security (BIS), Office of Technology Evaluation, in coordination with the National Aeronautics and Space Administration (NASA), Office of the Administrator and the National Oceanic and Atmospheric Administration (NOAA), National Environmental Satellite, Data, and Information Service (NESDIS) is conducting a survey and assessment of organizations affiliated with NASA, NOAA-NESDIS, and the broader U.S. Civil Space Industrial Base (CSIB). The resulting data will help identify the structure and interdependencies of organizations that participate in the CSIB and identify their associated supply chains. This effort will also aid NASA and NESDIS's ability to understand and respond to supply chain deficiencies, such as supply chain disruptions and diminishing manufacturing sources and material shortages (DMSMS), foreign sourcing and dependency, financial performance, cyber security incidents, use of critical minerals and materials, COVID-19 pandemic impacts, and other challenges facing the civil space industrial base.

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 Information furnished herewith is deemed confidential and will not be published or disclosed except in accordance with Section 705 of the Defense Production Act of 1950, as amended (50 U.S.C App.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 16 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information to BIS Information Collection Officer, Room 6883, Bureau of Industry and Security, U.S. Department of Commerce, Washington, D.C. 20230, and to the Office of Management and Budget, Paperwork Reduction Project (OMB Control No. 0694-0119), Washington, D.C. 20503.

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GENERAL INSTRUCTIONS

A.	<p>Your organization is required by law to complete this survey of the supply chain supporting the acquisition, manufacture, and sustainment of NASA and NOAA-NESDIS affiliated systems and subsystems, including related products and services.</p> <p>Your organization has been identified as a direct or indirect supplier to NASA or NOAA-NESDIS, meaning as a prime contractor, subcontractor or as part of their multi-tiered supply chain network as a raw or intermediate material provider, distributor, reseller, integrator, software developer, quality or test providers, manufacturer, small business, non-profit, laboratory, university, FFRDC, etc.</p> <p>Please complete the survey using the Microsoft Excel file downloaded from the secure Census Bureau portal: https://respond.census.gov/csib</p> <p>To improve internal coordination and overall reporting, a PDF version of the survey is available on the portal to aid internal data collection. The portal will only accept Excel submissions.</p>
B.	<p>Respond to every question. Surveys that are not fully completed will be returned for completion. Use the comment boxes at the bottom of every section to provide any supplemental information. 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. Refer to the "Definitions" section while completing the survey.</p> <p>Sections 2a-2g must be completed before proceeding to subsequent parts of the survey as answers inform menu options in later survey sections.</p> <p>DO NOT CUT AND PASTE RESPONSES WITHIN THIS SURVEY.</p> <p>Inputs to the survey are made by keyboard responses or use of a drop-down menu. The use of cut and paste can corrupt the file. If your submittal is corrupted due to cut and paste your organization will be required to download an additional survey from the portal and resubmit.</p>
C.	<p>Do not disclose any classified information in this survey form.</p>
D.	<p>Submit your survey only through the secure Census Bureau portal: https://respond.census.gov/csib</p> <p>Do not email surveys to BIS.</p>
E.	<p>Questions related to the survey content should be directed to BIS survey support staff at CSIBsurvey@bis.doc.gov.</p> <p>Email is the preferred method of contact.</p>
F.	<p>For questions related to the overall scope of the industrial base survey and assessment, contact CSIBsurvey@bis.doc.gov or:</p> <p>Jason Bolton, Director DOC/BIS/EA/OTE/Defense Industrial Base Division Room 1093, 1401 Constitution Avenue, NW Washington, DC 20230</p> <p>DO NOT submit completed surveys to Mr. Bolton.</p>
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DEFINITIONS	
Term	Definition
Additive Manufacturing	A process of joining materials to make objects from 3D model data, usually layer upon layer, as opposed to subtractive manufacturing technologies.
Advanced Materials	Materials with engineered properties created through the development of specialized processing and synthesis technology, including ceramics, high value-added metals, electronic materials, composites, polymers, and biomaterials.
Applied Research	A systematic study to gain the 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.
Approved Item	A DMSMS resolution in which the obsolescence issue is resolved by the use of items already approved on the drawing and still in production.
Artificial Intelligence (AI)	The ability of machines to perform tasks that normally require human intelligence.
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.
Blockchain	A decentralized, distributed ledger that records the provenance of a digital asset.
Brute Force cyberattack	A method of accessing an obstructed device through attempting multiple combinations of numeric/alphanumeric passwords.
Capability	The ability to provide the product or service within 12 months in typical business conditions.
Civil Space	Non-military/DOD space-related work supporting primarily NASA and NOAA and to a lesser extent Federal Aviation Administration, Federal Communications Commission, and the Department of Energy. For instance, the civil space industrial base goes beyond prime contractors and commercial companies to include federally-funded research and development centers (FFRDCs), universities, and laboratories.
Cloud Computing	The delivery of computing services—including servers, storage, databases, networking, software, analytics, and intelligence—over the Internet ("the cloud").
Code/SQL Injection	A type of cyberattack that looks for web sites that pass insufficiently-processed user input to database back-ends.
Commercial and Government Entity (CAGE) Code	An alphanumeric 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 organization. Find CAGE codes at https://cage.dla.mil
Commercialization	The process of developing products, processes, technologies, or services and the production and delivery (whether by the originating party or others) of the products, processes, technologies, or services for sale to or use by the federal government or commercial markets.
Commercially Sensitive Information	Privileged or proprietary information which, if compromised through alteration, corruption, loss, misuse, or unauthorized disclosure, could cause serious harm to the information's owners.
Complex Substitute	A DMSMS resolution in which the replacement item that has different specifications but requires no modification of the source product or the NHA, is researched and validated. The substitute may be the result of a redefined military requirement.
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 cost-reimbursement contract that provides for payment to the contractor of a negotiated fee that is fixed at the inception of the contract. The fixed fee does not vary with actual cost, but may be adjusted as a result of changes in the work to be performed under the contract.
Counterfeit	A part that is not genuine because it 1) is an unauthorized copy; 2) does not conform to original manufacturer design, model, and/or performance standards; 3) is not produced by the original manufacturer or is produced by unauthorized contractors; 4) is an off-specification, defective, or used OEM product sold as "new" or working; or 5) has incorrect or false markings and/or documentation.
Critical Minerals	For the purposes of this survey, critical minerals are the 35 minerals identified by the U.S. Geological Survey as a non-fuel mineral or mineral material that is essential to the economic and national security of the United States, has a supply chain vulnerable to disruption, and serves an essential function in the manufacturing of a product, the absence of which would have significant consequences for the economy or national security. For more information, please visit https://www.usgs.gov/news/national-news-release/us-geological-survey-releases-2022-list-critical-minerals
Critical Technology	In terms of this survey, critical technology are "at risk" industrially-supplied building block items used for a variety of NASA ground and space systems.
Customer	An entity to which an organization directly delivers the product or service that it produces. A customer may be another organization or another facility owned by the same parent organization. The Customer may be the end user for the item but often can be the immediate link in the supply chain, adding additional value before transferring the item to yet another customer.
Cybersecurity	The body of technologies, processes, and practices designed to protect networks, computers, programs, and data from attack, damage, or unauthorized access.

Data Universal Numbering System (DUNS)	A nine-digit numbering system that uniquely identifies an individual businesses. Find DUNS numbers at http://fedgov.dnb.com/webform
Deemed Export	The release of controlled technology or information to a foreign person in the U.S. This includes technology made available to foreign nationals for visual inspection, exchanged orally, and made available by practice or application under the guidance of persons with knowledge of the technology.
Defense-Related	Any activity/component/subsystem/test/product/service that contributes to a government defense program, whether directly or indirectly, or is used to provide any such item that contributes to a government defense program.
Denial of Service (DoS/DDoS)	The prevention of authorized access to resources or the delaying of time-critical operations (Time-critical may be milliseconds or it may be hours, depending upon the service provided).
Development of a New Item or Source	A DMSMS resolution in which a replacement product is developed that meets the requirements of the original product without affecting the NHA. The new product may be developed by emulating, reverse engineering, designing a replacement based on the original manufacturing designs and processes, or designing a different product based on the original or new requirements. The manufacturing source for the new item may be the original manufacturer or a new source.
Digital Engineering	The use of models and computer resources together to do engineering tasks, such as design, analysis, prototyping and experimentation.
Direct Support	Selling to or engaging in a direct contract with the entity in question.
Distributed Ledger Technology	Refers to the technological infrastructure and protocols that allows simultaneous access, validation, and record updating in an immutable manner across a network that's spread across multiple entities or locations.
Diversity, Equity, Inclusion, and Accessibility (DEIA)	1) Diversity encompasses the full variety of communities, identities, races, ethnicities, backgrounds, abilities, cultures, and beliefs of all people, including those from underserved communities. 2) Equity defined means the consistent and systematic provision of fair, just, and impartial treatment to all individuals, including individuals who belong to underserved communities that have been denied such treatment. 3) Inclusion involves the recognition, appreciation, and use of the talents and skills of employees of all backgrounds. 4) Accessibility denotes the capability for full and independent use by all people, including people with disabilities, of technology, programs, and services through inclusive design, construction, development, and maintenance of facilities.
Edge Computing	Computing and processing that can occur at the edge of the IT enterprise, often at the data collection source itself.
Encryption Technologies	Technology that converts information to ciphertext that can only be deciphered by authorized users that have the key. Types of encryptions include, but are not limited to, Symmetric Encryption, Asymmetric Encryption, Data Encryption Standard (DES), Triple Data Encryption Standard (3DES), Rivest-Shamir-Adleman (RSA), Advanced Encryption Standard (AES), Encryption in the Cloud, and End-to-End Encryption.
Export Administration Regulation (EAR)	U.S. Government regulation designed to control the export of "dual-use" goods, that is, those that have both commercial and military applications, administered by the U.S. Department of Commerce.
Extension of Product Support	A DMSMS resolution in which the supplier is incentivized to continue providing the obsolete items. This may involve long-term agreements to procure specific quantities of items. One-time costs may be associated with setting up this resolution. Those costs should be included in any cost and cost avoidance by being proactive calculations. For software, long-term licensing and/or support agreements are obtained.
Facility	For the purpose of this survey, a facility is an area within an organization defined by a single CAGE code. An organization's physical organization may contain multiple facilities.
Federal Acquisition Regulation (FAR)	The Federal Acquisition Regulations System is established for the codification and publication of uniform policies and procedures for acquisition by all executive agencies. The Federal Acquisition Regulations System consists of the Federal Acquisition Regulation (FAR), which is the primary document, and agency acquisition regulations that implement or supplement the FAR.
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.
Hypersonics	Vehicles or weapons that travel faster than Mach 5 (~3,800mph) and have the capability to maneuver during the entire flight.
Indefinite-Delivery, Indefinite Quantity (IDIQ) Contract	This type of contract provides for an indefinite quantity of services for a fixed time. They are used when the government can't determine, above a specified minimum, the precise quantities of supplies or services that it will require during the contract period.
Innovation	Applying technology, tools, or processes in a new or different way that helps perform the mission better, cheaper, or faster. That is, it saves resources, time or money, or enables the user to perform their mission better.
International Traffic in Arms Regulation (ITAR)	Regulation designed to control the export of defense and military-related technologies, administered by the U.S. Department of State.
Internet of Things (IoT)	A system of objects, as well as even people and animals, who carry unique identifiers and can transfer data over the internet without any human-to-human or human-to-computer interaction.
Joint Venture	A joint commercial enterprise taken by two or more distinct business entities.
Labor-Hour Contract	A labor-hour contract is a variation of the time-and-materials contract, differing only in that materials are not supplied by the contractor.
Life of Need (LON) Buy	A DMSMS resolution in which a sufficient quantity of the item is purchased to sustain the product until its next technology refreshment or the discontinuance of the host assembly. Because this resolution uses an approved item, no testing or drawing changes are required. The source of supply can be residual stock from the original manufacturer, shelf stock from distributors, sponsor-owned material, and so forth.
Long Range Deep Space Communication	Communication technology with the ability to communicate with spacecraft, send commands or software updates, track location and receive telemetry, images and scientific data across large distances from earth. According to NASA, deep space is considered any distance further than the moon, roughly 384,000km.
Malware	Hardware, firmware, or software that is intentionally included or inserted in a system for a harmful purpose.
Man in the Middle (MitM)	A cyberattack where the adversary positions himself in between the user and the system so that he can intercept and alter data traveling between them.

