

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE PAGE OF PAGES
1 1

2. AMENDMENT/MODIFICATION NUMBER 000008
3. EFFECTIVE DATE See Block 16C
4. REQUISITION/PURCHASE REQUISITION NUMBER
5. PROJECT NUMBER (if applicable)

6. ISSUED BY CODE HQ
7. ADMINISTERED BY (if other than Item 6) CODE HQ

NASA/Goddard Space Flight Center
Headquarters Procurement Office
Greenbelt, MD 20771

8. NAME AND ADDRESS OF CONTRACTOR (Number, street, county, State and ZIP Code)

USRA
7178 Columbia Gateway Drive
Columbia, MD 21046-2581

9A. AMENDMENT OF SOLICITATION NUMBER

9B. DATED (SEE ITEM 11)

10A. MODIFICATION OF CONTRACT/ORDER NUMBER

NNH15CO48B

10B. DATED (SEE ITEM 13)
09/14/2015

CODE 1F731 FACILITY CODE

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers is extended. is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:
(a) By completing items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or electronic communication which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by letter or electronic communication, provided each letter or electronic communication makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (if required)
Pgroup: HDN; PPC: 99

**13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS.
IT MODIFIES THE CONTRACT/ORDER NUMBER AS DESCRIBED IN ITEM 14.**

- CHECK ONE
- A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NUMBER IN ITEM 10A.
 - B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation data, etc.) SET FORTH IN ITEM 14. PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
 - C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
 - D. OTHER (Specify type of modification and authority)
I.1 (52.249-14) EXCUSABLE DELAYS (APR 1984)

E. IMPORTANT: Contractor is not is required to sign this document and return 1 copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

The purpose of this modification is to Replace Attachment A: Statement of Work dated December 2017 in its entirety with the attached Attachment A: Statement of Work dated March 2019.

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print) <i>Redacted</i> Senior Manager, Contracts and Grants		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) Jason Lou Contracting Officer	
15B. CONTRACTOR/OFFEROR <i>Redacted</i> (Signature of person authorized to sign)	15C. DATE SIGNED 03/15/2019	16B. STATES OF AMERICA <i>Redacted</i> (Signature of Contracting Officer)	16C. DATE SIGNED 3/18/19

Previous edition unusable

NNH15CO48B
ATTACHMENT A
STATEMENT OF WORK
March 2019

**ATTACHMENT A
STATEMENT OF WORK
FOR THE
NASA POSTDOCTORAL PROGRAM (NPP)**

Background

The NASA Postdoctoral Program (NPP) consists of the NASA Postdoctoral Research Program (NPRP) and the NASA Postdoctoral Management Program (NPMP). The NPP offers unique research opportunities to highly talented individuals who serve as guests at a NASA Center, Headquarters, and other NASA facilities. Fellows selected as part of the Astrobiology program can also reside at the universities that employ researchers funded through the NASA Astrobiology Program (NAP). Another component of the NPP is the Solar System Exploration Research Virtual Institute (SSERVI; <http://sservi.nasa.gov>).

The NPP offers one to three year appointments. These are competitive and designed to advance NASA's Mission and Vision for Space Science and Exploration. Content for the NPP is derived from NASA's four Mission Directorates, namely: the Aeronautics Research Mission Directorate, the Human Exploration and Operations Directorate, the Science Mission Directorate, and the Space Technology Mission Directorate. The Mission Directorates work with the NASA Centers, the NAP member institutions; the SSERVI member institutions, the Jet Propulsion Laboratory, and other NASA organizations to provide challenging research areas for the postdoctoral program.

The NPMP is an adjunct to the NPRP to provide valuable management experience for some of the NPP Fellows. References to Centers in the following contractual requirements include the Jet Propulsion Laboratory, the NAP, and SSERVI.

