L-I SOLICITATION PROVISIONS INCORPORATED BY REFERENCE

L-II SOLICITATION PROVISIONS IN FULL TEXT

L-12 PROPOSAL INSTRUCTIONS TO OFFERORS-EMD PHASE CALL FOR IMPROVEMENT

1.0. GENERAL INSTRUCTIONS

1.1. **Solicited Proposals.** The paragraphs below contain instructions for preparing and submitting a proposal for the Joint Strike Fighter (JSF) Engineering and Manufacturing Development (EMD) Phase Call For Improvement (CFI). The Offeror shall provide a single proposal that is fully integrated across all functional areas and is responsive to the JSF EMD SOO, JSF Model Specification (JMS), and all other aspects of the solicitation. The JMS is expected to be used by the contractor to develop an Air System contract specification that meets all JMS requirements and provides a best value solution. The Offeror shall also integrate an Air System block development approach consistent with SOO paragraph 3.4 in their Statement of Work (SOW), Air System Contract Specification, and the Integrated Master Plan (IMP), that meets the minimum mission effectiveness and supportability elements as described in Appendix C to this section. The successful Offeror's proposed SOW, Air System Contract Specification (including annexes and appendices), and IMP will become part of any contract resulting from the CFI.

1.2. **General Guidance.** Requested information may be satisfied by a range of substantiating data from design philosophy, analysis, wind tunnel, laboratory, flight test and other data. However, any information submitted shall have a clear explanation as to where it came from and how it was derived. Charts or figures shall have sufficient detail (e.g., assumptions used, test conditions, data for test points shown) to permit Government evaluation and contract award without discussions.

The Offeror's proposal must contain all the pertinent information in sufficient detail to permit evaluation of the proposed program. In the event that inconsistencies exist between the electronic proposal and paper submissions provided as supporting data, the electronic proposal will take precedence over the paper submissions.

1.3. **Content.** The Offeror's proposal must clearly and convincingly demonstrate that the Offeror: has a thorough understanding of the solicitation and associated risks; possesses or can obtain access to required resources; and has valid and practical solutions for all requirements. Statements that the Offeror understands, or can or will comply with the requirements, and statements paraphrasing the requirements or parts thereof are inadequate. The Offeror is advised that the quality of information is more important than quantity. Clarity, brevity, and logical organization should be emphasized during proposal preparation. It is the responsibility of the Offeror to present enough information to allow evaluation without discussions. The Offeror must include any data necessary to illustrate the adequacy of the various assumptions, design approaches, and solutions to problems. There is no need to repeat information in more than one section if an overlap exists; the detailed information should be included in the most logical place and summarized and referenced in other areas. Unnecessarily elaborate proposals are neither necessary nor desired. The Offeror must submit an offer and other written proposal information in accordance with the following instructions.

1.4. **Proposal Validity.** The Offeror's proposal shall remain valid for a period of 240 days after the due date for submission of proposals.

1.5. **Contractor Investment.** The Government will not accept any proposed contractor investment in the JSF EMD Phase, nor will any proposed investments be used in the evaluation.

1.6. **Alternate Proposals.** Alternate proposals are not permitted in response to this solicitation.

1.7. **CDP Flight Test Data.** After the formal proposal due date, the Offeror may provide flight test data from the JSF CDP Flight Test program as the data becomes available. The submission of flight test data following the formal proposal due date shall only include reduced data from the Offeror's analysis of raw flight test data, narrative description of how the test data substantiates the Offeror's previously submitted proposal, and provides risk reduction to the Air System design. Format, page limits and submission of this data shall be coordinated with the Contracting Officer. The Offeror's submission of flight test data shall not include any updates to the Offeror's proposal unless explicitly requested by the Contracting Officer.

1.8. **Planning and Guidance.** The "JSF EMD GR&A," Section L, Appendix A, shall be used by the Offeror in conjunction with the additional guidance provided in this Section for developing an EMD cost estimate.

1.9. **Air System Block Development.** The Offeror shall include in the proposed EMD program a resource-loaded plan that includes the tasks required to develop capabilities and functionality to support the minimum requirements in Section L-12, Appendix C and shall include the required work in the SOW and program events in the IMP.