NATO Commercial and Government Entity (NCAGE) Code	CAGE codes for entities located outside the United States. NCAGE codes are assigned internationally as part of the NATO Codification System (NCS), and are required for all foreign entities or the registration will be considered incomplete. Find NCAGE codes at: https://portal.nspa.nato.int/AC135Public/CageTool/home
Organization	For the purpose of this survey, an organization can include a company, university, federally-funded research and development center (FFRDC), laboratory, or other government entity. Organizations may, and often will, contain multiple facilities. Additionally, all off-work site activities associated with a organization should be reported as part of that organization. For instance, employees who work at a client site should be considered as part of their employing organization.
Other Transaction Agreements (OTA)	Legally binding instruments that may be used to engage industry and academia for a broad range of research and prototyping activities. OTAs are typically defined by what they are not: they are not standard procurement contracts, grants, or cooperative agreements. As such, they are generally not subject to the federal laws and regulations that apply to government procurement contracts (e.g., FAR/DFARS)
Phishing	A technique for attempting to acquire sensitive data, such as bank account numbers, through a fraudulent solicitation in email or on a web site, in which the perpetrator masquerades as a legitimate business or reputable person.
Product/Process Development	Conceptualization and development of a product prior to the production of the product for customers.
Qualified Research Expense (QRE)	The R&D credit comprises the following types of Qualified Research Expenses (QRE): <ul style="list-style-type: none"> • Wages paid to employees for qualified services (including amounts considered to be wages for federal income tax withholding purposes) • Supplies (defined as any tangible property other than land or improvements to land, and property subject to depreciation) used and consumed in the R&D process • Contract research expenses paid to a third party for performing QREs on behalf of the taxpayer, regardless of the success of the research, allowed at 65% of the actual cost incurred • Basic research payments made to qualified educational institutions and various scientific research organizations, allowed at 75% of the actual cost incurred.
Quantum Computing	An area of advanced theoretical research in computer science and physics, with the theory behind quantum computing being that the principles of quantum mechanics can be used to replace the binary one and zero bits of digital computing with multidimensional quantum bits known as qubits.
Ransomware	A type of malicious software designed to block access to a computer system until a sum of money is paid.
Redesign - Complex/Systems Replacement	A DMSMS resolution in which major assembly redesign affects assemblies beyond the obsolete item's NHA and may require that higher level assemblies, software, and interfaces be changed.
Redesign - Next Higher Assembly (NHA)	A DMSMS resolution in which the affected item's NHA must be modified. Only the NHA is affected, and the new design will not affect anything at a higher level in the system
Repair, Refurbishment, or Reclamation	A DMSMS resolution type in which the obsolescence issue is resolved by doing one of the following: instituting a repair or refurbishment program for the existing item or assembly; instituting a reclamation program to reclaim items from marginal, out-of-service, or surplus materiel; or obtaining access to the software source code, development tools, and the human resource skills necessary to change it to ensure continued support.
Requirements Contract	A requirements contract provides for filling all actual purchase requirements of designated Government activities for supplies or services during a specified contract period (from one contractor), with deliveries or performance to be scheduled by placing orders with the contractor.
Research & Development (R&D)	All efforts of scientific study and experimentation, theoretical work, and original investigation undertaken primarily to acquire new knowledge or understanding of the underlying foundations of phenomena and observable facts, including the creative and systematic application of knowledge with specific practical aim or objective or the production of useful materials, devices, and systems or methods. Comprises such efforts at all levels (basic, applied, design, etc.), including the design, development, and improvement of prototypes and new processes to meet specific requirements.
Robotics	The technology behind machines that are programmable by a computer and which can carry out a complex series of actions automatically.
Service	An intangible product (contrasted to a good, which is a tangible product). Services typically cannot be stored or transported, even though other sources with equivalent technical know-how and production capability may exist.
Simple Substitute	A DMSMS resolution in which the item is replaced with an existing item that meets all requirements without modification to either the item or its NHA and requires only minimal qualification. Associated costs are largely administrative. This is sometimes referred to as an "alternate."
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.
Small Business Innovation Research (SBIR) Contracts	A highly competitive program that encourages domestic small businesses to engage in Federal Research/Research and Development (R/R&D) that has the potential for commercialization. Through a competitive awards-based program, SBIR enables small businesses to explore their technological potential and provides the incentive to profit from its commercialization. By including qualified small businesses in the nation's R&D arena, high-tech innovation is stimulated and the United States gains entrepreneurial spirit as it meets its specific research and development needs. Find more information about SBIR at: https://www.sbir.gov/about/about-sbir
Small Business Technology Transfer (STTR) Contracts	A program that expands funding opportunities in the federal innovation research and development (R&D) arena. Central to the program is expansion of the public/private sector partnership to include the joint venture opportunities for small businesses and nonprofit research institutions. The unique feature of the STTR program is the requirement for the small business to formally collaborate with a research institution in Phase I and Phase II. STTR's most important role is to bridge the gap between performance of basic science and commercialization of resulting innovations. Find more information about STTR at: https://www.sbir.gov/about/about-sttr#three
Sole Source	An organization that is the only source for the supply of parts, components, materials, or services. No alternative U.S. or non-U.S. based suppliers exist other than the current supplier.
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 Workforce	STEM is the acronym for Science, Technology, Engineering, and Mathematics. The STEM workforce not only includes occupations that are historically known to require science and engineering skills and expertise (e.g., life sciences, physical sciences, engineering, mathematics and computer sciences, social sciences, and health care) but also occupations that require STEM skills but are not historically considered STEM occupations (e.g., installation, maintenance, and repair; construction trades; and production occupations).
Supercomputing	A class of extremely powerful computers used primarily for scientific and engineering work requiring exceedingly high-speed computations. The performance of a supercomputer is commonly measured in floating-point operations per second (FLOPS) instead of million instructions per second (MIPS). Common applications for supercomputers include testing mathematical models for complex physical phenomena or designs, such as climate and weather, evolution of the cosmos, nuclear weapons and reactors, new chemical compounds (especially for pharmaceutical purposes), and cryptography.
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.
Supply Chain Risk Management (SCRM) Program	A coordinated effort within an organization to help identify, monitor, detect and mitigate threats to the supply chain.
Technology Taxonomy	NASA's system that identifies, organizes, and communicates technology areas into 17 distinct technical discipline-based taxonomies relevant to advancing the agency's mission.
Time-and-Materials Contracts	A time-and-materials contract provides for acquiring supplies or services on the basis of either direct labor hours at specified fixed hourly rates that include wages, overhead, general and administrative expenses, and profit; or the actual cost for materials.
Unique Entity Identifier (UEI)	The Unique Entity ID or UEI is a 12-character alphanumeric ID assigned to an entity by SAM.gov. Find UEIs at https://sam.gov/content/home
Zero-day Exploit	A cyberattack that exploits a previously unknown hardware, firmware, or software vulnerability.

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Section 1a: Organization Information

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This survey has been distributed on a Corporate/Whole Organization basis, with space-related facilities included in the response. Provide the following information for your organization:

Organizational Type

Legal Entity Name

Street Address

City

State/Territory

ZIP or Postal Code

Website

Phone Number

In 2-3 sentences, provide a general description of this organization's activities.

Please indicate "Yes" if your organization qualifies as any of the following types of business.

A. A small business enterprise (as defined by the Small Business Administration) Yes A minority-owned business

8(a) firm (as defined by the Small Business Administration) A woman-owned business

A historically underutilized business zone (HUBZone) A veteran-owned or service-disabled veteran-owned business

Provide the following codes, as applicable, for your organization.

Does this organization have a Unique Entity Identifier (UEI)? Yes/No Does this organization have a Commercial and Government Entity (CAGE) Code? Yes/No

If yes, please enter your organization's primary UEI.

If yes, please enter your organization's primary CAGE code.

Other UEI(s): Other CAGE code(s): (If you have more than 10 additional CAGE codes, please utilize Section 1b for further reporting of their activities and operations)

Find UEIs at: Find CAGE codes at:

<https://sam.gov/content/home> <https://cage.dia.mil/>

How many U.S. facilities does your organization operate? Does your organization also have facilities outside of the U.S.? Yes/No

B. Is your organization publicly traded or privately held? If your organization is publicly traded, identify its stock ticker symbol:

Does your organization have a parent company? If not, select "No" and advance to section D. Yes/No

If yes, provide the following information on your parent organization(s), including whether your organization has any foreign beneficial ownership and information pertaining to your organization's parent company/companies.

Does your organization have any foreign beneficial ownership (either by individuals or entities)? Yes/No

If yes, please indicate the country of the person/entity with the highest percentage of beneficial ownership percentage held.

Additionally, please estimate the ownership percentage held by the individual/entity with the highest percentage of beneficial ownership, if the holding is greater than five percent.

C. Parent Organization 1 Parent Organization 2 (if applicable)

Organization Name

Street Address

City

State/Province

Country

ZIP/Postal Code

In 2-3 sentences, provide a general description of the parent organization's activities.

Mergers, Acquisitions, Divestitures and Joint Venture Activities

Record the total number of space-related (space sector business) mergers, acquisitions, and divestitures (both U.S.-based, and non-U.S. based) in which your organization has been involved in in the last ten years, as well as any current or ongoing joint venture activities.

Identify your organization's 10 most recent space-related mergers, acquisitions, and divestitures, as well as any ongoing joint venture activities based on their strategic importance to the organization's support of NASA, NOAA, and the broader CSIB.

If none, please insert "0" into the provided box and move to Part E.

Organization Name Primary CAGE, UEI, or Full Address (including street and zip or postal code) Type of Activity Country Year Activity Took Place Activity Ongoing or Terminated (ended)? Primary Objective of Activity

D. 1 2 3 4 5 6 7 8 9 10

Point of Contact regarding this survey:

E. Name Title Phone Number Email Address State

Comments:

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Commercial Company,
Federally Funded Research and Development
Center (FFRDC),
Non-Profit Organization,
Other Non-Government Organization,
U.S. Government Organization,
University

Privately Held,
Publicly Traded,
Not Applicable

Other objective (Explain),
Overcome market entry
barrier/Geopolitical
concerns,
R&D access/coordination,
Reduced costs,
Reduced lead times,
Risk sharing,
Shared/improved
technology or skills,
Tax-related,
Vertical integration

Section 1b: Location/Facility Information**U.S. Facilities**

Identify the total number of space-related locations that your organization operates in the United States.

List your organization's space-related locations (which provide inputs, products, services, etc. to support your organization's space sector business) that are located in the United States. Identify each facility's name, CAGE code (if applicable), city, state, primary function, and secondary function (if applicable). If a single location provides multiple functions, select the two most important from the dropdown options in the "Primary Function" and "Secondary Function" columns. If you select "other," please explain in the last provided column.

	Location Name	CAGE (if applicable)	City	State	ZIP Code	Primary Function	Secondary Function (if applicable)	Explain (if "Other")
A.	1					Distributor	Distributor	
	2					Manufacturing	Manufacturing	
	3					R&D	R&D	
	4					Reseller	Reseller	
	5					Servicing/Engineering	Servicing/Engineering	
	6					Other (specify in "Explain" section)	Other (specify in "Explain" section)	
	7							
	8							
	9							
	10							

Non-U.S. Facilities

Identify the total number of space-related locations that your organization operates outside the United States **or enter "0" if none or not applicable.**

List your organization's space-related locations (which provide inputs, products, services, etc. to support your organization's space sector business) that are located outside the United States. Identify each facility's name, NCAGE code (if applicable), city, state/province/region, postal code, country, primary function, and secondary function (if applicable). If a single location provides multiple functions, select the two most important from the dropdown options in the "Primary Function" and "Secondary Function" columns. If you select "other," please explain in the last column.

	Location Name	NCAGE (if applicable)	City	State/Province/Region (if applicable)	Postal Code	Country	Primary Function	Secondary Function	Explain (if "Other")
B.	1						Distributor	Distributor	
	2						Manufacturing	Manufacturing	
	3						R&D	R&D	
	4						Reseller	Reseller	
	5						Servicing/Engineering	Servicing/Engineering	
	6						Other (specify in "Explain" section)	Other (specify in "Explain" section)	
	7								
	8								
	9								
	10								

Comments:

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In Section 2, you are asked to identify all space-related products and/or services that your organization manufactures, distributes, performs research and development, and/or otherwise provides, or has the capability of providing. For the purpose of this survey, "capability" is defined as having the ability to provide a product or service. For Sections 2b-2g, capability can mean current ability to produce products or provide services, capability currently in development (available within 3 years), or your organization is planning to develop the capability (available in 3 years or more). Products and services are separated based on NASA Technology Taxonomy (TX) and in each subsection are further differentiated by subareas.

For more information on the NASA Technology Taxonomy: <https://www.nasa.gov/offices/oct/taxonomy/index.html>

Identify each Technology Taxonomy subarea in which your organization has capabilities below (**only affirmative "Yes" responses required**). Then, move to that subarea's corresponding section (Sections 2b through 2g), and provide information on the individual type of products or services within each indicated subarea for which your organization has capabilities.

The list below contains links that navigate you to the section containing that particular subarea. After completing this section, you may skip to the corresponding section(s) with the products/services that pertain to your organization. Review all segments to ensure you do not omit any required information. Subareas in which you do not indicate a capability will be greyed out in Sections 2b through 2g.

NASA Technology Taxonomy Area	Capability	NASA Technology Taxonomy Area	Capability	NASA Technology Taxonomy Area	Capability
TX01 - Propulsion Systems		TX06 - Human Health and Performance	Yes	TX12 - Structures	Yes
TX01.1 - Chemical Propulsion Systems	Yes	TX06.4 - Environmental Monitoring, Safety, and Emergency Response	No	TX12.3 - Mechanical Systems	No
TX01.2 - Electric Space Propulsion	No	TX06.5 - Radiation		TX12.4 - Manufacturing	
TX01.3 - Aero Propulsion		TX06.6 - Human Systems Integration		TX12.5 - Structural Dynamics	
TX01.4 - Advanced Propulsion		TX07 - Exploration Destination Systems		TX13 - Ground, Test, and Surface Systems	
TX02 - Flight Computing and Avionics		TX07.1 - In-Situ Resource Utilization		TX13.1 - Infrastructure Optimization	
TX02.1 - Avionics Component Technologies		TX07.2 - Mission Infrastructure, Sustainability, and Supportability		TX13.2 - Test and Qualification	
TX02.2 - Avionics Systems and Subsystems		TX07.3 - Mission Operations and Safety		TX13.3 - Assembly, Integration, and Launch	
TX02.3 - Avionics Tools, Models, and Analysis		TX08 - Sensors and Instruments		TX13.4 - Mission Success Technologies	
TX03 - Aerospace Power and Energy Storage		TX08.1 - Remote Sensing Instruments and Sensors		TX14 - Thermal Management Systems	
TX03.1 - Power Generation and Energy Conversion		TX08.2 - Observatories		TX14.1 - Cryogenic Systems	
TX03.2 - Energy Storage		TX08.3 - In-Situ Instruments and Sensors		TX14.2 - Thermal Control Components and Systems	
TX03.3 - Power Management and Distribution		TX09 - Entry, Descent, and Landing		TX14.3 - Thermal Protection Components and Systems	
TX04 - Robotic Systems		TX09.1 - Aeroassist and Atmospheric Entry		TX15 - Flight Vehicle Systems	
TX04.1 - Sensing and Perception		TX09.2 - Descent		TX15.1 - Aerosciences	
TX04.2 - Mobility		TX09.3 - Landing		TX15.2 - Flight Mechanics	
TX04.3 - Manipulation		TX09.4 - Vehicle Systems		TX16 - Air Traffic Management and Range Tracking Systems	
TX04.4 - Human-Robot Interaction		TX10 - Autonomous Systems		TX16.1 - Safe All Vehicle Access	
TX04.5 - Autonomous Rendezvous and Docking		TX10.1 - Situational and Self Awareness		TX16.2 - Weather/Environment	
TX04.6 - Robotics Integration		TX10.2 - Reasoning and Acting		TX16.3 - Traffic Management Concepts	
TX05 - Communications, Navigation, and Orbital Debris Tracking/Characterization		TX10.3 - Collaboration and Interaction		TX16.4 - Architecture and Infrastructure	
TX05.1 - Optical Communications		TX10.4 - Engineering and Integrity		TX16.5 - Range Tracking, Surveillance, and Flight Safety Technologies	
TX05.2 - Radio Frequency		TX11 - Software, Modeling, Simulation, and Information Processing		TX16.6 - Integrated Modeling, Simulation, and Testing	
TX05.3 - Internetworking		TX11.1 - Software Development, Engineering, and Integrity		TX17 - Guidance, Navigation, and Control (GN&C)	
TX05.4 - Network Provided Position, Navigation, and Timing		TX11.2 - Modeling		TX17.1 - Guidance and Targeting Algorithms	
TX05.5 - Revolutionary Communications Technologies		TX11.3 - Simulation		TX17.2 - Navigation Technologies	
TX05.6 - Networking and Ground Based Orbital Debris Tracking and Management		TX11.4 - Information Processing		TX17.3 - Control Technologies	
TX05.7 - Acoustic Communications		TX11.5 - Mission Architecture, Systems Analysis, and Concept Development		TX17.4 - Altitude Estimation Technologies	
TX06 - Human Health, Life Support, and Habitation Systems		TX11.6 - Ground Computing		TX17.5 - GN&C Systems Engineering Technologies	
TX06.1 - Environmental Control and Life Support Systems and Habitation Systems		TX12 - Materials, Structures, Mechanical Systems, and Manufacturing		TX17.6 - Technologies for Aircraft Trajectory Generation, Management, and Optimization for Airspace Operations	
TX06.2 - Extravehicular Activity Systems		TX12.1 - Materials		TX18 - Not Specified/Other NASA Technology Taxonomy Area	