The NASA Postdoctoral Research Program (NPRP):

The NPRP provides highly qualified postdoctoral researchers the opportunity to conduct research at a specific NASA Center chosen by the applicant;

Participants are doctoral level scientists and engineers who can apply their special knowledge and talents to research areas that are of interest to them and to the host Center;

Applications are initially reviewed by Center Advisors, who recommend which applications should be referred to an external Review Panel consisting of Subject Matter Experts;

Two groups of potential Fellows are supported by the NPP program: Research Fellows, who are currently within five years or less from the date their degree was conferred; and Senior Research Fellows, who are normally five years or more beyond the doctorate, and who have achieved significant professional accomplishments in their field of interest as demonstrated by their record of peer-reviewed publications, reference letters, and stature in the field; Awards are made for one

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year, but may be renewed annually for up to three years contingent upon demonstrated progress in the selected research topic and availability of funds; Annual stipends for Research Fellows **will be at least \$60,000 and include a \$10,000 annual allowance for travel;** and,

Annual stipends for Senior Research Fellows are negotiable based upon the location of the appointment, experience (the number of years beyond the doctoral degree), and career achievement (academic rank and professional title), and a **\$10,000 annual allowance for travel.**

The three-year fellowship limitation set forth above may be waived only by the Contracting Officer, upon request by the Contractor. The decision to waive is within the discretion of the Contracting Officer and a waiver will only be issued in unusual and unforeseeable circumstances in which accessibility to government facilities for fellows was sporadic or non-existent, causing delays or stops in work. Upon the issuance of a waiver, affected Fellows shall be allowed exceptions to the three year limitation, within funding limitations.

The NASA Postdoctoral Management Program (NPMP):

The NPMP serves as an adjunct to the NPP for the purpose of providing scientists and engineers an opportunity to gain valuable management experience in combination with their research background;

The Fellow undertakes a meaningful and significant developmental program. The NASA Headquarters mentor accepts the responsibility to assure that the appointment makes a strong contribution to the Fellow's future career, as well as an effective contribution to NASA research management;

The Fellow is required to complete at least one year, but up to two years, at a Center in the NPRP prior to converting to the Management Program. The management position has a potential for up to two additional years at Headquarters;

The selected Fellow resides at NASA Headquarters in Washington, DC;

Applications are reviewed and ranked by a panel consisting of NASA Headquarters Mission Directorate and Contractor personnel; and,

Funding for annual stipends, travel, relocation to the Washington, DC, area, and other pertinent expenses will be consistent with the NPP.

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The total number of NASA Fellows on tenure at any time is around 200 to 240. On average, around 200 NPP Fellows are expected each year, with approximately 80 selected for new awards.

Scope of Services

A. The Contractor shall provide the necessary materials, facilities, supplies, administrative support, programmatic support, and expertise necessary to promote and administer the NPRP and NPMP as detailed in paragraphs B, C, and D below.

B. The Contractor shall develop, provide, and maintain a web site for the purpose of describing the NPP, covering both the NPRP and the NPMP, including recruitment activities to promote the NPP with appropriate organizations and institutions, frequently asked questions, application forms, and other information beneficial to the program. The web site will be one of the primary, but not exclusive, means for announcing the annual solicitation. The web site may be used for other purposes, such as electronic processing of applications, reporting, and other management and administrative functions, if beneficial to the Government.

C. In accomplishing the objectives of the NPP, the Contractor shall perform the following tasks:

1. Working with the Mission Directorates and the Centers, the contractor will be responsible for posting and updating research opportunities. Mission Directorates will determine the ultimate approval and recommendations for opportunities. NASA Headquarters may review the research opportunities with Advisors at the NASA Centers. Once finalized, NASA will provide the lists of research opportunities and associated NASA Advisors to the Contractor for use in soliciting candidates. The Contractor shall make the lists of research opportunities and Advisors available at the web site cited in paragraph B. These lists may be updated at any time during the year, often within two business days. The Contractor shall present on the web site the NASA provided standards for Advisors, so potential candidates understand the competences of the Advisors with whom they would work.
2. Announce the annual solicitation for research and management opportunities from the Centers and Mission Directorates. Prepare and distribute informational material through the web site, various other media, and participation at select major science meetings such as the American Geophysical Union (AGU), American Astronomical Society (AAS), etc., to announce the NPP to the widest possible community for the relevant field of research to attract a diverse

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representation of prospective participants. Special efforts to recruit scientists and engineers who are U.S. citizens shall be undertaken. Under the current program, the application deadlines are March 1, July 1, and November 1.