1.9.1. The effort shall include demonstration of Air Systems functionality which meets or exceeds the intended minimum capabilities, in accordance with the proposed block development approach, needed to execute the Mission Vignettes, as listed in Section L-12, Appendix C, Table 1.

1.9.2. The effort shall include integration and certification of stores on the JSF listed in Section L-12, Appendix C, Table 2, in accordance with the proposed block development approach. The effort shall also include provisions to allow integration and support of all remaining stores listed in the JMS. Appendix A provides specific guidance.

1.9.3. The effort shall include integration and demonstration of the supportability, training, and mission planning functionality, which meets or exceeds the minimum capabilities identified in Section L-12, Appendix C, Table 3, in accordance with the proposed block development approach.

1.9.4. The effort shall include integration and demonstration of the information exchange requirements (defined by the JMS) associated with the Operational Facilities identified in Section L-12, Appendix C, Table 4, in accordance with the proposed block development approach.

1.9.5. **Flight Certification Process.** Aircraft built during EMD for flight test will be certified airworthy and cleared for flight by using a joint-service certification/clearance process that will leverage lessons learned from the JSF CDA program. The JSF Program Office (JSFPO) will maintain oversight of certification and flight clearances. The Integrated Product Teams (IPT) shall develop certification criteria, means for satisfying the criteria (e.g., by analysis, ground test.), necessary guidelines/procedures, and data elements necessary for airworthiness certification of the Air Vehicle, its systems and subsystems. All resources required to conduct this certification must be specifically addressed in the Offeror's proposed SOW.

1.9.6. **Safety and Environmental Rule Compliance at Government Facilities.** The Offeror shall comply with all safety and environmental protection rules of the host base when operating at a Government base or facility.

1.10. **JSF EMD Phase Environmental and Safety Considerations.** The Offeror shall include in the SOW and IMP the tasks required to incorporate technologies and techniques to ensure JSF Air System production, testing, operation and disposal will have minimal effect on the environment, worker safety and occupational health. The JSF shall minimize life cycle environmental costs and liability while improving environmental quality and program performance by prudent investments in pollution prevention initiatives and technologies. The system design shall eliminate or minimize to the greatest extent possible life cycle requirements for hazardous materials, conditions and processes in all areas, including aboard ship and at deployed locations.

The Offeror shall include in the SOW and IMP the resources and tasks required to meet the JSF Air System environmental, safety and health goals and requirements listed in Table 1 below:

Requirements	**Goals**
1) Only use lead, mercury, cadmium and chromium when an engineering analysis and total cost of ownership analysis demonstrates use to be the best decision 2) Only use products or processes that contain benzene, methyl ethyl ketone, xylene, toluene, or methylene chloride when an engineering analysis and total cost of ownership analysis demonstrates use to be the best decision 3) Do not use ozone depleting compounds 4) 10% less variety and quantity of consumable materials required for maintenance and repair than similar legacy systems 5) Demilitarized JSF Air System and components are capable of being disposed of at permitted government or commercial facilities	1) Avoid use of lead, mercury, cadmium and chromium 2) Avoid use of products or processes that contain benzene, methyl ethylketone, xylene, toluene , or methylene chloride 3) 25% less variety and quantity of consumable materials required for maintenance and repair than similar legacy systems 4) Demilitarized JSF Air System and components are recyclable through the commercial marketplace

Table Number 1: Environmental and Safety Considerations

1.10.1. **Hazardous Materials Minimization**

Requirements for hazardous materials are to be carefully weighed against their life cycle impacts to include costs associated with procurement, management, disposal and compliance. Target materials used in manufacturing, maintenance, and repair processes, known to be highly regulated and therefore not cost effective include:

Asbestos	Methyl Ethyl Ketone
Beryllium, Alloys and Compounds	Nickel and Compounds
Cadmium and Compounds	Phenol
Chromium and Compounds	Tetrachloroethylene
Class I and II Ozone Depleting Compounds	Thallium
Hydrazine	Toluene
Lead and Compounds	Toluene Diisocyanate
Mercury	Trichloroethylene
Methylene Chloride	Xylenes

A report/database shall be prepared to document the specific use, selection criteria, and cost trades associated with the use of hazardous materials required throughout the life cycle of the system.