Comments:

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

Section 2b: NASA Technology Taxonomy Areas 1 - 3: Propulsion Systems; Flight Computing and Avionics; Aerospace Power and Energy Storage

For each Taxonomy Subarea that you indicated capabilities for in Section 2a, please specify your organization's capabilities by selecting an option from the "Product/Service Capability" drop-downs. Next, indicate the type of Direct Support your organization provides to NASA and/or NOAA. Then, provide a description of the product/service within that Taxonomy Subarea for which your organization has capabilities and indicate whether your organization carries out Research & Development (R&D) for the given product/service. Please note, internal R&D is performed in-house by the organization, while external R&D is contracted out or otherwise out-sourced to another company or organization. If the product contains any critical minerals, identify the primary critical mineral used (based on estimated level of criticality to the product). Lastly, for each Taxonomy Subarea line, provide your organization's Primary Part Number, if applicable.

Do not disclose any classified information in this survey form.

TX01 - Propulsion Systems							
TX01.1 - Chemical Propulsion Systems	Product/Service Capability	Direct Support of NASA	Direct Support of NOAA	Product/Service Description	R&D	Primary Critical Mineral	Primary Part Number
TX01.1.1 - Integrated Systems and Ancillary Technologies (ex: Thrust Vector Control, Separation motors, Cubesat propulsion, propellant thermal control systems, etc.)							
TX01.1.2 - Earth Storable (ex: Kerosene, Green propellants, ionic liquids, etc.)							
TX01.1.3 - Cryogenic (ex: Liquid Oxygen, Methane, etc.)							
TX01.1.4 - Solids (ex:Hydrotol Terminated Poly Butadiene (HTPB))							
TX01.1.5 - Hybrids (ex: Acrylonitrile butadiene styrene thermoplastic)							
TX01.1.6 - Gels (ex: Gelled oxygen (O2)/hydrogen (H2), Nanogelled propellants, etc.)							
TX01.1.7 - Cold Gas							
TX01.1.8 - Warm Gas							
TX01.2 - Electric Space Propulsion	Product/Service Capability	Direct Support of NASA	Direct Support of NOAA	Product/Service Description	R&D	Primary Critical Mineral	Primary Part Number
TX01.2.1 - Integrated Systems and Ancillary Technologies (ex: Engine health monitoring, Materials and manufacturing, etc.)							
TX01.2.2 - Electrostatic (ex: Ion engines, Hall thrusters, Electropray propulsion, etc.)							
TX01.2.3 - Electromagnetic (ex: Magnetoplasmadynamic (MPD) thruster, Pulsed inductive thruster, Electrodynamic launch, etc.)							
TX01.2.4 - Electrothermal (ex: Resistojets, Arcjets, etc.)							
TX01.3 - Aero Propulsion	Product/Service Capability	Direct Support of NASA	Direct Support of NOAA	Product/Service Description	R&D	Primary Critical Mineral	Primary Part Number
TX01.3.1 - Integrated Systems and Ancillary Technologies (ex: Engine health monitoring, Emissions control, etc.)							
TX01.3.2 - Turbine Based Combined Cycle (ex: Dual mode scramjet)							
TX01.3.3 - Rocket Based Combined Cycle (ex: Ejector ramjet)							
TX01.3.4 - Pressure Gain Combustion (ex: Pulse Detonation Engines (PDE), Rotating Detonation Engines (RDE), Pulsajets, Wave rotors)							
TX01.3.5 - Turbine Based Jet Engines							
TX01.3.6 - Ramjet/Scramjet							
TX01.3.7 - Reciprocating Internal Combustion (ex: Air-cooled four- and six-cylinder piston engines)							
TX01.3.8 - All Electric Propulsion (ex: Permanent magnet synchronous motor, Distributed electronic propulsion, etc.)							
TX01.3.9 - Hybrid Electric Systems							
TX01.3.10 - Turboelectric Propulsion							
TX01.3.11 - Engine icing (ex: Electro-expulsive deicing, Thermal anti-icing systems, etc.)							
TX01.3.12 - Alternative Low Carbon Jet Fuel (ex: Biojet fuels, Hydrogen-based fuels, etc.)							
TX01.4 - Advanced Propulsion	Product/Service Capability	Direct Support of NASA	Direct Support of NOAA	Product/Service Description	R&D	Primary Critical Mineral	Primary Part Number
TX01.4.1 - Solar Sails							
TX01.4.2 - Electromagnetic Tethers							
TX01.4.3 - Nuclear Thermal Propulsion							
TX01.4.4 - Other Advanced Propulsion Approaches							
TX01.X - Other Propulsion Systems	Product/Service Capability	Direct Support of NASA	Direct Support of NOAA	Product/Service Description	R&D	Primary Critical Mineral	Primary Part Number
TX02 - Flight Computing and Avionics							
TX02.1 - Avionics Component Technologies	Product/Service Capability	Direct Support of NASA	Direct Support of NOAA	Product/Service Description	R&D	Primary Critical Mineral	Primary Part Number
TX02.1.1 - Radiation Hardened Extreme Environment Components and Implementations (ex: Radiation mitigation devices, Rad-hard/tolerant data processing, Nanoelectronics based memory devices, etc.)							
TX02.1.2 - Electronic Packaging and Implementations (ex: Additively manufactured electronic packaging, Chip-on-board technologies, etc.)							
TX02.1.3 - High Performance Processors (ex: Scalable, multi-core processors, Digital signal processors (DSP), Graphics processing units (GPU), etc.)							
TX02.1.4 - High Performance Memories (ex: Rad-hard high-density on-board memory, Double Data Rate (DDR3/4), Magnetoresistive Random Access Memory (MRAM), etc.)							
TX02.1.5 - High Performance Field Programmable Gate Arrays (FPGA) (ex: Rad-hard/tolerant FPGAs, Techniques for FPGA radiation hardening, etc.)							
TX02.1.6 - Radiation Hardened ASIC Technologies (ex: System-on-a-chip (SoC) devices, Intellectual property (IP) cores, Network interface ASICs, etc.)							
TX02.1.7 - Point-of-Load Power Converters (ex: Fault-tolerant point-of-load converters, Multi-output point-of-load converters, etc.)							
TX02.1.8 - Wireless Avionics Technologies (ex: RFID-based sensors, Wi-Fi-based sensors, Wireless wearable sensors for monitoring astronauts, etc.)							
TX02.2 - Avionics Systems and Subsystems	Product/Service Capability	Direct Support of NASA	Direct Support of NOAA	Product/Service Description	R&D	Primary Critical Mineral	Primary Part Number
TX02.2.1 - Spacecraft Command and Data Handling Systems (C&DH) (ex: Data recorders and storage systems, Health management systems, Crew input and display systems, etc.)							
TX02.2.2 - Aircraft Avionics Systems (ex: Autopilots, Flight deck management systems, Terrain awareness/warning systems, Collision avoidance systems, etc.)							
TX02.2.3 - Vision and Virtual/Augmented Reality Avionics (ex: External visions systems for safe take-off/landing, Integrated data and real-time imaging into heads-up displays, etc.)							
TX02.2.4 - Low Power Embedded Computer Systems (ex: Real-time processor boards/systems, Instrument or peripheral embedded processing systems, etc.)							
TX02.2.5 - High Speed Onboard Interconnects and Networks (ex: Gigabit Ethernet, Fiber optic network waveguide, etc.)							
TX02.2.6 - Data Acquisition Systems (ex: Structural Health m-Monitoring and Thermal Health Monitoring (SHM/THM) system integration, Sensor webs, High analog-bandwidth/sampling rate, etc.)							
TX02.2.7 - Data Reduction Hardware Systems (ex: Data duplication software, Radio frequency (RF) compression, etc.)							
TX02.2.8 - Use of Advanced Commercial-off-the-Shelf (COTS) Technologies (ex: Uses of advanced commercial microcircuits, semiconductors, and passives; Implementation of commercial processors, FPGAs, memories, Analog-to-Digital/Digital-to-Analog Converters (ADC/DAC), etc.)							

Currently produce/service and is available for procurement
Currently in development (available within 3 years)
Planned development (greater than 3 years)

Direct Contract or Purchase Order with NASA,
Space Act Agreement with NASA,
Sub-tier supplier to NASA,
Contractual relationship to NASA unknown

Direct Contract or Purchase Order with NOAA,
Sub-tier supplier to NOAA,
Other Transactional Authority with NOAA,
Contractual relationship to NOAA unknown

Yes, internal R&D,
Yes, external R&D,
Yes, both internal and external,
Neither/No R&D

None
Aluminum
(bauxite)
Antimony
Arsenic
Barite
Beryllium
Bismuth
Cerium
Cesium
Chromium
Cobalt
Dysprosium
Erbium
Europium
Fluorspar
Gadolinium
Gallium
Germanium
Graphite
(natural)
Hafnium
Holmium
Helium
Indium
Iridium
Lanthanum
Lithium
Lutetium
Magnesium
Manganese
Neodymium
Nickel
Niobium
Palladium
Platinum
Praseodymium
Rhodium
Rubidium
Ruthenium
Samarium
Scandium
Tantalum
Tellurium
Terbium
Thulium
Tin
Titanium
Tungsten
Vanadium
Ytterbium
Yttrium
Zinc
Zirconium
Unknown

TX02.3 - Avionics Tools, Models, and Analysis	Product/Service Capability	Direct Support of NASA	Direct Support of NOAA	Product/Service Description	R&D	Primary Critical Mineral	Primary Part Number
TX02.3.1 - <u>Electronics Development Tools</u> (ex: Automated hardware development toolsets, Printed circuit board (PCB) design tools, etc.)							
TX02.3.2 - <u>Space Radiation Analysis and Modeling</u> (ex: IRENE, ESP, and PSYCHIC environmental models, MULASSIS, Monte Carlo N-Particle/Monte Carlo N-Particle eXtended (MCNP/MCNPX), NOVICE transport codes, etc.)							
TX02.3.3 - <u>Avionics Reliability and Fault-Tolerance Analysis and Modeling</u> (ex: Fault tolerance modeling and coverage estimation, Fault Injectors, etc.)							
TX02.3.4 - <u>Electromagnetic Environment Effects</u> (ex: E3 2D and 3D modeling capability, including Finite Difference Time Domain (FDTD) and integral electromagnetic solvers, with aerodynamic and thermal environment interfaces)							
TX02.X - <u>Other Flight Computing and Avionics</u>							
TX03 - Aerospace Power and Energy Storage							
TX03.1 - Power Generation and Energy Conversion	Product/Service Capability	Direct Support of NASA	Direct Support of NOAA	Product/Service Description	R&D	Primary Critical Mineral	Primary Part Number
TX03.1.1 - <u>Photovoltaic</u> (ex: 25-150 kW-class solar arrays, Reliably retractable solar arrays, etc.)							
TX03.1.2 - <u>Heat Sources</u> (ex: Conventional radioisotope, fission, or solar-thermal heat sources linked with novel aspects of heat collection such as heat pipes, heat pumps, etc.)							
TX03.1.3 - <u>Static Energy Conversion</u> (ex: Enhanced multi-mission radioisotope thermoelectric generators, Thermionic generators)							
TX03.1.4 - <u>Dynamic Energy Conversion</u> (ex: Advanced Stirling radioisotope generator, Brayton and Rankine cycle generators with solar, fission, or chemical energy sources, etc.)							
TX03.1.5 - <u>Electrical Machines</u> (ex: High-efficiency, high-power motors/generators for electric aircraft, Wind turbines, etc.)							
TX03.1.6 - <u>Other Advanced Concepts for Generating/Converting Power</u> (ex: Electrodynmaic tether energy harvesting, Nuclear thermionic avalanche cells, Alpha/beta voltaics, etc.)							
TX03.2 - Energy Storage	Product/Service Capability	Direct Support of NASA	Direct Support of NOAA	Product/Service Description	R&D	Primary Critical Mineral	Primary Part Number
TX03.2.1 - <u>Electrochemical: Batteries</u> (ex: High-specific-energy, Extreme environment energy storage, Flow batteries, etc.)							
TX03.2.2 - <u>Electrochemical: Fuel Cells</u> (ex: Hydrogen/oxygen-based regenerative fuel cells, Solid oxide fuel cells, etc.)							
TX03.2.3 - <u>Electrochemical: Advanced Concepts for Energy Storage</u> (ex: Superconducting bearings, Solar energy stored as high-energy-density chemical fuels, etc.)							
TX03.3 - Power Management and Distribution	Product/Service Capability	Direct Support of NASA	Direct Support of NOAA	Product/Service Description	R&D	Primary Critical Mineral	Primary Part Number
TX03.3.1 - <u>Management and Control</u> (ex: Autonomous fault detection, isolation, and recovery (FDIR) algorithms and technologies for complex power systems, Heirarchical and distributed control of a power system, etc.)							
TX03.3.2 - <u>Distribution and Transmission</u> (ex: High-conductivity carbon nanotube wire, All forms of wireless power transmission (magnetic, radio frequency, and optical), etc.)							
TX03.3.3 - <u>Electrical Power Conversion and Regulation</u> (ex: Modular power converters, Electrical propulsion power processing units (power electronics related to electric propulsion), etc.)							
TX03.3.4 - <u>Advanced Electronic Parts</u> (ex: High-voltage semiconductors and passive components, Extreme radiation-hardened power distribution, etc.)							
TX03.X - <u>Other Aerospace Power and Energy Storage</u>							
Comments:							
BUSINESS CONFIDENTIAL - Per Section 705(d) of the Defense Production Act							

Section 3: Critical Products and Services

Please review the below list of USG-designated critical products and/or services associated with supporting space systems and various ground systems. Indicate the capabilities your organization has in the listed products and services. If your organization has a capability in a specific critical product or service, please complete the remaining columns related to that product. Please note, capability selection option "Currently procure from supplier" means that your organization does not have production capability but can source the product or service from a supplier. Selection options for "Location with Capability" populate from your responses on Section 1b. If your organization uses suppliers to produce any critical products or provide services, you may indicate them on the next Section (4). For more information on each product or service, select that product's or service's corresponding cell. Most listed products have an associated definition or description.