3. Initiate recruitment and activities for the NPP to attract available Earth and space science, human space exploration, space operations technologies, aerospace, and aeronautics research from the U.S. and international communities, making sure that maximum outreach is extended to U.S. citizens.
4. Initiate special efforts to recruit participants from women and underrepresented U.S. populations to encourage program diversity.
5. Respond to program inquiries concerning the NPP in two business days.
6. Conduct the peer review of applications in a manner consistent with the NASA guidelines for Peer Review Panels identified in subparagraphs 7 and 8.
7. Assemble Peer Review Panels of national and international prominence in NASA-related research and development in Earth and space science, human space exploration, space operations technologies, aerospace, and aeronautics. The Contractor shall identify a body of talent and experience for membership on the NPP Peer Review Panel selected from the above communities on the basis of their prominence in the field.
8. The Peer Review Panel shall evaluate the competency of the applicants and proposed research on the following criteria: laboratory/center review, scientific merit of the proposed research, references, and academic and research record, and rank the applications for consideration by NASA for selection. Review panels will meet virtually to review and rank candidates on a schedule that is phased to follow the application deadlines of March 1, July 1, and November 1. Review panel members will provide written reports to the Contractor who will manage their subsequent distribution to the Center Advisors. The Contractor must assess and attempt to avoid both personal and institutional conflict of interest in the Peer Reviews. If conflict of interest occurs, the Contractor shall inform NASA and NASA will take action to mitigate it. On some task orders, the Contractor may be required to provide the names of the Peer Review Panel members to the COR and Task Monitor.

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9. Receive and process applications and supporting documents, monitor the Center Advisor's review of applicant's proposals, and work with Advisors to ensure availability of funding and the Center's current interest in supporting the proposed research. Process recommendations from Advisors, in a timely manner, typically within 60 days, to meet the schedule of the Peer Review Panel.
10. Notify the Centers, within five business days, after receipt of all the results of the peer review including the ranking of the applicants for their consideration. The Centers notify the Contractor of their decisions and to whom the Contractor should make offers. The Contractor shall prepare selection and non-selection letters to notify NPP applicants in writing the decision made on their applications. For Foreign Nationals, the Contractor must be knowledgeable of relevant immigration and naturalization laws and have the ability and capability to facilitate processing of visas in a timely manner and to assist applicants from the international research community, for whom, as sponsor, they will be responsible. Contractor shall be approved by the Department of State as a sponsor of an exchange visitor program prior to contract award.
11. Administer the NPMP recruitment, application, and selection process working with the NASA Headquarters Task Order Managers and Center Advisors. Each candidate must complete at least one year of tenure as a Research Fellow or Senior Research Fellow at one of the Centers to qualify for the NPMP. Applications will be reviewed and ranked by a panel consisting of NASA Headquarters Task Order Managers and Contractor representatives. NASA will provide the evaluation criteria and make the final selection.
12. Each postdoctoral fellow must have a Sponsor, who is a Research Advisor at the participating institutions, typically NASA Centers. The Contractor shall post the NASA provided Research Advisors, brief summaries of associated research projects, and the criteria used by NASA for their selection.
13. After an offer has been made and accepted by the applicant, the Contractor shall make the necessary arrangements to relocate the Fellow to the Centers or Headquarters, including managing the logistics of the relocation and promptly entering the Fellow into the Contractor's payroll system.
14. NASA will process badging in a timely manner upon the arrival of the Fellow at the Center and will provide work areas, available facilities, equipment, and other

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resources for the participants for conducting their assignments while at NASA facilities.

15. NASA will coordinate and process Agency Security and Background Checks with NASA's Office of Protective Services and other appropriate organizations. The Contractor shall provide assistance to non-U.S. participants that will expedite issuance of the award, arrival, and assignment at the sponsoring NASA Center.
- D. The Contractor shall administer the NPP to include, but not be limited to, the following tasks:
1. Provide a payroll system for the Fellows' monthly Stipend payments. Fellows are not employees of the Contactor or of the Government and they receive awards, not wages. Therefore, Federal and state income taxes and Social Security tax are not withheld for U.S. citizens. It is the responsibility of the Fellow to contact a tax accountant or other tax professional regarding these requirements. The Contractor shall make withholdings for foreign nationals based upon the existing treaties between the Fellow's country of citizenship and the U.S. to determine Federal income tax withholdings. The Contractor does not withhold state taxes for foreign nationals.
 2. The Contractor shall arrange for or otherwise ensure Fellows have Accident and Death/Dismemberment Insurance.
 3. Provide any necessary recruitment incentives, as accepted by NASA, to ensure a qualified candidate pool.
 4. Provide a travel service for the Fellows according to Federal travel regulations, including travel agency services, processing of travel requests and authorization forms, and expense payments for travel and relocation (from within and outside the U.S.) as authorized for the NPP. Assist the Fellows when on travel within four hours during the Contractor's normal business hours should issues arise;
 5. Provide Monthly Contractor Financial Management Reports (NF 533M) to the Contracting Officer's Representative, Mission Directorates, and Center NPP Representatives Fellow, by Center, and by Mission Directorate.
 6. Provide Monthly Financial Status Reports that shall include actual expenses and funding available for each participant. Each Headquarters Mission Directorate Task Order Manager shall receive the report for their Directorate in order to monitor