1.10.2. **Emissions and Noise**

The Offeror shall include in the SOW and IMP the tasks required to address the JSF engine emissions goals for all JSF variants. Noise emissions and vibro-acoustic effects, which are understood to pose potential constraints to deployment and basing flexibility, will be rigorously evaluated during the design, manufacturing and development phases so as to incorporate mitigating technologies where possible.

1.10.3. **Deactivation/Disposal/Demilitarization (D3)**

The Offeror shall include in the SOW and IMP the tasks required to develop and implement a D3 Plan that contains a complete description of the Air Vehicle and Propulsion System, a list of all the hazardous materials contained therein, and a detailed plan on disposal of each system component (e.g., recycled, sold as scrap, incinerated, sent to Hazardous Material Disposal Site). Included in the Plan are other necessary procedures such as shipping, transportation, incinerator operations, and washout procedures. Emphasis is placed on opportunities for recycling through the commercial marketplace. The D3 Plan is a supportability-planning document, which includes the necessary descriptions and specific technical procedures to allow safe, effective, and fully compliant demilitarization of the entire system and subassemblies. Guidance and format for Demilitarization and Disposal Plan are provided in DODI 4160.21 dated 8/97.

1.10.4. **System Safety Program.** The Offeror shall include in the SOW and IMP the resources and tasks required for a system safety program that will meet the safety requirements of SOO paragraph 3.2 and be consistent with Mil Std 882-D.

1.11. **Frequency Management Process**

1.11.1. The Offeror shall include in the proposed EMD program a resource-loaded plan that includes the tasks required to provide the data necessary for the JSF Program Office to obtain radio frequency (RF) spectrum allocation, certification, and assignment approval as described in Mil STD 464 for US systems and DCI GEN 175/2000 (Defense Spectrum and Frequency Management, dated 7 July 00) for UK systems. The Offeror shall provide the information in time to meet frequency spectrum approval milestones for EMD and service introduction as described in Section L-12, Appendix A, part 5. The Offeror shall supply the frequency management information consistent with the format as described in Mil STD 464 for US systems and DCI GEN 175/2000 for UK systems.

1.12. **Air Vehicle Supplemental Tasks, Plans and Studies.**

1.12.1. **Stores Modernization Monitoring.** The Offeror shall include in the SOW and IMP the resources and tasks required to monitor store modernization and upgrade programs and account for store improvement plans as part of the contractor's proposed Verification and Validation processes, Tests, IMP and IMS as well as other plans and schedules.

1.12.2. **Missionized Equipment Implementation Plans.** The Offeror shall include in the SOW and IMP the resources and tasks required to provide detailed design descriptions and plans to utilize the provisions (as required by the JMS) for missionized equipment. These plans and design descriptions shall address costs, schedules, technical details, verification and validation processes, IMP and IMS impacts as to how the following missionized capabilities would be implemented: Missionized gun (CV and STOVL), Future sensors, Reconnaissance packages, and P^3I avionics packages. These plans and design descriptions shall be updated as often as the Air System configuration is updated throughout the EMD program

1.12.3. **Growth Provisions Usage Plans.** The Offeror shall include in the SOW and IMP the resources and tasks required to provide detailed design descriptions and plans to utilize the growth provisions (as required by the JMS) for future enhancements. These plans and design descriptions shall address costs, schedules, technical details, verification and validation processes, IMP and IMS impacts. These plans and design descriptions shall be updated as often as the Air System configuration is updated throughout the EMD program.

1.12.4. **Technology Refresh.** The Offeror shall include in the SOW and IMP the resources and tasks required to refresh and retrofit technology used during EMD to ensure components remain current with equivalent commercial technology at the end of EMD and to mitigate Diminishing Manufacturing Source (DMS) issues.