	Product/Service Capability	Direct Support of NASA	Direct Support of NOAA	Location with Capability (generated from Section 1b)
Additive Manufacturing				
Adiabatic Demagnetization Refrigerators (ADR)				
Aerospace-grade Rayon (for use in reentry thermal protection systems)				
Air Force Elastomeric Material (AF-E)				
Ammonia Scrubber	Currently produce and is available for procurement.			
Ammonia Scrubber Sorbent	Currently distribute, Currently procure from supplier.			
Ammonium Perchlorate	Currently in development (available within three years).			
Atomic Clocks	Planned development (greater than 3 years)			
Avcoat				
Bearings for Extreme Environments				
Bellows Tanks				
Carbon Fiber (Aerospace Grade)				
Carbon FiberForm and Phenolic Impregnated Carbon Ablator (PICA)				
Ceramic Tiles & Coating				
Charge Coupled Devices (CCD)				
Conductivity Sensor				
Cool Gas Generators				
Cryocoolers				
Cryogenic High Accuracy Refraction Measurement System (CHARMS)				
Electron Beam Direct Write IC Equipment				
Far-Ultraviolet Coating Capabilities				
Fuel Valves				
Gas Valves and Regulators				
Heatshield for Extreme Entry Environment Technology (HEEET)				
Helium				
High performance, sole source MIL-parts (logic ICs, memory ICs, ADCs, etc.)				
High Power Laser Diodes				
High Purity Hydrazine				
High-power, high-specific-impulse Electric Propulsion Power Processing Unit (PPU)				
High-power, High-specific-impulse Electric Propulsion Thruster				
Honeycomb Radiators				
Hot Structures (CVI C/SIC)				
Infrared Detectors				
In-Space Propulsion Systems				

Direct Contract or Purchase Order with NASA,
Space Act Agreement with NASA,
Sub-tier supplier to NASA,
Contractual relationship to NASA unknown

Direct Contract or Purchase Order with NOAA,
Sub-tier supplier to NOAA,
Other Transactional Authority with NOAA,
Contractual relationship to NOAA unknown

Liquid Hydrogen (LH2)				
Liquid Rocket Engines				
Loop Heat Pipes				
Louvers				
Low to Moderate Power Electric Propulsion				
Mechanical Thermostats				
Monomethyl Hydrazine (MMH)				
Nitrogen Tetroxide (Rocket Fuel N2O4)				
Oxygen (O2) High Pressure Regulator				
Oven-Controlled Crystal Oscillators and Resonators (OCXO)				
Packed Multifiltration Beds				
Parachute Reefing Line Cutters				
Phase Separators				
Photovoltaics				
Precision Gyroscopes				
Pressure Sensors				
Propellant Thrusters				
Quick Disconnects				
Rad-Hard DC-DC Converters High Efficiency Power Supplies (DC-DC)				
Rad-hard processing elements (memory, processors, System on Chip)				
Rad-hard transistor and power transistors (BJT, MOSFET, HEMT, Si, SiC, GaN, etc.)				
Radiation Hardened Trusted Electronics				
Radiation Testing of Integrated Avionics Subsystems and Systems				
Radioisotope Thermoelectric Generators (RTG)				
Reaction Wheel Assemblies				
Rotary Encoders				
Sensor Chip Assembly				
Space-qualified Extended Wavelength Advanced Photodetectors (APD)				
Space-qualified Infrared (IR) Detectors - Mercury Cadmium Telluride (HgCdTe)				
Space-qualified Infrared (IR) Detectors - Type II Superlattice (T2SL)				
Space-qualified Infrared (IR) Detectors - Thermopile				
Star Trackers				
Super Lightweight Ablator (SLA)				
Tantalum Chip and Wet Tantalum Capacitors				
Traveling Wave Tubes				
Urine Processing Assembly Pump Motor				
Valves				
Comments:				
BUSINESS CONFIDENTIAL - Per Section 705(d) of the Defense Production Act				

Section 4: Supplier Information

Please provide information about your organization's suppliers. This section must be completed in its entirety with at least one supplier per product/service. Blank responses will not be accepted.

First, estimate the total number of direct suppliers your organization used to produce its products or provide services in the last year in the right-hand corner box.

For each of the products/services your organization has capabilities, please identify its top suppliers (up to three) and choose from the criteria selection options why the supplier is significant to producing the product or providing the service. Then, provide the information associated with these key suppliers, including their address, the Technology Taxonomy Subarea of Input Sourced from Supplier, a brief description of the supplier product/service input, and supplier sourcing criticality.

Estimate this organization's total number of direct suppliers in the last year, which were used to produce its products or provide its services:

Please fill in all columns.

NOTE: the "Criticality" selection option means the key supplier is single or sole source, or is otherwise associated with a potential vulnerability. Second, the "Revenue" selection option refers to the monetary size of your organization's relationship with the supplier.


Your Organization's Products and Services (Generated from Section 2 and 3 responses)		Supplier Name	Supplier Criteria	Supplier Street Address, including City and State (We cannot accept P.O. Boxes)	Supplier ZIP or Postal Code	Supplier Country	Technology Taxonomy Subarea of Input Sourced from Supplier (ex: TX01.1 - Chemical Propulsion Systems)	Supplier Product/Service Input Description	Supplier Sourcing Criticality
	1		Criticality						Sole Global Source
	2		Number of Products/Services Sourced						U.S. Alternate Available
	3		Revenue						Only non-U.S. Alternate Available
	1		Supplier contract is larger than \$250K						
	2								
	3								
	1								
	2		TX01.1 - Chemical Propulsion Systems, TX01.2 - Electric Space Propulsion, TX01.3 - Aero Propulsion, TX01.4 - Advanced Propulsion, TX01.X - Other Propulsion Systems						
	3		TX02.1 - Avionics Component Technologies, TX02.2 - Avionics Systems and Subsystems, TX02.3 - Avionics Tools, Models, and Analysis, TX02.X - Other Flight Computing and Avionics						
	1		TX03.1 - Power Generation and Energy Conversion, TX03.2 - Energy Storage, TX03.3 - Power Management and Distribution, TX03.X - Other Aerospace Power and Energy Storage						
	2		TX04.1 - Sensing and Perception, TX04.2 - Mobility, TX04.3 - Manipulation, TX04.4 - Human-Robot Interaction, TX04.5 - Autonomous Rendezvous and Docking, TX04.6 - Robotics						
	3		TX05.1 - Optical Communications, TX05.2 - Radio Frequency, TX05.3 - Internetworking, TX05.4 - Network Provided Position, Navigation, and Timing (PNT), TX05.5 - Revolutionary Communications Technologies, TX05.6 - Networking and Ground Based Orbital Debris Tracking and Characterization Systems						
	1		TX06.1 - Environmental Control and Life Support Systems (ECLSS) and Habitation Systems, TX06.2 - Extravehicular Activity Systems, TX06.3 - Human Health and Performance, TX06.4 - Environmental Monitoring, Safety, and Emergency Response, TX06.5 - Radiation, TX06.6 - Human Systems Integration, TX06.X - Other Human Health, Life Support, and Habitation Systems						
	2		TX07.1 - In-Situ Resource Utilization, TX07.2 - Mission Infrastructure, Sustainability, and Supportability, TX07.3 - Mission Operations and Safety, TX07.X - Other Exploration Destination Systems						
	3		TX08.1 - Remote Sensing Instruments and Sensors, TX08.2 - Observatories, TX08.3 - In-Situ Instruments and Sensors, TX08.X - Other Sensors and Instruments						
	1		TX09.1 - Aerocapture and Atmospheric Entry, TX09.2 - Descent, TX09.3 - Landing, TX09.4 - Vehicle Systems, TX09.X - Other Entry, Descent, and Landing						
	2		TX10.1 - Situational and Self-Awareness, TX10.2 - Reasoning and Acting, TX10.3 - Collaboration and Interaction, TX10.4 - Engineering and Integrity, TX10.X - Other Autonomous Systems						
	3		TX11.1 - Software Development, Engineering, and Integrity, TX11.2 - Modeling, TX11.3 - Simulation, TX11.4 - Information Processing, TX11.5 - Mission Architecture, Systems Analysis, and Concept Development, TX11.6 - Ground Computing, TX11.X - Other Software, Modeling, Simulation, and Information Processing						
	1		TX12.1 - Materials, TX12.2 - Structures, TX12.3 - Mechanical Systems, TX12.4 - Manufacturing, TX12.5 - Structural Dynamics, TX12.X - Other Manufacturing, Materials, and Structures						
	2		TX13.1 - Infrastructure Optimization, TX13.2 - Test and Qualification, TX13.3 - Assembly, Integration, and Launch, TX13.4 - Mission Success Technologies, TX13.X - Other Ground, Test, and Surface Systems						
	3		TX14.1 - Cryogenic Systems, TX14.2 - Thermal Control Components and Systems, TX14.3 - Thermal Protection Components and Systems, TX14.X - Other Thermal Management Systems						
	1		TX15.1 - Aerosciences, TX15.2 - Flight Mechanics, TX15.X - Other Flight Vehicle Systems						
	2		TX16.1 - Safe All Vehicle Access, TX16.2 - Weather/Environment, TX16.3 - Traffic Management Concepts, TX16.4 - Architectures and Infrastructure, TX16.5 - Range Tracking, Surveillance, and Flight Safety Technologies, TX16.6 - Integrated Modeling, Simulation, and Testing, TX16.X - Other Air Traffic Management and Range Tracking Systems						
	3		TX17.1 - In-Situ Resource Utilization, TX17.2 - Navigation Technologies, TX17.3 - Control Technologies, TX17.4 - Altitude Estimation Technologies, TX17.5 - GN&C Systems Engineering Technologies, TX17.6 - Technologies for Aircraft Trajectory Generation, Management, and Optimization for Aerospace Operations, TX17.X - Other Guidance, Navigation, and Control						
	1		TX18.X - Not Specified/Other NASA Technology Taxonomy Area						
	2								
	3								
	1								
	2								
	3								

Please provide information about your organization's customers. This section must be completed in its entirety with at least one customer per product/service. Blank responses will not be accepted.

Estimate this organization's total number of direct customers in the last year:

Please fill in all columns.

NOTE: "Revenue" indicates that they are your organization's most important customer for the selected product/service based on monetary/sales value.



Number of Products/Services supported,
Revenue,
Customer contract is larger than \$250K