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funding levels. The Headquarters NPP Manager shall receive all the Mission Directorate reports and a summary for the total program. This report should enable an analysis of full-costs for each Fellow and average full-costs by Centers and by Mission Directorate. The Monthly Financial Status Report shall include for each Mission Directorate:

- a. Summary of authorized funding and expenditures for the month and total to date; projected commitments; projected direct administrative costs; and, balance remaining.
 - b. The Fellow's name, start and term dates, and a detailed accounting of commitments broken down by categories, e.g., stipend, travel (relocation, professional, programmatic), worker's compensation type, general administration, and other. This information shall be provided for each Fellow on tenure and to those to whom an offer has been made and shall be organized by Center.
 - c. The date a participant leaves and/or returns to their appointment and the impact of these changes in tenure to the funding for the Center and the Mission Directorate.
7. Obtain from each Fellow an annual report describing the scientific and technical progress of their research, which will be assembled by the Contractor into an annual record of the accomplishments of the program, entitled "NASA Postdoctoral Program Research Annual Progress Report for Fiscal Year (insert Government fiscal year)." The data for this report shall be compiled and transmitted to the Headquarters NPP Manager by March 1 of the following fiscal year.
8. The Annual Report is a year-end statistical report and a year-end program evaluation report which will enable Headquarters to accurately assess the value and achievements of the NPRP and plan the yearly budget allocations.
- a. The Annual Report shall include:
 - 1.) A summary of recruitment efforts, and a list of total applications and awards by doctoral discipline.
 - 2.) Analysis of Fellows vs Senior Fellows; U.S. vs non-U.S. applicants, including the foreign country of non-U.S. applicants;
 - 3.) Summary by year (after the first year) of the number of applications and awards; number of applications by quarter within each year; number of Fellows and Senior Fellows on tenure each year and by Center; number of U.S. and non-U.S. Fellows; awards to underrepresented populations; and the gender of awardees;
 - 4.) For Fellows ending tenure during the year, summaries of:

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- a.) The scholarly activities by the Fellows ending tenure during the year by Journal articles, domestic technical presentations, international technical presentations, awards and achievements, and, patents applied for.
 - b.) Statistics for Fellows ending tenure during the year, including average, high, low and standard deviation.
 - c.) Post-tenure positions by categories, e.g., hired by NASA; hired by a contractor for on-site support to NASA; other U.S. Government research laboratory position; domestic college or university faculty position; foreign college or university faculty position; aerospace industry position; nonaerospace industry position; nonprofit organization position; other position or no report.
- b. Year-End Program Evaluation Report shall:
- 1.) Include a roll-up of the information provided in the Monthly Financial Status Reports.
 - 2.) Contain a summary evaluation of the appointee's technical performance for the year based upon reports provided to the Contractor by the responsible NASA Center Advisor.
 - 3.) Report, by Mission Directorate, on follow-up employment data on Fellows who leave the program, indicating conversions to the NASA workforce, NASA Contractors, industry, and university employment to assist NASA in assessing the return on investment.
9. Assure participants' compliance with NASA's requirement of Award exclusivity while on tenure. Specifically, while on tenure, an NPRP participant shall devote his/her efforts entirely to the NASA sponsored research program for which the award was made. An NPRP participant may not receive funding from another appointment, fellowship, scholarship, or similar grant during the term of his/her appointment at the NASA Center.
10. Maintain on the Contractor's website a "Policies, Practices, and Procedures Handbook" for the Fellows, covering all aspects of the NPRP and NPMP needed by potential candidates and selected participants, including, but not limited to, such information as: definitions, accepting an award and beginning tenure, stipend, Visas, taxes, travel, reporting, renewing award, resignation and early departure, publications, copyrights, patents, leave of absence, and teleworking policies. Information about publications, copyrights, patents, and other related topics shall be consistent with

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NASA policies. Nothing in this handbook shall conflict with anything in the SOW of the resulting contract.