1.12.5. **Life Support Equipment Life Cycle Trade Studies.** The Offeror shall include in the SOW and IMP the resources and tasks required to host working groups, conduct life cycle trade study analyses, refine requirements, and to document and make presentations concerning selection, procurement and development of pilot Life Support Equipment (LSE). The analyses and requirements refinement shall address design limitations and restrictions due to service-wide (USAF, USN, USMC, RN, and RAF) implications for personnel issue and supportability. The Offeror shall make presentations to the Using Commands' leadership prior to final selection/design freeze of the pilot LSE to justify and discuss their rationale for selection, approach for implementation, inadequacies of existing inventory LSE, potential capability of retrofitting legacy aircraft to benefit from the JSF LSE improvements, and Operating and Support costs.

1.13. **Proposal Format.**

1.13.1. **Proposal Organization and Page Limits.** The Offeror shall submit its proposal in electronic format only (exception for Section L-12, Attachment (4) Design Drawings that are part of Affordability (Air Vehicle) volume). Proposals are constrained to the page limits identified below. Cover pages, table of contents, listing of figures, and indices may be used and will not be included in the page count. Annexes, appendices, and other attachments to the proposal will be included in the page count unless the CFI specifically excludes them elsewhere. Any pages in excess of those limits will be deleted from the end of each proposal section and will not be read or evaluated. A transmittal letter may be used to forward proposals to the Contracting Officer and will not count against the page count. This letter will be used administratively and will not be read by the evaluators or the Source Selection Authority (SSA). Unless otherwise specified, the Offeror may use any presentation form such as narrative, graphics, photographs,

pictures, tables, graphs, and block diagrams to provide a concise description of the information to be conveyed. Footnotes to the text are allowed and may be used in tables and figures. Wherever a plan, parametric data, or a certification is requested as part of a Volume, that plan, parametric data, or certification may be attached to the specific Volume as an Appendix. The proposal should be divided into ten Volumes as follows:

Volume Number	Volume Title	Page Limitations
I	Executive Summary	
	- Executive Summary Narrative	10
	- Executive Summary Template Briefing Charts	7
	- Cross reference Matrix	As required
II	Affordability (Air Vehicle Subfactor)	
	- Air Vehicle	200
	- Supporting Data	200
	- Propulsion Data	1 CD ROM or Zip Disk
	- Weight and Mass Properties Data	As required
	- Design Drawings	20 (3 copies)
	- Architecture Models (Functional, Hardware, Software, Information, Dynamic)	As required
III	Affordability (Autonomic Logistics Subfactor)	200
	- LCOM	As required
	- CALM	As required
	- R&M	As required
	- Autonomic Logistics Information Functional Model	As required
IV	Affordability (Remaining Life Cycle Cost Subfactor)	* and attachments as required
V	EMD (Technical Subfactor)	200
VI	EMD (Management Subfactor)	
	- Management Narrative	50
	- CWBS Organization Map	As required
	- Program Protection Implementation Plan	As required
	- Risk Management Plan	As required
	- Associate Contractor Agreements	As required
	- IMS	As required
VII	EMD (Cost Subfactor)	* and attachments as required

* Affordability Remaining Life Cycle Cost and EMD Cost pages not to exceed 125 pages total; however, data required in response to Remaining Life Cycle Cost and EMD Cost Volume attachments (13-23), and the Offeror's Direct and Indirect Rate Package may be included as required.

VIII	Past Performance Factor	5 pages per contract and additional pages for adverse PPI and Organizational Structure Change History as required (see Section 2.8 below)
IX	Contract Documentation	
	- SF30 and Model Contract (Sections B - J)	As required
	- Statement of Work	As required
	- Contract Specification	As required
	- IMP	As required
	- CWBS	As required
	- CDRL Items	Limited
	- Small Business Subcontracting Plan	As required
	- Propulsion System Management Plan	As required
	- Technical Data and Computer Software delivered with other than unlimited rights	As required

	- Program Introduction Document	As required
	- Contract Security (DD 254)	As required
	- Representations and Certifications (Section K)	As required
	- Government Furnished Property	As required
	- Exceptions	As required
X	Acquisition Streamlining	
	- Version A	10
	- Version B	10