Your Organization's Products and Services (generated from Section 2 and 3 responses)	Total Number of Direct Customers Product/Service Sold to	Single Most Important Customer - Customer Name	Customer Street Address, including City and State (We cannot accept P.O. Boxes)	Customer ZIP or Postal Code	Customer Country	Technology Taxonomy Subarea of Customer's Product (ex: TX01.1 - Chemical Propulsion Systems)	Customer Product/Service Description
						TX01.1 - Chemical Propulsion Systems, TX01.2 - Electric Space Propulsion, TX01.3 - Aero Propulsion, TX01.4 - Advanced Propulsion, TX01.X - Other Propulsion Systems TX02.1 - Avionics Component Technologies, TX02.2 - Avionics Systems and Subsystems, TX02.3 - Avionics Tools, Models, and Analysis, TX02.X - Other Flight Computing and Avionics TX03.1 - Power Generation and Energy Conversion, TX03.2 - Energy Storage, TX03.3 - Power Management and Distribution, TX03.X - Other Aerospace Power and Energy Storage TX04.1 - Sensing and Perception, TX04.2 - Mobility, TX04.3 - Manipulation, TX04.4 - Human-Robot Interaction, TX04.5 - Autonomous Rendezvous and Docking, TX04.6 - Robotics Integration, TX04.X - Other Robotic Systems TX05.1 - Optical Communications, TX05.2 - Radio Frequency, TX05.3 - Internetworking, TX05.4 - Network Provided Position, Navigation, and Timing (PNT), TX05.5 - Revolutionary Communications Technologies, TX05.6 - Networking and Ground Based Orbital Debris Tracking and Management, TX05.7 - Acoustic Communication, TX05.X - Other Communications, Navigation, and Orbital Debris Tracking and Characterization Systems TX06.1 - Environmental Control and Life Support Systems (ECLSS) and Habitation Systems, TX06.2 - Extravehicular Activity Systems, TX06.3 - Human Health and Performance, TX06.4 - Environmental Monitoring, Safety, Emergency Response, TX06.5 - Radiation, TX06.6 - Human Systems Integration, TX06.X - Other Human Health, Life Support, and Habitation Systems TX07.1 - In-Situ Resource Utilization, TX07.2 - Mission Infrastructure, Sustainability, and Supportability, TX07.3 - Mission Operations and Safety, TX07.X - Other Exploration Destination Systems TX08.1 - Remote Sensing Instruments and Sensors, TX08.2 - Observatories, TX08.3 - In-Situ Instruments and Sensors, TX08.X - Other Sensors and Instruments TX09.1 - Aerossist and Atmospheric Entry, TX09.2 - Descent, TX09.3 - Landing, TX09.4 - Vehicle Systems, TX09.X - Other Entry, Descent, and Landing TX10.1 - Situational and Self-Awareness, TX10.2 - Reasoning and Acting, TX10.3 - Collaboration and Interaction, TX10.4 - Engineering and Integrity, TX10.X - Other Autonomous Systems TX11.1 - Software Development, Engineering, and Integrity, TX11.2 - Modeling, TX11.3 - Simulation, TX11.4 - Information Processing, TX11.5 - Mission Architecture, Systems Analysis, and Concept Development, TX11.6 - Ground Computing, TX11.X - Other Software, Modeling, Simulation, and Information Processing TX12.1 - Materials, TX12.2 - Structures, TX12.3 - Mechanical Systems, TX12.4 - Manufacturing, TX12.5 - Structural Dynamics, TX12.X - Other Manufacturing, Materials, and Structures TX13.1 - Infrastructure Optimization, TX13.2 - Test and Qualification, TX13.3 - Assembly, Integration, and Launch, TX13.4 - Mission Success Technologies, TX13.X - Other Ground, Test, and Surface Systems TX14.1 - Cryogenic Systems, TX14.2 - Thermal Control Components and Systems, TX14.3 - Thermal Protection Components and Systems, TX14.X - Other Thermal Management Systems TX15.1 - Aeronautics, TX15.2 - Flight Mechanics, TX15.X - Other Flight Vehicle Systems, TX16.1 - Safe Air Vehicle Access, TX16.2 - Weather/Environment, TX16.3 - Traffic Management Concepts, TX16.4 - Architectures and Infrastructure, TX16.5 - Range Tracking, Surveillance, and Flight Safety Technologies, TX16.6 - Integrated Modeling, Simulation, and Testing, TX16.X - Other Air Traffic Management and Range Tracking Systems TX17.1 - In-Situ Resource Utilization, TX17.2 - Navigation Technologies, TX17.3 - Control Technologies, TX17.4 - Altitude Estimation Technologies, TX17.5 - GN&C Systems Engineering Technologies, TX17.6 - Technologies for Aircraft Trajectory Generation, Management, and Optimization for Airspace Operations, TX17.X - Other Guidance, Navigation, and Control TX18.X - Not Specified/Other NASA Technology Taxonomy Area	

***Survey continues another 89 rows

[Previous Page](#)[Next Page](#)**Section 6: Support of U.S. Government (USG) - Agencies & Space-related Programs**

Please indicate all U.S. Government agencies your organization has supported, directly or indirectly, from 2019-2022 (including all affiliated laboratories or federally funded research and development centers). Then, indicate the estimated percent of sales attributable to each USG customer, from 2019-2022, and identify the primary taxonomy subarea your organization provides to each agency.

Agency Name	Support Type	Estimated Percent of This Organization's Total Sales Attributable to USG Agency	Primary Technology Taxonomy Subarea Provided (generated from Section 2)	Secondary Technology Taxonomy Subarea Provided (if applicable)
National Aeronautics and Space Administration (NASA)	Direct			
National Oceanic and Atmospheric Administration (NOAA)	Indirect			
Federal Aviation Administration (FAA)	Both (Direct & Indirect)			
Federal Communications Commission	None			
National Laboratories (DOE Labs)	Unknown			
U.S. Air Force (USAF)				
U.S. Army				
U.S. Coast Guard				
U.S. Marine Corps (USMC)				
U.S. Navy				
U.S. Space Force (USSF)				
U.S. DOD Defense Advanced Research Projects Agency (DARPA)				
U.S. DOD Missile Defense Agency (MDA)				
U.S. Intelligence Community (e.g. CIA, NSA, NRO, NSA, DNI, etc.)				
U.S. Space Development Agency (SDA)				
Other Agency	(Identify Agency)			
Other Agency	(Identify Agency)			
Other Agency	(Identify Agency)			
Unlisted Agency	(Specify here)			
Unlisted Agency	(Specify here)			

NASA
NOAA
U.S. Air Force
U.S. Army
U.S. Coast Guard
U.S. Navy
U.S. Marine Corps
U.S. Space Force
U.S. Intelligence Community (such as CIA, NSA, NRO, NSA, DNI, etc.)
National Laboratories (DOE Labs)
DOD Missile Defense Agency (MDA)
DOD Defense Advanced Research Projects Agency (DARPA)
Department of Agriculture
Department of Commerce (other than NOAA)
Department of Education
Department of Energy (other than National Laboratories)
Department of Health and Human Services
Department of Homeland Security (other than Coast Guard)
Department of Justice
Department of Labor
Department of the Interior
Department of the Treasury
Department of State
Department of Transportation
Defense Logistics Agency (DLA)
DOD Defense Finance and Accounting Service
DOD Defense Threat Reduction Agency
DOD Department of Defense
DOD Joint Chiefs of Staff
DOD Office of the Secretary of Defense
DOD Washington Headquarters Service
DOD Other
Environmental Protection Agency
Federal Communications Commission
General Services Administration
National Archives and Records Administration
Nuclear Regulatory Commission
Office of Personnel Management
United States International Trade Commission
United States Trade Representative
Department of Veterans Affairs
White House Communications Agency
Classified
Other

Support of USG and Space-related Programs

B. Please estimate the total number of USG and space-related programs your organization has directly or indirectly supported from 2019-2022 (including those not listed below):

From the list provided below, please identify all of the U.S. Government and space-related program(s) your organization has supported, directly or indirectly, from 2019-2022 and indicate how your organization supported each program. Then, select the top three products/services provided in support of each program, the key supplier your organization uses to support each program (if applicable), and the primary customer you work with in supporting each program (if your organization is a subcontractor).

If your organization participates in a USG and space-related program(s) that is not listed below, you may enter it manually at the bottom of this page (entries 322-331). In these cases, identify the relevant agency in the 'U.S. Government Agency' column and then identify the program in the 'Program Name' column.

You may use the following links to jump directly to additional agencies/categories: [NASA \(#1-211\)](#) [NOAA \(#212-215\)](#) [Commercial Launch Vehicles \(#216-220\)](#) [Space Force \(#233-276\)](#) [Air Force \(#277-314\)](#) [Other: Please identify \(#315-324\)](#)

If your organization does not support any U.S. Government programs, please indicate this in the box to the right:

USG Program Identification							
Do not disclose any classified information in this survey form.							
U.S. Government Agency/Program Type	Program Name	Participation	Top Technology Taxonomy Subarea(s) (from Survey Section 2b-2g) Supporting USG Programs			Primary Supplier (from Section 4a)	Primary Customer supporting program, if subcontractor (from Section 5; leave blank if not applicable)
			1	2	3		
1	NASA	ACSC Core and Risk Reduction	Prime Contractor				
2	NASA	Advanced Air Mobility	Subcontractor				
3	NASA	Advanced Air Transport Technology	Both (Prime and Subcontractor)				
4	NASA	Advanced Composite-Based Solar Sail System (ACS3)	Other Support				
5	NASA	Advanced Composition Explorer (ACE)					
6	NASA	Aeronomy of Ice in the Mesosphere (AIM)					
7	NASA	AES Foundational Systems					
8	NASA	AES Future Projects					
9	NASA	AES Habitation Capabilities					
10	NASA	AES Strategic Operations					
11	NASA	AETC Project					
12	NASA	Air Traffic Management - exploration					
13	NASA	Airspace Technology Demonstrations					
14	NASA	Aqua					
15	NASA	Atmospheric Waves Experiment (AWE)					
16	NASA	Aura					
17	NASA	Balloon Projects					
18	NASA	Block 1B DDT&E					
19	NASA	Chandra X-Ray Observatory (CXO)					

161	NASA	Robotic Systems						
162	NASA	Rocket Propulsion Testing Project						
163	NASA	Safe & Precise Landing Integrated Capabilities (SPUCE)						
164	NASA	SAGE II on ISS						
165	NASA	Sentinel-6						
166	NASA	SN Ground Segment Subairmment (SGSS)						
167	NASA	Soil Moisture Active and Passive (SMAP)						
168	NASA	Solar & Heliospheric Observatory (SoHO)						
169	NASA	Solar Dynamics Observatory (SDO)						
170	NASA	Solar Electric Propulsion (SEP)						
171	NASA	Solar Orbiter Collaboration (SOC)						
172	NASA	Solar Probe Plus						
173	NASA	Solar Terrestrial Relations Observatory (STEREO)						
174	NASA	Space Flight Crew Operations						
175	NASA	Space Launch System						
176	NASA	Space Network						
177	NASA	Space Nuclear Propulsion (SNP)						
178	NASA	Space Radiation (SR)						
179	NASA	Spectro-Photometer for the History of the Universe, Epoch of Reionization and Icos Explorer (SPHEREx)						
180	NASA	Spitzer Space Telescope						
181	NASA	Starling Demonstration						
182	NASA	Stratospheric Observatory for Infrared Astronomy						
183	NASA	Strofo						
184	NASA	Sun Radio Interferometer Space Experiment (SunRISE)						
185	NASA	Surface Water & Ocean Topography (SWOT) Mission						
186	NASA	System-Wide Safety						
187	NASA	Tandem Reconnection and Cusp Electrodynamics Reconnaissance Satellites (TRACERS)						
188	NASA	Terra						
189	NASA	Thrustor for the Advancement of Low temperature Operation in Space (TALOS)						
190	NASA	Time History of Events & Macroscale Interactions (THEMS)						
191	NASA	TIMED						
192	NASA	Time-Resolved Observations of Precipitation structure and storm Intensity with a Constellation of Smallsats (TROPICS)						
193	NASA	Tipping Point: Counter Solar Electric Propulsion Module (Counter SEP)						
194	NASA	Tipping Point: Dual Propulsion Experiment CubeSat (DUPLEX)						
195	NASA	Tipping Point: Tilted Ionic Liquid Electro Spray Propulsion Demonstration (TILE Demo)						
196	NASA	Tipping Point: X-NAV Autonomous Navigation Demonstration						
197	NASA	Total and Spectral Solar Irradiance Sensor - 2 (TSIS-2)						
198	NASA	Total and Spectral Solar Irradiance Sensor (TSIS) on ISS						
199	NASA	Transformational Tools & Technologies						
200	NASA	Transiting Exoplanet Survey Satellite (TESS)						
201	NASA	Tropospheric Emissions: Monitoring of Pollution (TEMPO)						
202	NASA	UAS Traffic Management						
203	NASA	University Innovation Project						
204	NASA	Unmanned Aircraft Systems Integration into the National Airspace System						
205	NASA	Vehicle Systems						
206	NASA	VIPER						
207	NASA	Voyager						
208	NASA	WIND						
209	NASA	WVA						
210	NASA	XMM-Newton						
211	NASA	X-Ray Imaging and Spectrometry Mission (XRISM) (formerly XARM)						
212	NOAA	GOES-R: Geostationary Operational Environment Satellite (also, including GOES-S, T, and U)						
213	NOAA	Joint Polar Satellite System (JPSS)-1						
214	NOAA	JPSS-2						
215	NOAA	SWFO-L1 (Reimbursable)						
216	Launch Vehicles	Atlas V						
217	Launch Vehicles	Atlas V - Centaur						
218	Launch Vehicles	Atlas V - Common Core Booster						
219	Launch Vehicles	Black Brant						
220	Launch Vehicles	Blue Origin New Glenn						
221	Launch Vehicles	Blue Origin New Shepard						
222	Launch Vehicles	Boeing CST-100 Starliner						
223	Launch Vehicles	DCSS - Delta Cryogenic Second Stage						
224	Launch Vehicles	Delta IV						
225	Launch Vehicles	Delta IV - Common Booster Core						
226	Launch Vehicles	Delta IV - Heavy						
227	Launch Vehicles	Dragon						
228	Launch Vehicles	HMS - Handheld, Manpack, and Small Form Fit Radios						
229	Launch Vehicles	Space X - Falcon Heavy						
230	Launch Vehicles	Star 48 Upper Stage						
231	Launch Vehicles	Star 48BV						
232	Launch Vehicles	Starship						
233	Space Force	AEHF - Advanced Extremely High Frequency						
234	Space Force	AN/FPS-16 Perimeter Acquisition Radar Attack Characterization System (PARC/SEPARCS)						
235	Space Force	AN/FPS-108 COBRA DANE Radar						
236	Space Force	AN/FPS-85 Radar						
237	Space Force	ARTS - Automated Remote Tracking Station						
238	Space Force	CCS - Counter Communications System						
239	Space Force	DMSP - Defense Meteorological Satellite Program						
240	Space Force	DSCS - Defense Satellite Communications System						
241	Space Force	DSP - Defense Support Program Satellites						
242	Space Force	GBS - Global Broadcast Service						
243	Space Force	GEODSS - Ground-Based Electro Optical Deep Space Surveillance						
244	Space Force	GLOBALUS II						
245	Space Force	GLOBALUS II						
246	Space Force	GPS Block IIA						
247	Space Force	GPS Block IIF						
248	Space Force	GPS Block III						
249	Space Force	GPS Block IIA						
250	Space Force	GPS Block IIR						