11. Visit participating NASA Centers to understand and coordinate research opportunities and facilities; meet with the NASA Advisors; review the Center's program status; and meet with NPP Fellows on tenure, as appropriate. The NASA Center may choose to include a forum for technical presentations by participants during the visit. Visits shall be coordinated with the Center Representatives and associated Headquarters Mission Directorate Task Order Managers.
12. Hold an Annual Program Meeting to review the program status with NPP Center Representatives and Mission Directorate Task Order Managers, review the Annual Report, report on the evaluation outcome, and plan for future program years. NASA will coordinate the meeting location with the Contractor, which will typically be at one of the Centers listed in Paragraph F or in the Washington, DC area, or may be at the Contractor's location. A summary of the Annual Program Meeting shall be provided to all Center Representatives and the Mission Directorate Task Order Managers.

E. The Contractor must be available for a post-award conference within two weeks of the award.

F. The Headquarters Mission Directorates and the following NASA Centers and other facilities will participate in the NPRP. Other NASA designated Research Centers, such as University Research Centers and NASA University Research Engineering Technology Institutes (URETIs), will also be able to participate, and funded researchers of the NASA Astrobiology Program. Only NASA Headquarters, Washington, DC 20546, participates in the NPMP.

- a. Ames Research Center, Moffett Field, CA 04035
- b. Armstrong Flight Research Center, Edwards, CA 93523
- c. Glenn Research Center, Cleveland, OH 44135
- d. Goddard Space Flight Center, Greenbelt, MD 20771
- e. Goddard Institute for Space Studies, New York, NY 10025
- f. Jet Propulsion Laboratory, Pasadena, CA 91109
- g. Johnson Space Center, Houston, TX 77058
- h. Kennedy Space Center, Kennedy Space Center, FL 32899
- i. Langley Research Center, Hampton, VA 23681
- j. Marshall Space Flight Center, Marshall Space Flight Center, Alabama 35812
- k. NASA Headquarters, Washington, DC 20546

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- l. Stennis Space Center, Stennis Space Center, MS 39529
- m. Wallops Flight Facility, Goddard Space Flight Center, Wallops Island, VA 23337

F. The following Mission Directorates at NASA Headquarters, Washington, DC, will participate in the NPP:

1. Aeronautics Research Mission Directorate
2. Human Exploration and Operations Mission Directorate
3. Science Mission Directorate
4. Space Technology Mission Directorate

G. The Contractor shall comply with the following Electronic and Information Technology Accessibility Standards (Section 508):

Subpart A -- General

§ 1194.1 Purpose.

The purpose of this part is to implement section 508 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794d). Section 508 requires that when Federal agencies develop, procure, maintain, or use electronic and information technology, Federal employees with disabilities have access to and use of information and data that is comparable to the access and use by Federal employees who are not individuals with disabilities, unless an undue burden would be imposed on the agency. Section 508 also requires that individuals with disabilities, who are members of the public seeking information or services from a Federal agency, have access to and use of information and data that is comparable to that provided to the public who are not individuals with disabilities, unless an undue burden would be imposed on the agency.

§ 1194.2 Application.

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(a) Products covered by this part shall comply with all applicable provisions of this part. When developing, procuring, maintaining, or using electronic and information technology, each agency shall ensure that the products comply with the applicable provisions of this part, unless an undue burden would be imposed on the agency.

(1) When compliance with the provisions of this part imposes an undue burden, agencies shall provide individuals with disabilities with the information and data involved by an alternative means of access that allows the individual to use the information and data.

(2) When procuring a product, if an agency determines that compliance with any provision of this part imposes an undue burden, the documentation by the agency supporting the procurement shall explain why, and to what extent, compliance with each such provision creates an undue burden.

(b) When procuring a product, each agency shall procure products which comply with the provisions in this part when such products are available in the commercial marketplace or when such products are developed in response to a Government solicitation. Agencies cannot claim a product as a whole is not commercially available because no product in the marketplace meets all the standards. If products are commercially available that meet some but not all of the standards, the agency must procure the product that best meets the standards.

(c) Except as provided by §1194.3(b), this part applies to electronic and information technology developed, procured, maintained, or used by agencies directly or used by a contractor under a contract with an agency which requires the use of such product, or requires the use, to a significant extent, of such product in the performance of a service or the furnishing of a product.

§ 1194.3 General exceptions.