1.13.2. **Cross Reference Matrix.** Each volume shall be written to the greatest extent possible on a stand-alone basis so that its content may be evaluated with a minimum of cross-referencing to other volumes of the proposal. Cross-referencing within a proposal volume is permitted where its use would conserve space without impairing clarity. The Offeror shall complete a Cross Reference Matrix in accordance with Section L-12, Attachment (1). The Cross Reference Matrix shall include references to the Contract Specification, Work requirement, CWBS Level, CLIN, Section L, Section M, Proposal, SOW, CDRL, IMP, and SOO. The Offeror shall include the Cross Reference Matrix as a separate file within the Executive Summary, Volume I.

1.13.3. **Use of Missions, Vignettes, and Use-Cases.** The purpose of Use of Missions, Vignettes, and Use-Cases in this solicitation is to provide operational context to limit the scope of or to define the mission environment associated with broad reaching Air System requirements defined in the JMS.

1.13.4. **Early Past Performance Information.** Each Offeror shall submit the present and past performance information requested in Section L-12, paragraph 2.8, in electronic format on 12 January 2001. The early past performance proposal information shall include any teaming partners' and/or critical subcontractors' written consent to have its past performance information disclosed to the Offeror [See Section L-12, Attachment (25)], and copies of all client authorization letters [See Section L-12, Attachment (26)]. Each Offeror shall also provide the EMD Workshare information [See Section L-12, Attachment (21)] requested in Section L-12, paragraph 2.7.10 with the early past performance information submittal. The Offeror shall update any changed early past performance information and reference unchanged information in their formal proposal submission. This early proposal information shall be in accordance with the page count limits identified in paragraph 1.13.1 above. Failure to submit Early Past Performance Proposal Information will not result in Offeror disqualification.

1.13.5. **Electronic Submission of Proposal.** Proposals shall be submitted, read, and evaluated electronically. This section is intended to provide information to the Offeror on the electronic format and application software to be used for submitting proposals. Use of the software and procedures described in this section will reduce the amount of time and effort needed to receive and install proposals onto the electronic evaluation system, and will help ensure that the proposals received are suitable for reading electronically.

1.13.5.1. **Electronic Proposal Media.** The Offeror shall submit all electronic volumes of their proposals on MS-DOS formatted CD-ROM(s) or 100 MB ZIP disks. There are no limits to the number of CDs or ZIP disks that may be submitted, as long as the page and font requirements are met. The Offeror shall put as much proposal material as possible on each CD/ZIP disk, except for the Affordability Remaining Life Cycle Cost and EMD Cost Volumes, and any classified and "no foreign" files for any of the subfactors. The Remaining Life Cycle Cost and Cost volumes must be delivered on a separate CD(s) or ZIP disk(s). Classified files for any of the subfactors must be delivered in accordance with the procedures set forth below in paragraph 1.13.5.8. The Offeror shall submit two copies of the electronic portions of their proposals. One set of CDs/ZIP Disks shall be marked "Master" and another shall be marked "Back-Up."

Both sets of CDs/Zip Disks shall be clearly marked with the Offeror's name and address, the point of contact's name and phone number, and proposal volumes contained therein. The Offeror shall be responsible for ensuring electronic proposals are virus free in accordance with paragraph 1.13.5.11.

1.13.5.2. **Operating System and Applications.** The proposals will be accessed via Microsoft Windows NT 4.0 Advanced Server network. Two identical proposals shall be submitted in separate, paperless versions. One version will be submitted in Adobe Portable Document Format (.pdf). The .pdf version shall meet all page count limitations when read by Adobe Acrobat Reader 4.0. The .pdf document must be fully searchable in Adobe. The Offeror shall submit the proposal in a second format with the identical content of the .pdf version using Microsoft Office 97 Applications for Windows. The Microsoft Office 97 Applications version may vary slightly from the page limitations above as a result of print drivers or formatting. However, the Offeror shall be responsible for ensuring that the .pdf and Microsoft Office 97 Applications versions contain the identical information. The Government shall have the discretion to use the information in either version, and shall not be responsible for any differences in content between the two proposal formats submitted by the Offeror. The appropriate Microsoft Applications are Microsoft Word, Microsoft Excel, Microsoft PowerPoint, and Microsoft Project for Office 97. Use of other application software for submission of proposals is prohibited. However, other applications (e.g., non-Microsoft drawing programs) can be used in proposal preparation as long as the electronic product can still be viewed by the Microsoft application as an object embedded within the document (i.e., Word, Excel, PowerPoint or Project). The source selection network will use Microsoft Internet Explorer 5.0.