251	Space Force	GSSAP - Geosynchronous Space Situational Awareness Program							
252	Space Force	JETSS - Joint Execution and Training System for Space							
253	Space Force	LADO - Launch, Early Orbit, Anomaly, & Disposal Operations							
254	Space Force	MSX - Midcourse Space Experiment							
255	Space Force	Mistat Satellites							
256	Space Force	Mistat ODMJ II Terminals							
257	Space Force	Mistat SMC2 Satellite Mission Control Subsystem							
258	Space Force	MOSS - Motion Optical Space Surveillance							
259	Space Force	NSSL - National Security Space Launch/Evolved Expendable Launch Vehicle (EELV)							
260	Space Force	OCS - GPS Operational Control Segment							
261	Space Force	OCC - Next Generation Operational Control System							
262	Space Force	PAVE PAWS - Phased Array Warning System							
263	Space Force	SZEL - SBIRS Survivable Endurable Evolution							
264	Space Force	SBIRS - Space Based Infrared System							
265	Space Force	SBIRS Fixed Sites							
266	Space Force	SBIRS High-Space Based Infrared System							
267	Space Force	SBIRS Mobile Vehicles							
268	Space Force	SBIRS Space Segment							
269	Space Force	SBSS - Space Based Space Surveillance - Block 10							
270	Space Force	Space Fence							
271	Space Force	SST - Space Surveillance Telescope							
272	Space Force	Vulcan Centaur							
273	Space Force	WSF-M - Weather System Follow-on Microwave							
274	Space Force	Wideband Global SATCOM - WGS Block I							
275	Space Force	Wideband Global SATCOM - WGS Block II							
276	Space Force	Wideband Global SATCOM - WGS Block III							
277	Air Force	ADAP - Advanced Digital Antenna Production							
278	Air Force	AEHF - Advanced Extremely High Frequency							
279	Air Force	AEP - Architecture Evolution Program							
280	Air Force	AF-CPT - Air Force Command Post Terminals							
281	Air Force	AFSCN ESD - Air Force Satellite Control Network Electronic Schedule Dissemination 2.7							
282	Air Force	AFSCN ESD - Air Force Satellite Control Network Electronic Schedule Dissemination 3.0							
283	Air Force	AFSCN RBC - Air Force Satellite Control Network Remote Tracking Station Block Change							
284	Air Force	AFSSS - Air Force Space Surveillance System							
285	Air Force	AFWET - Air Force Wideband Enterprise Terminals							
286	Air Force	AITG - Airborne Integrated Terminals Group							
287	Air Force	ARS - Archival Recorder Systems							
288	Air Force	BMEWS - Ballistic Missile Early Warning System							
289	Air Force	CCS-C Block 1 - Command and Control System							
290	Air Force	Control and Reporting Center (CRC)							
291	Air Force	EPS - Enhanced Polar System							
292	Air Force	FAB-T - Family of Advanced Beyond Line-of-Sight Terminals (Inc 1)							
293	Air Force	GMT - Ground Multiband Terminal							
294	Air Force	HUSIR - Haystack Ultra-Wideband Satellite Imaging Radar							
295	Air Force	JMS - Joint Space Operations Center (JSOC) Mission System (JMS)							
296	Air Force	LEONS - Logistics Information Operations Systems							
297	Air Force	LTRS - Launch Test Range System							
298	Air Force	MAGR-2K - Miniaturized Airborne GPS Receiver 2000							
299	Air Force	MARK IVB - Meteorological Data Station							
300	Air Force	MGUE-GPS User Equipment: Modernized UE							
301	Air Force	Mini-MUTES - Mini-Multiple Threat Emitter System							
302	Air Force	MMP-Midstream MISON Program							
303	Air Force	MMSOC-GSA - Multi-Mission Space Operations Center Ground Support Architecture							
304	Air Force	MUTES - Multiple Threat Emitter System							
305	Air Force	NDS - Nuclear Detonation Detection System							
306	Air Force	OSR - Operational Switch Replacement							
307	Air Force	RADIRS - Rapid Attack Identification Detection Reporting System							
308	Air Force	RSLP - Rocket Systems Launch Program							
309	Air Force	RSTN - Radio Solar Telescope Network							
310	Air Force	SCAMP - Single Channel Anti-Jam Man Portable Terminal							
311	Air Force	SODN - Solar Observing Optical Network							
312	Air Force	SSAEM-Space Situational Awareness Environmental Monitoring							
313	Air Force	TacSat-3							
314	Air Force	VTS-A - Vandenberg Tracking Station-A							
315	(Identify Agency)	(Write in Program Here)							
316	(Identify Agency)	(Write in Program Here)							
317	(Identify Agency)	(Write in Program Here)							
318	(Identify Agency)	(Write in Program Here)							
319	(Identify Agency)	(Write in Program Here)							
320	(Identify Agency)	(Write in Program Here)							
321	(Identify Agency)	(Write in Program Here)							
322	(Identify Agency)	(Write in Program Here)							
323	(Identify Agency)	(Write in Program Here)							
324	(Identify Agency)	(Write in Program Here)							
Comments:									
BUSINESS CONFIDENTIAL - Per Section 705(d) of the Defense Production Act									

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Section 7: Emerging Technologies

In the table below, please select the types of Emerging Technology that your organization previously used, currently uses, conducts R&D on, or plans to use in the future. Then, indicate the primary and secondary application areas, primary technology taxonomy subarea, any USG agency partnership to develop the technology, and the primary USG program associated with your use of that technology. Lastly, if your organization sourced its Emerging Technology from an external supplier, please provide that supplier's information.

Emerging Technology	Use	Primary Application Area	Secondary Application Area	Primary Technology Taxonomy Subarea Used for	Partnership with USG Agency to Develop Technology, if applicable	Primary USG Program Supported, if applicable	Emerging Technology Supplier Name - Single Most Important Supplier (if applicable)	Supplier CAGE, DUNS, or Full Address (including City, State/Province, ZIP Code, & Country)
Additive Manufacturing (A.M.)/3D printing	Currently Use	Customer Service	Customer Service		Cooperative agreement			
Advanced Materials	Conduct R&D On	Cyber Security	Cyber Security		Cooperative Research and Development Agreement (CRADA)			
Artificial Intelligence	Do Not Use	Data Management	Data Management		Space Act Agreement			
Blockchain/Distributed Ledger Technologies	Plan to Use	Manufacturing	Manufacturing		Other			
Cloud Computing	Previously Used	New Product Development	New Product Development					
Digital Engineering		Process Efficiency	Process Efficiency					
A. Edge Computing		Quality Control	Quality Control					
Encryption Technologies		Other	Other					
Hypersonics								
Internet of Things (IoT)								
Long Range Deep Space Communication								
Quantum Computing								
Robotics								
Super Computing								
Other	(specify here)							
Other	(specify here)							
B.	Please indicate the approximate number of emerging technologies inventions and patents (whether protected or not) that your organization has produced or registered since 2021 in the applicable boxes.		If inventions and patents are non-applicable to your organization since 2021, please choose "None" in the drop-down and move to Part C.		Number of Inventions		Number of Patents	
Please identify any issues that have impacted your organization's adoption of Emerging Technologies. For each issue listed below, indicate if your organization has experienced that issue, and rank it by order of severity (1 being the most important issue; 2 being the next most important issue, etc.). Please explain any relevant details in the box provided.								
Please skip this section if your organization has not adopted or does not plan to adopt the Emerging Technologies identified in Part A.								
Which Emerging Technology has been the most important to your organization?					Which Emerging Technology, in your view, has been the most important to the civil space industry at large?			
Explain:					Explain:			
Type of Issue	Issue Experienced? (Yes/No)	Rank (1-5), if applicable	Explain					
C. Cost to Develop or Purchase, and Implement	Yes							
Lack of Information on Emerging Technology	No							
Lack of Technical Talent								
Regulatory Burden								
Modernization Time Burden								
Old/Incompatible Equipment or IT infrastructure								
Other	(specify here)							
In the table below, please indicate any research institutions your organization has partnered with to further research any of the Emerging Technologies listed in Part A. Then, provide details on the research project and the specifics of the technology researched, including the project's technology readiness level, time until it can be used, and research institution point of contact information.								
If you do not partner with any research institutions, proceed to Section 8.								
For a description of Technology Readiness Level (TRL), please visit this link: https://www.nasa.gov/pdf/458490main_TRL_Definitions.pdf								
Research Institution Partner	Emerging Technology Research Area	Specification of Item Researched	Project Name and Description	Technology Readiness Level	Time until Commercialization (Years)	Research Institution Point of Contact Name	Research Institution Point of Contact Email	
D.					0-1			
					1-3			
					3-5			
					6-10			
					10+			
Comments:								

Additive Manufacturing, (A.M.)/3D printing, Advanced Materials, Artificial Intelligence, Blockchain, Cloud Computing, Digital Engineering, Edge Computing, Encryption Technologies, Hypersonics, Internet of Things (IoT), Long Range Deep Space Communication, Quantum Computing, Robotics, Super Computing, (specify here) (specify here)

TRL 1
TRL 2
TRL 3
TRL 4
TRL 5
TRL 6
TRL 7
TRL 8
TRL 9
Not Applicable

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Section 8: USG Contracts

From 2019-2022, how many **prime** contracts, **excluding SBIR and STTR contracts**, has your organization been awarded by NASA and/or NOAA? Estimates are acceptable if exact figures are unknown.

Number of Prime Contracts

NASA

NOAA

From 2019-2022, how many **sub** contracts, **excluding SBIR and STTR contracts**, has your organization been awarded by entities contracted by NASA and/or NOAA? Estimates are acceptable if exact figures are unknown.

Number of Sub Contracts

NASA

NOAA

A. Please list your top five contracts by monetary value (\$) below. **Record contract value in \$ Thousands, e.g. \$12,000.00 = survey input of \$12.**

Contracting Agency	Prime/Subcontract	Contracting Entity Name (if subcontract)	Contract Number	Year Contract Issued	Contract Length (Years)	Contract Type	Contract Value (\$)	Primary Technology Taxonomy Subarea Provided	Primary USG Program Supported (if applicable)
NASA	Prime/Direct Contract								
NOAA	Subcontract								
	Other Contract								

1. Between 2019-2022, have changes to NASA and/or NOAA-related spending practices impacted your organization?

Explain:

For Question 1: Yes, Positive impact; No, Negative impact; No Impact; Not Applicable

2. Is your organization dependent on selling to or funding from USG agencies for its continued viability?

Explain:

For Question 2: Yes, No

3. What is the most significant factor that restricts your organization's ability to execute on its NASA/NOAA contract awards?

Explain:

B. Identify the primary issue your organization faces with regards to NASA's and/or NOAA's procurement and acquisition practices, and specify the type and degree of impact. Then, provide the primary contract number affected by the issue and include an explanation.

Issue	Primary Issue - NASA		Explain
	Impact Type	Degree of Impact	
(Identify Primary Issue)			
Issue	Primary Issue - NOAA		Explain
	Impact Type	Degree of Impact	
(Identify Primary Issue)			

Note: Please complete Part C prior to advancing to Parts D-E.

From 2019-2022, did your organization participate in any NASA Small Business Innovation Research (SBIR) or Small Business Technology Transfer (STTR) programs? If not, select "No" in the adjacent cell and proceed to the Section 9.

SBIR, STTR, Both, No

If yes, indicate the number of SBIR or STTR programs your organization participated in or currently participates in from 2019-2022. Estimates are acceptable if exact figures are unknown.

Provide information for your organization's top five largest **NASA-related** SBIR or STTR projects by monetary value (\$) from 2019-2022.

For a description of Technology Readiness Level (TRL), please visit this link: https://www.nasa.gov/pdf/458490main_TRL_Definitions.pdf

Project Title	Award/Grant Number	SBIR/STTR Program	Year Program Started	Primary NASA Mission Directorate Supported	Primary Technology Taxonomy Subarea Supported by Project	Current Program Phase	Technology Readiness Level (TRL)	Description of Project
1		SBIR		Aeronautics Research		Phase I		
2		STTR		Human Exploration and Operations		Phase II		
3				Science		Phase III		
4				Space Technology				
5								

Provide information for your organization's to three **space-related, non-NASA** SBIR/STTR projects by monetary value (\$) that your organization participated in or currently participates in from 2019-2022.

For a description of Technology Readiness Level (TRL), please visit this link: https://www.nasa.gov/pdf/458490main_TRL_Definitions.pdf

If your organization does/did not participate in any space-related, non-NASA SBIR/STTR projects, select the "This organization has not participated in space-related, non-NASA SBIR/STTR projects" in the adjacent cell and advance to Part D.

Project Title	Award/Grant Number	SBIR/STTR Program	Year Program Started	Primary USG Agency Supported	Primary Technology Taxonomy Subarea Supported (if applicable)	Current Program Phase	Technology Readiness Level (TRL)	Description of Project
1		SBIR		(Identify Agency)		Phase I		
2		STTR		(Identify Agency)		Phase II		
3				(Identify Agency)		Phase III		

Cost-Plus-Award-Fee (CPAF) Contract
 Cost-Reimbursement Incentive Contract
 Cost-Sharing Contracts
 Firm-Fixed Price (FFP) Contract
 Fixed-Price Contract
 Indefinite-Delivery, Indefinite-Quantity Contract
 Labor-Hours Contract
 Requirements Contract
 Time-and-Materials Contract
 Other Contract Type
 Unknown Contract Type

Administrative burden (reporting requirements),
 Changing regulatory provisions,
 Contract closeout,
 Lack of personnel (employment/workforce issues),
 Lead times,
 Resources,
 Supply chain disruptions ,
 Other (explain below)

Changes in Requirements
 Confusion over Requirements
 Contract Type
 Cumbersome Requirements
 Domestic Sourcing/Buy America Requirements
 Inadequate Budget
 Inadequate Guidance/Outreach
 Limited or No R&D Reimbursement
 Program Cancellations
 Reliance on Prime Contractors
 Spending Volatility
 Other (Please Explain)

TRL 1
 TRL 2
 TRL 3
 TRL 4
 TRL 5
 TRL 6
 TRL 7
 TRL 8
 TRL 9
 Not Applicable

(Identify Agency)
 Department of Agriculture
 Department of Commerce
 Department of Defense
 Department of Education
 Department of Energy
 Department of Health and Human Services
 Department of Homeland Security (other than Coast Guard)
 Department of Transportation
 Environmental Protection Agency (EPA)
 National Science Foundation
 Small Business Administration (SBA)

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Friends & Family
Angels
Venture Capitalists
Strategic Investors
Crowdfunding
Other SBIR/STTR Federal or non-Federal awards (not from NASA or NOAA and not from the SBIR/STTR programs)
Other State/Local Government awards
Foundation funding awards

NASA
NOAA
Other USG Agency
Commercial Company
Federally Funded Research and Development Center (FFRDC)
Non-U.S. Government Organization
Not-for-profit Company
Research and Development (R&D) Organization
State/Local Government Agency

Please indicate if your organization is working towards commercializing any innovations resulting from its participation in NASA-related SBIR or STTR programs identified in Part C. If yes, complete the requested information below. The first column will be filled in automatically based on your responses in the previous section.