(a) This part does not apply to any electronic and information technology operated by agencies, the function, operation, or use of which involves intelligence activities, cryptologic activities related to national security, command and control of military forces, equipment that is an integral part of a weapon or weapons system, or systems which are critical to the direct fulfillment of military or intelligence missions. Systems which are critical to the direct fulfillment of military or intelligence missions do not include a system that is to be used for routine administrative and business applications (including payroll, finance, logistics, and personnel management applications).

(b) This part does not apply to electronic and information technology that is acquired by a contractor incidental to a contract.

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(c) Except as required to comply with the provisions in this part, this part does not require the installation of specific accessibility-related software or the attachment of an assistive technology device at a workstation of a Federal employee who is not an individual with a disability.

(d) When agencies provide access to the public to information or data through electronic and information technology, agencies are not required to make products owned by the agency available for access and use by individuals with disabilities at a location other than that where the electronic and information technology is provided to the public, or to purchase products for access and use by individuals with disabilities at a location other than that where the electronic and information technology is provided to the public.

(e) This part shall not be construed to require a fundamental alteration in the nature of a product or its components.

(f) Products located in spaces frequented only by service personnel for maintenance, repair, or occasional monitoring of equipment are not required to comply with this part.

§ 1194.4 Definitions.

The following definitions apply to this part:

Agency. Any Federal department or agency, including the United States Postal Service.

Alternate formats. Alternate formats usable by people with disabilities may include, but are not limited to, Braille, ASCII text, large print, recorded audio, and electronic formats that comply with this part.

Alternate methods. Different means of providing information, including product documentation, to people with disabilities. Alternate methods may include, but are not limited to, voice, fax, relay service, TTY, Internet posting, captioning, text-to-speech synthesis, and audio description.

Assistive technology. Any item, piece of equipment, or system, whether acquired commercially, modified, or customized, that is commonly used to increase, maintain, or improve functional capabilities of individuals with disabilities.

Electronic and information technology. Includes information technology and any equipment or interconnected system or subsystem of equipment, that is used in the creation, conversion, or duplication of data or information. The term electronic and information technology includes, but is not limited to, telecommunications products (such as telephones), information kiosks and

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transaction machines, World Wide Web sites, multimedia, and office equipment such as copiers and fax machines. The term does not include any equipment that contains embedded information technology that is used as an integral part of the product, but the principal function of which is not the acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission, or reception of data or information. For example, HVAC (heating, ventilation, and air conditioning) equipment such as thermostats or temperature control devices, and medical equipment where information technology is integral to its operation, are not information technology.

Information technology. Any equipment or interconnected system or subsystem of equipment, that is used in the automatic acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission, or reception of data or information. The term information technology includes computers, ancillary equipment, software, firmware and similar procedures, services (including support services), and related resources.

Operable controls. A component of a product that requires physical contact for normal operation. Operable controls include, but are not limited to, mechanically operated controls, input and output trays, card slots, keyboards, or keypads.

Product. Electronic and information technology.

Self Contained, Closed Products. Products that generally have embedded software and are commonly designed in such a fashion that a user cannot easily attach or install assistive technology. These products include, but are not limited to, information kiosks and information transaction machines, copiers, printers, calculators, fax machines, and other similar types of products.

Telecommunications. The transmission, between or among points specified by the user, of information of the user's choosing, without change in the form or content of the information as sent and received.

TTY. An abbreviation for teletypewriter. Machinery or equipment that employs interactive text based communications through the transmission of coded signals across the telephone network. TTYs may include, for example, devices known as TDDs (telecommunication display devices or telecommunication devices for deaf persons) or computers with special modems. TTYs are also called text telephones.

Undue burden. Undue burden means significant difficulty or expense. In determining whether an action would result in an undue burden, an agency shall consider all agency resources

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available to the program or component for which the product is being developed, procured, maintained, or used.

§ 1194.5 Equivalent facilitation.

Nothing in this part is intended to prevent the use of designs or technologies as alternatives to those prescribed in this part provided they result in substantially equivalent or greater access to and use of a product for people with disabilities.

Subpart B -- Technical Standards

§ 1194.21 Software applications and operating systems.