	Project Title (generated from Part C)	Working Towards Commercializing Innovation?	If no, please indicate what happened to the technology supported by the SBIR/STTR award.	If yes, please indicate the current state of technology development	Additional USG Funding Source (if applicable)	Primary External Funding Source (if applicable)	External Funding Source Name (if applicable)	External Funding Received (\$)	Primary Innovation Customer/End-User	Explain
D.	1	Yes	Company abandoned the technology.		(Identify Agency)					
	2	No	Company sold the technology.		(Identify Agency)					
	3		Company modified the technology and created a new product that is currently being commercialized.		(Identify Agency)					
	4		Other, please explain		(Identify Agency)					
	5				(Identify Agency)					

Please indicate if your organization partnered with other entities for each SBIR and STTR project provided in Part C and provide the requested information, including primary partner entity name and entity CAGE, DUNS, or Full Address, as well as identify the percent of project work completed by/with the partner entity. Estimates are acceptable if exact figures are unknown.

If this section does not apply to your organization, select the "This organization does not collaborate with partner entities for the listed projects" dropdown in the adjacent cell and advance to the Section 9.

	Project Title (generated from Part C)	Number of Partner Entities	Type of Partnership	Explain (if applicable)	Primary Partner Entity Name (note: if STTR, you must identify Research Institution)	Primary Partner Entity CAGE, DUNS, or Full Address (including City, State/Province, & ZIP or Postal Code)	Primary Partner Entity Country	Percent of Project Work Completed by/with Partner Entity
E.	1							
	2							
	3							
	4							
	5							
	6							
	7							
	8							

Comments:

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(Identify Agency)
Department of Agriculture
Department of Commerce
Department of Defense
Department of Education
Department of Energy
Department of Health and Human Services
Department of Homeland Security (other than Coast Guard)
Department of Transportation
Environmental Protection Agency (EPA)
National Science Foundation
Small Business Administration (SBA)

Feasibility or Proof of Concept continues to be developed
The technology is still being researched and developed since proof-of-concept validation
Company received a Phase II award for the technology
Company received a Phase II/E, CCRP or Sequential award for the technology
Company received a Phase III award from a Federal Agency
Technology is in Product Development
Technology is in Market Development
Technology is in the Manufacturing Stage
Technology is undergoing Clinical Trials (if applicable)
Technology is producing Revenue Generation

Acquisition
Distribution
Licensing
Manufacturing
Research and Development (R&D)
Resources
Strategic partner
Technical collaboration
Other, please explain

Section 9: U.S. Export Control Regulations

Indicate whether your organization uses any U.S. export control systems (International Traffic in Arms Regulations (ITAR) or Export Administration Regulations (EAR)) for the export of **space-related** products or services. Please indicate the frequency of use, the primary Commerce Control List (CCL) or United States Munitions List (USML) category used, and your primary challenge with export control systems. For additional information on export licensing, including ITAR and EAR, see: <https://www.bis.doc.gov/index.php/documents/technology-evaluation/781-export-licensing/file>.

1	If your organization does not use any U.S. export control systems for the export of space-related products or services, select "No, I do not use them" in the "Export Control Use Frequency" box for each system and skip the rest of Section 9.	Export Control Regime	Export Control Use Frequency	EAR - Primary Commerce Control List (CCL) Category	Primary Challenge Encountered
		EAR			
		ITAR		ITAR - Primary United States Munitions List (USML) Category	Primary Challenge Encountered

Yes, I use them frequently (more than ten times per year)
Yes, but I use them infrequently (less than ten times per year)
No, I do not use them

Category 0 - Nuclear Materials Facilities & Equipment [and Miscellaneous Items]
Category 1 - Materials Chemicals Microorganisms and Toxins
Category 2 - Materials Processing
Category 3 - Electronics Design Development and Production
Category 4 - Computers
Category 5 Part 1 - Telecommunications
Category 5 Part 2 - Information Security
Category 6 - Sensors and Lasers
Category 7 - Navigation and Avionics
Category 8 - Marine
Category 9 - Aerospace and Propulsion

Cost of export compliance program,
Difficulty finding export control employees,
Outdated regulation,
Overly burdensome regulation,
Program delays due to export compliance,
Unclear or confusing regulation,
Unilateral USG export control,
No challenged encountered

Since 2019, indicate your organization's top three non-U.S. space-related customers by revenue and provide the required information below (if applicable). Estimates are acceptable for the percentage of space-related revenue attributable to each customer.

Customer Name	Customer Type	Customer Country	Related Primary Technology Taxonomy Subarea	Percent of Annual Space-Related Revenue Attributable to Customer

Commercial Company,
Government Agency,
Intergovernmental Agency,
Non-Government Organization (NGO),
University

Indicate the number of deemed export licenses your organization obtained in 2021. **or enter "0" if not applicable.**

Indicate the country with the largest number of deemed exports (including those with no license required) in 2021.

If your organization is a university or research institution, has deemed export enforcement caused non-U.S. students and/or faculty members to avoid research or other work activities within space-related fields?

If your organization is a university or research institution, have export controls caused your organization to limit the scope of a space-related research project?

Indicate up to five ECCNs or USML classifications (or subcategories, if exact classification is unknown) that your organization would like to see revised. For each item, provide the relevant ECCN or USML classification, the product most impacted by current export controls, the suggested revision, and an explanation of the revision.

If your organization does not have any desired changes, indicate so in the box at right.

ECCN or USML Classification	Most Impacted Product (generated from Section 2)	Suggested Revision	Explanation of Revision
1			
2			
3			
4			
5			

Comments:

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Reclassify commodity to a new ECCN or USML classification,
Reclassify commodity to another existing ECCN or USML classification,
Remove from CCL or USML entirely,
Revise ECCN or USML classification to reflect new technological developments,
Revise ECCN's or USML classification's technical definitions or terms to increase clarity,
Revise ECCN or USML classification to include an exception for a specific commodity,
Other (explain in right-hand box)

Category I - Firearms and Related Articles
Category II - Guns and Armament
Category III - Ammunition and Ordnance
Category IV - Launch Vehicles, Guided Missiles, Ballistic Missiles, Rockets, Torpedoes, Bombs, and Mines
Category V - Explosives and Energetic Materials, Propellants, Incendiary Agents, and Their Constituents
Category VI - Surface Vessels of War and Special Naval Equipment
Category VII - Ground Vehicles
Category VIII - Aircraft and Related Articles
Category IX - Military Training Equipment and Training
Category X - Personal Protective Equipment
Category XI - Military Electronics
Category XII - Fire Control, Laser, Imaging, and Guidance Equipment
Category XIII - Materials and Miscellaneous Articles
Category XIV - Toxicological Agents, Including Chemical Agents, Biological Agents, and Associated Equipment
Category XV - Spacecraft and Related Articles
Category XVI - Nuclear Weapons Related Articles
Category XVII - Classified Articles, Technical Data, and Defense Services Not Otherwise Enumerated
Category XVIII - Directed Energy Weapons
Category XIX - Gas Turbine Engines and Associated Equipment
Category XX - Submersible Vessels and Related Articles
Category XXI - Articles, Technical Data, and Defense Services Not Otherwise Enumerated

Section 10: DMSMS & Supply Chain Disruptions

Does your organization have an obsolescence/Diminishing Manufacturing Sources and Material Shortages (DMSMS) management program?						Constant/Ongoing Multiple Times Per Year Once or Twice Per Year Less than Once Per Year Never		Yes, No, Not applicable							
How frequently is your organization affected by issues involving obsolete/out of production parts or components?															
Are there any specific items that are essential to your organization's operations that will soon no longer be available? If no, select "No" and proceed to Part B.						Never		Yes, No							
If yes, indicate which items will no longer be available, including details about the finished product (based on capability responses from Sections 2b-2g and the Technology Taxonomy subareas related inputs, which are sourced from a key supplier identified on Section 4a), and associated USG program to be impacted (if identifiable). Then, indicate when the item is expected to become unavailable, and the DMSMS resolution used, if applicable. Use the "Explain" box to provide any additional details on how your organization plans to mitigate any issues.															
Primary Technology Taxonomy Subarea Impacted		Technology Taxonomy Subarea I Input Disrupted (ex: TX01.1 - Chemical Propulsion Systems)		Technology Taxonomy Subarea II Input Disrupted (ex: TX01.1.1 - Integrated Systems and Ancillary Technologies)		Product Description (Referring to end use/finished product or service)		Primary USG Program Impacted (Generated from Section 6)		Expected Year Unavailable		DMSMS Resolution (if applicable)		Explain	
1														No solution required	
2		***Same list found on page 27 and 28												Approved item	
3														Complex substitute	
4														Development of a new item or source	
5														Extension of production or support Life of Need (LON) buy	
														Redesign - Next Higher Assembly (NHA)	
														Repair, refurbishment, or reclamation	
														Simple substitute	
Does your organization have a supply chain risk management (SCRM) program in place?										Yes/No					
From 2019-2022, has your organization experienced any supply chain disruptions (indicate up to 10) which impacted your organization's ability to supply customers in a timely manner? If no, select "No" and advance to Part C.										Yes/No					
If yes, ranking by magnitude of impact, provide the technology taxonomy subarea disrupted (generated from Sections 2b-2g), identify the type of disruption, any mitigation or resolution measures taken, the impact(s) on your organizations' ability to deliver on its contracts, and indicate the affected USG program (if applicable).															
Product Technology Taxonomy Subarea Disrupted (Generated from Sections 2b-2g)		Disruption Experienced		Primary Mitigation/Resolution		Secondary Mitigation/Resolution (if applicable)		Primary Impact on Contractual Delivery		Secondary Impact on Contractual Delivery (if applicable)		Primary USG Program Affected (Generated from Section 6)		Explain	
1															
2															
3								Design of Product							
4								Engineering Reliability							
5								Environmental Compatibility							
6								Inability to fully meet customers' contractual requirements (explain)							
7								Inability to source needed product/materials							
8								Increased Cost							
9								Mission Life or Success (explain)							
10								Safety (explain)							
								Schedule (required longer time to deliver product/service)							
								Use of alternative materials							
								Other (explain)							
From 2019-2022, has your organization experienced any disruptions related to critical minerals, compounds, gases, metals, or other materials? If no, select "No" and advance to Section 11.										Yes/No					
If yes, in the table below, please indicate any critical minerals your organization uses directly that have experienced a disruption from 2019-2022 and provide the technology taxonomy subarea affected (generated from Sections 2b-2g), the item disrupted, supplier information, cause of disruption, and any mitigation or resolution measures.															
Primary Technology Taxonomy Subarea Using Critical Mineral		Type of Critical Mineral or Input Material Disrupted		Primary Supplier Name		Supplier Street Address, including City and State (We cannot accept P.O. Boxes)		Supplier ZIP or Postal Code		Supplier Country		Disruption Cause (if known)		Disruption(s) Mitigation Measures	
1		***Same list found on page 10													
2															
3															
Please indicate any other critical compounds, gases, materials, or metals not found in the above list that have experienced a disruption and provide the technology taxonomy subarea affected (generated from Sections 2b-2g), the item disrupted, supplier information, cause of disruption and any mitigation or resolution measures.															
4										Customs or Ports Issue					
5										Disease/Quarantine					
6										End of Product Life Cycle					
										Environmental Regulations					
										Export Controls					
										Foreign Competition					
										Foreign Government Actions					
										Labor Disruption					
										Production Costs					
										Supplier Ended Production					
										Supplier Production Delays					
										Supplier Went Out of Business					
										Trade Dispute/Tariffs					
										Transportation Issue					
										Other (specify in "Comments" below)					
Comments:															

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Additional testing/analysis and validation.
Augmented training of specialized workforce.
Corrective/Preventative Action Board.
Deploying new resource planning techniques.
Enhanced Cybersecurity Controls.
Failure Review Board.
Flow-down of contractual requirements.
Geographical Supply Chain Diversification.
Higher Inventory of Material/Product Needed.
Partnering with Sole Source Suppliers.
Partnering with suppliers to create new capabilities.
Searching for viable alternate supplier sources.
Specialized Equipment Investment.
Specialized Technology Infrastructure Investment.
Vertical Integration (e.g., moving production processes in-house)
Other (explain)

Deploying new resource planning techniques.
Partner with suppliers to create new capabilities.
Searching for viable alternate supplier sources.
Vertical Integration (e.g., moving production processes in-house).
Other - please explain in "Comments"

[Previous Page](#)[Next Page](#)**Section 11: Quality Assurance and Engineering Standards**

Please select any technical standards that your organization currently complies with to operate and/or provide products and services. The standards are separated by issuing authority. Double clicking on each issuing authority heading will navigate you a webpage where you can look up each standard's description. **Only affirmative responses are required.**

You may use the following links to jump directly to certain categories of standards:

NASA Standards	International Organization for Standardization (ISO) Standards	U.S. Defense Standards	American Institute of Aeronautics and Astronautics Standards	American Society for Testing and Materials Standards	Society for Automotive Standards	Other Miscellaneous Standards
--------------------------------	--	--	--	--	--	---

	Technical Standard	Currently Compliant with Standard?	Currently hold independent certificate of compliance?	Comments	Technical Standard	Currently Compliant with Standard?	Currently hold independent certificate of compliance?	Comments
NASA Standards								
A.	1 NASA-STD-8739.1, Workmanship Standard for Staking and Conformal Coating of Printed Wiring Boards and Electronic Assemblies	Yes	Yes		3 NASA-STD-8739.5, Fiber Optics Terminations, Cable Assemblies, and Installation	Yes	Yes	
	2 NASA-STD-8739.4, Crimping, Interconnecting Cables, Harnesses, and Wiring				4 NASA-STD-8739.6, Implementation Requirements for NASA Workmanship Standards			
International Organization for Standardization (ISO) Standards								
B.	1 ISO 12931: Performance criteria for authentication solutions used to combat counterfeiting of material goods				5 ISO 14644-5: Cleanrooms and associated controlled environments — Part 5: Operations			
	2 ISO 14644-1: Cleanrooms and associated controlled environments — Part 1: Classification of air cleanliness by particle concentration				6 ISO 28000: Specification for security management systems for the supply chain			
	3 ISO 14644-2: Cleanrooms and associated controlled environments — Part 2: Monitoring to provide evidence of cleanroom performance related to air cleanliness by particle concentration				7 ISO 9001: Fifth Edition, Quality Management Systems - Requirements			
	4 ISO 14644-: Cleanrooms and associated controlled environments — Part 3: Test methods				8 ISO/IEC 17025:2017: General requirements for the competence of testing and calibration laboratories			
U.S. Defense Standards								
C.	1 MIL-STD-1472 DoD Design Criteria Standard - Human Engineering				6 MIL-STD-464 Electromagnetic Environmental Effects, Requirements for Systems			
	2 MIL-STD-1542 Electromagnetic Compatibility and Grounding Requirements for Space System Facilities				7 MIL-STD-704 Aircraft Electric Power Characteristics			
	3 MIL-STD-1553 Digital Time Division Command/Response Multiplex Data Bus				8 MIL-STD-810 Environmental Engineering Considerations and Laboratory Tests			
	4 MIL-STD-1576 Electro explosive Subsystem Safety Requirements and Test Methods for Space Systems				9 MIL-STD-981 Design, Manufacturing and Quality Standards for Custom Electromagnetic Devices for Space Applications			
	5 MIL-STD-461 Requirements for the Control of Electromagnetic Interference Characteristics of Subsystems and Equipment							
American Institute of Aeronautics and Astronautics Standards								
D.	1 AIAA S-080 Space Systems - Metallic Pressure Vessels, Pressurized Structures, and Pressure Components				6 AIAA S-113 Criteria for Explosive Systems and Devices Used on Space and Launch Vehicles			
	2 AIAA S-081 Space Systems - Composite Overwrapped Pressure Vessels (COPVs)				7 AIAA S-114 Moving Mechanical Assemblies for Space and Launch Vehicles			
	3 AIAA S-110 Space Systems - Structures, Structural Components, and Structural Assemblies				8 AIAA S-119 Flight Dynamics Model Exchange Standard			
	4 AIAA S-111 Qualification and Quality Requirements for Space Solar Cells				9 AIAA S-120A Mass Properties Control for Space Systems			
	5 AIAA S-112 Qualification and Quality Requirements for Space Solar Panels				10 AIAA S-122 Electrical Power Systems for Unmanned Spacecraft			

American Society for Testing and Materials Standards									
E.	1	ASTM E1025 Standard Practice for Design, Manufacture, and Material Grouping Classification of Hole-Type Image Quality Indicators (IQI) Used for Radiology				7	ASTM E1817 Standard Practice for Controlling Quality of Radiological Examination by Using Representative Quality Indicators (RQIs)		
	2	ASTM E1316 Standard Terminology for Nondestructive Examinations				8	ASTM E2033 Standard Practice for Radiographic Examination Using Computed Radiography (Photostimulable Luminescence Method)		
	3	ASTM E1417/E1417M Standard Practice for Liquid Penetrant Testing				9	ASTM E2375 Standard Practice for Ultrasonic Examination of Wrought Products		
	4	ASTM E1444/E1444M Standard Practice for Magnetic Particle Testing				10	ASTM E2445/E2445M Standard Practice for Performance Evaluation and Long-Term Stability of Computer Radiography Systems		
	5	ASTM E164 Standard Practice for Contact Ultrasonic Testing of Weldments				11	ASTM E2698 Standard Practice for Radiological Examination Using Digital Detector Arrays		
	6	ASTM E1742 Standard Practice for Radiographic Examination				12	ASTM E2737 Standard Practice for Digital Detector Array Performance Evaluation and Long-Term Stability		
Society for Automotive Standards									
F.	1	SAE AMS2647, Fluorescent Penetrant Inspection Aircraft and Engine Component Maintenance				6	SAE AS9100D, Quality Management Systems - Requirements for Aviation, Space, and Defense Organizations		
	2	SAE AS4787, Eddy Current Inspection of Circular Holes in Nonferrous Metallic Aircraft Engine Hardware				7	SAE EIA-649-2, Configuration Management Requirements for NASA Enterprises		
	3	SAE AS5553C, Counterfeit Electronic Parts; Avoidance, Detection, Mitigation, and Disposition				8	SAE EIA-649C, Configuration Management Requirements		
	4	SAE AS6174A, Counterfeit Materiel, Assuring Acquisition of Authentic and Conforming Materiel				9	SAE GEIA-STD-0005-1A, Performance Standard for Aerospace and High Performance Electronic Systems Containing Lead-free Solder		
	5	SAE AS9003A, Inspection and Test Quality Systems, Requirements for Aviation, Space, and Defense Organizations				10	SAE GEIA-STD-0005-2A, Standard for Mitigating the Effects of Tin Whiskers in Aerospace and High Performance Electronic Systems		
Other Miscellaneous Standards									
G.	1	AIA/NAS NAS410 Certification and Qualification of Nondestructive Test Personnel				7	AS9110C, Quality Maintenance Systems - Aerospace - Requirements for Maintenance Organizations		
	2	ANSI/ESD S20.20-2014, ESD Association Standard for the Development of an Electrostatic Discharge Control Program for Protection of Electrical and Electronic Parts, Assemblies, and Equipment (Excluding Electrically Initiated Explosive Devices)				8	IPC J-STD-001GS, Joint Industry Standard, Space Applications Electronic Hardware Addendum to IPC J-STD-001G Requirements for Soldered Electrical and Electronic Assemblies (Chapter 10 of IPC J-STD-001GS does not apply to NASA)		
	3	ANSI/NCSL Z540.1-1994 (R2002) Calibration Laboratories and Measuring and Test Equipment - General Requirements				9	FAA HF-STD-001 Human Factors Design Standard		
	4	ANSI/NCSL Z540.3-2006 (R2013) Requirements for the Calibration of Measuring and Test Equipment				10	IPC J-STD-001GS, Joint Industry Standard, Space Applications Electronic Hardware Addendum to IPC J-STD-001G Requirements for Soldered Electrical and Electronic Assemblies		
	5	AS5553 Counterfeit Electronic Parts; Avoidance, Detection, Mitigation, and Disposition				11	AWS QC1 Standard for AWS Certification of Welding Inspectors		
	6	AS6081 Counterfeit Electronic Parts (applies to distributors so if that is not included in our target remove)							
Comments:									
BUSINESS CONFIDENTIAL - Per Section 705(d) of the Defense Production Act									

Section 12: Challenges & COVID-19 Impacts

Please identify the issues that have impacted your organization from 2019 to present day. Only affirmative responses are required. Then, rank your organization's top five issues (1 - being the most important issue; 2 - being the next most important issue, etc.) and explain the affirmative issues with examples and narratives that will aid the U.S. Government's understanding of your concerns.					
Issue	A	B	C		
	Affirmative "Yes"	Rank Top 5	Explanation of Issue		
Aging equipment, facilities, or infrastructure	Yes				
Aging workforce					
Counterfeit parts					
Cybersecurity					
Domestic competition					
Environmental regulations/remediation					
Export controls - EAR					
Export controls - ITAR					
Financing/credit availability					
Foreign competition					
Government acquisition process					
Government purchasing volatility					
Government regulatory burden					
Health and safety/OSHA compliance					
A. Healthcare costs					
Industrial espionage - domestic					
Industrial espionage - foreign					
Input availability					
Intellectual property/patent infringement					
Labor availability					
Labor costs					
Natural disasters (including disease/quarantine)					
Obsolescence					
Pension costs					
Proximity to customers					
Proximity to suppliers					
Qualifications/certifications					
Quality of inputs					
R&D costs					
Reduction in USG demand					
Taxes					
Trade disputes/tariffs					
Worker/skills retention					
Other			(specify here)		

Please identify any impacts or actions resulting from the COVID-19 pandemic at your organization. Only affirmative responses are required. Then, rank your organization's top three most significant impacts experienced and top three most important actions taken (1 - being the most important issue; 2 - being the next most important issue, etc.). Please indicate whether the actions were short-term or long-term solutions.					
Impacts Experienced	Affirmative "Yes"	Rank Top 3	Actions Taken	Short Term/	Rank Top 3
				Long Term	
Customer business closures	Yes		Business digitization	Short Term	
Domestic supplier manufacturing delays	No		Conduct regular COVID-19 testing of employees	Long Term	
Financing difficulties			Establish vaccine mandates for employees	Both	
Foreign supplier manufacturing delays			Identify new market(s)/product growth opportunities	No	
Inability to access work organization			Improve demand forecasting		
Inability to fulfill contracts			Improve supply chain visibility		
Increased cost of materials			Increase inventories		
Increased demand			Increase online/remote work capabilities		
Labor shortages			Increase supplier redundancy		
Reduced productivity			Increase use of domestic suppliers		
Reduced sales			Increase use of foreign suppliers		
Supplier business closures			Increase use of PPE		
Transportation-based disruptions			Reduce workforce		
Other			Seek government assistance		
			Shift to vendor managed inventories		
			Other	(specify here)	

Please identify any USG actions that could mitigate further COVID-19 impacts to your organization.	

Please indicate if your organization received financial assistance from the listed USG COVID-19 assistance/relief programs. Provide the dollar amount received in each year, if applicable.				
USG COVID-19 Program	Received Assistance?	Assistance Amount Received, 2020 (\$)	Assistance Amount Received, 2021 (\$)	
COVID-19 Economic Impact Disaster Loan (EIDL)	Yes			
Paid Leave Reimbursement	No			
Paycheck Protection Program (PPP) Loan				
Small Business Administration (SBA) COVID-19 Debt Relief				
Other USG COVID-19 relief program				(specify here)

Comments:

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

Section 13: Employment & STEM Workforce

Record the total number of full time equivalent (FTE) employees and contractors employed by this organization for each of the past four years. The year 2022 should be populated with the organization's most recent employment numbers. These yearly numbers should include employees and contractors who work off-site but still report to this organization.						
A.	1		2019	2020	2021	2022
		FTE Employees				
		FTE Contractors				
	2	First, identify the top visa type associated with your organization's non-U.S. citizen workers (employees or contractors). Second, please provide the total number of non-U.S. citizen workers (employees or contractors) with the indicated top visa type.				F-1 Student Visa, Green Card, H-1B, H-2B, L, O, Other
3	Identify the top country of citizenship of your organization's non-U.S. citizen workers (employees or contractors). Second, please provide the total number of non-U.S. citizen workers (employees or contractors) associated with the top indicated country.					3a

STEM-related and Other Workforce Questions		Yes/No	Explain
B.	1 Does your organization experience difficulty hiring and/or retaining STEM-related employees? Please explain your answer.		Yes, hiring; Yes, retaining; Yes, both hiring and retaining; No
	2 Does your organization actively engage in efforts to interest K-12 students in the STEM field? If yes, how? If no, please explain why.		Yes, No
	3 Does your organization sponsor STEM-related training for your employees? Please explain your answer.		Yes, No
	4 Has your organization benefited from any USG STEM-related programs and/or initiatives? If yes, provide the program name. If no, please explain why.		Yes, No
	5 Can the USG adapt its STEM-related programs and/or initiatives to better serve your organization? Please explain your answer.		Yes, No
	6 Has your organization benefitted from having a diversity, equity, inclusion, and accessibility (DEIA) program? Please explain your answer.		Yes, No, Not Applicable

Indicate whether your organization has difficulty hiring and/or retaining any part of its workforce and the associated degree of difficulty. Next, identify the current number of unfilled vacancies overall and by occupation type. Then, indicate the top workforce issue area for each occupation type (if applicable). Lastly, please specify the job title most impacted by the identified difficulty.					
	Occupation	Difficulty	Degree of Difficulty	# of Unfilled Vacancies	Top Workforce Issue Area
C.	Total (All Employees)	Hiring	Low		Attracting workers to location
	Engineers, Scientists, R&D (STEM)	Retaining	Medium		Employee turnover
	Information Technology and Cybersecurity	Both	High		Finding experienced workers
	Production Line Operations	Neither			Finding qualified workers
	Testing and Quality Control				Finding workers able to get security clearances
	Other (specify here)				Significant portion of workforce retiring
	Other (specify here)				Unions/Collective bargaining
					Workers unable/not allowed to access location
Comments:					

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

[Previous Page](#)[Next Page](#)**Section 15: Financial Information**

This survey section applies to commercial companies and not-for-profit companies. Report line items from your organization's financial statements for years 2019 through 2021.

This section should contain only Business Unit/Division-level data and **not corporate financials**.

Estimates are acceptable if exact figures do not exist.

Source of Financial Line Items:

Reporting Schedule:

Business Unit/Division
Corporate/Whole Organization

Calendar Year
Fiscal Year

Income Statement (Select Line Items)		Record in \$ Thousands, e.g. \$12,000.00 = survey input of \$12		
		2019	2020	2021
A.	Net Revenue			
B.	Cost of Sales (Cost of Goods Sold)			
C.	Operating Income			
D.	Earnings Before Interest & Taxes (EBIT)			
E.	Net Income			
Balance Sheet (Select Line Items)		Record in \$ Thousands, e.g. \$12,000.00 = survey input of \$12		
		2019	2020	2021
A.	Accounts Receivable			
B.	Cash and Cash Equivalents			
C.	Inventories			
D.	Marketable Securities			
E.	Current Assets			
F.	Current Liabilities			
G.	Total Assets			
H.	Total Liabilities			
Other Select Items		Record in \$ Thousands, e.g. \$12,000.00 = survey input of \$12		
		2019	2020	2021
A.	Research and Development (R&D) Expenditure			
1	Intramural R&D expenditures (from internal sources of funding)			
2	Intramural R&D expenditures (from external sources of funding)			

Use the space provided to qualify with narrative any anomalies, transactions, or non-recurring events reflected in your financial statement line items, e.g. reporting restatement, merger and acquisition or other major corporate activity, Chapter 11, SEC investigation, etc.

Comments:	
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Data Confirmation
Listed 2021 Revenue
None

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Section 16: 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. 1001 (1984 & SUPP. 1197)).

Once this survey is complete, save it to your computer and then submit the document via the Census Bureau portal linked here:

<https://respond.census.gov/csib>

Organization Name	
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.

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How many hours did it take to complete this survey?	
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BUSINESS CONFIDENTIAL - Per Section 705(d) of the Defense Production Act