- (a) When software is designed to run on a system that has a keyboard, product functions shall be executable from a keyboard where the function itself or the result of performing a function can be discerned textually.
- (b) Applications shall not disrupt or disable activated features of other products that are identified as accessibility features, where those features are developed and documented according to industry standards. Applications also shall not disrupt or disable activated features of any operating system that are identified as accessibility features where the application programming interface for those accessibility features has been documented by the manufacturer of the operating system and is available to the product developer.
- (c) A well-defined on-screen indication of the current focus shall be provided that moves among interactive interface elements as the input focus changes. The focus shall be programmatically exposed so that assistive technology can track focus and focus changes.
- (d) Sufficient information about a user interface element including the identity, operation and state of the element shall be available to assistive technology. When an image represents a program element, the information conveyed by the image must also be available in text.
- (e) When bitmap images are used to identify controls, status indicators, or other programmatic elements, the meaning assigned to those images shall be consistent throughout an application's performance.
- (f) Textual information shall be provided through operating system functions for displaying text. The minimum information that shall be made available is text content, text input caret location, and text attributes.

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- (g) Applications shall not override user selected contrast and color selections and other individual display attributes.
- (h) When animation is displayed, the information shall be displayable in at least one non-animated presentation mode at the option of the user.
- (i) Color coding shall not be used as the only means of conveying information, indicating an action, prompting a response, or distinguishing a visual element.
- (j) When a product permits a user to adjust color and contrast settings, a variety of color selections capable of producing a range of contrast levels shall be provided.
- (k) Software shall not use flashing or blinking text, objects, or other elements having a flash or blink frequency greater than 2 Hz and lower than 55 Hz.
- (l) When electronic forms are used, the form shall allow people using assistive technology to access the information, field elements, and functionality required for completion and submission of the form, including all directions and cues.

§ 1194.22 Web-based intranet and internet information and applications.

- (a) A text equivalent for every non-text element shall be provided (e.g., via "alt", "longdesc", or in element content).
- (b) Equivalent alternatives for any multimedia presentation shall be synchronized with the presentation.
- (c) Web pages shall be designed so that all information conveyed with color is also available without color, for example from context or markup.
- (d) Documents shall be organized so they are readable without requiring an associated style sheet.
- (e) Redundant text links shall be provided for each active region of a server-side image map.
- (f) Client-side image maps shall be provided instead of server-side image maps except where the regions cannot be defined with an available geometric shape.
- (g) Row and column headers shall be identified for data tables.

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- (h) Markup shall be used to associate data cells and header cells for data tables that have two or more logical levels of row or column headers.
- (i) Frames shall be titled with text that facilitates frame identification and navigation.
- (j) Pages shall be designed to avoid causing the screen to flicker with a frequency greater than 2 Hz and lower than 55 Hz.
- (k) A text-only page, with equivalent information or functionality, shall be provided to make a web site comply with the provisions of this part, when compliance cannot be accomplished in any other way. The content of the text-only page shall be updated whenever the primary page changes.
- (l) When pages utilize scripting languages to display content, or to create interface elements, the information provided by the script shall be identified with functional text that can be read by assistive technology.
- (m) When a web page requires that an applet, plug-in or other application be present on the client system to interpret page content, the page must provide a link to a plug-in or applet that complies with §1194.21(a) through (l).
- (n) When electronic forms are designed to be completed on-line, the form shall allow people using assistive technology to access the information, field elements, and functionality required for completion and submission of the form, including all directions and cues.
- (o) A method shall be provided that permits users to skip repetitive navigation links.
- (p) When a timed response is required, the user shall be alerted and given sufficient time to indicate more time is required.

Note to §1194.22:

1. The Board interprets paragraphs (a) through (k) of this section as consistent with the following priority 1 Checkpoints of the Web Content Accessibility Guidelines 1.0 (WCAG 1.0) (May 5, 1999) published by the Web Accessibility Initiative of the World Wide Web Consortium:

Section 1194.22 Paragraph	WCAG 1.0 Checkpoint
(a)	1.1

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(b)	1.4
(c)	2.1
(d)	6.1
(e)	1.2
(f)	9.1
(g)	5.1
(h)	5.2
(i)	12.1
(j)	7.1
(k)	11.4

2. Paragraphs (l), (m), (n), (o), and (p) of this section are different from WCAG 1.0. Web pages that conform to WCAG 1.0, level A (i.e., all priority 1 checkpoints) must also meet paragraphs (l), (m), (n), (o), and (p) of this section to comply with this section. WCAG 1.0 is available at <http://www.w3.org/TR/1999/WAI-WEBCONTENT-19990505>.