1.13.5.3. **Evaluation Hardware.** The JSF electronic source selection facility will consist of the following computer systems.

ITEM	EQUIPMENT
2 System Servers	P3 700 MHz or better CPUs 3 ½ " Floppy Drive CD ROM Drives Windows NT 4.0 Server OS
100 Workstations	P3 700 MHz or better CPUs 128 MB RAM 17" Monitors 3 ½" Floppy Drives iomega 100MB Zip Drives CD-ROM Drives Windows NT 4.0 Workstation Operating System
5 Workstations	P3 700 MHz or better CPUs 128 MB RAM 21" Monitors 3 ½" Floppy Drives iomega 100MB Zip Drives CD-ROM Drives Windows NT 4.0 Workstation Operating System

Network Printers: Two HP LaserJet 5P and two HP 8550 DN.

1.13.5.4. **Paper Copy Submission of Proposal.** The Offeror shall not submit a paper back-up copy of the proposal. However, three paper copies of the 15 allowable Design Drawings [See Section L-12, Attachment (4)] shall be submitted. (Other documents which require signature should be submitted in the original only if electronic signature is not used).

1.13.5.5. **Electronic Signature.** The Government and Offeror shall use electronic signatures for all proposal documents requiring the signature of the Contracting Officer or an authorized company official in accordance with the following procedures: The Government will release the formal CFI, amendments to the CFI and correspondence during the source selection with scanned digital cover letters signed by the Contracting Officer and included with the CFI as a .pdf file. The Offeror shall include all source selection documents requiring signature of an authorized company official in the same electronic format (i.e., .pdf). The JSF EMD contract that will be signed following the source selection decision will be signed digitally using an electronic signature process TBD (e.g., Verisign or some other JSFPO-designated paperless signature mechanism). The Offeror shall include a statement in their cover letter affirming the contractor's acceptance that the paperless signature procedures shall be legally binding with the full force and affect of an original signature submitted in writing.

1.13.5.6. **Page and Font Limitations.** The electronic page limits are set forth in paragraph 1.13.1 above. Font style and size shall be Times New Roman 12-point. The page limitation is based on 8 1/2" x 11" "paper" with 1" top, bottom and side margins. The "Times New Roman 12-point" requirement applies to text, figures, and tables. Single line spacing is acceptable. Do not use light colored fonts, such as lime or yellow, due to the difficulty of reading light fonts on a computer screen. The text shall be single column, versus multiple columns. Reduction to smaller fonts may only be used for graphics (e.g., tables, charts and pictures), but legibility must be maintained. In those cases where reduction of "Times New Roman 12-point" is not legible, a suitable font may be substituted as long as it is readable. Page numbers shall be placed in the middle of the page one-half (1/2) inch from the bottom. Paragraphs shall be numbered, titled, and titles underlined and/or bolded. Drawings, Figures, Tables, Foldouts, and Diagrams may be submitted on pages larger than 8 1/2" x 11". Each 8 1/2" x 11" sheet shall be counted as one page. Any page larger than 8 1/2" x 11" shall be counted as two pages. All graphs presented in the proposal must contain a grid that allows values to be read directly from the graph to the same accuracy that a 10 x 10 grid to the 1/2 inch provides. Graphic resolution must be consistent with the purpose of the data presented. The covers for Volumes/Books, tables of content, title pages, cross-reference indexes, section dividers, and tabs will not be included in the page count.

1.13.5.7. **File Naming Conventions.** There is no limit to the number of files that may be submitted. Valid extensions for all files using the above applications are:

.pdf for Adobe Portable Document File
.doc for Microsoft Word documents
.xls for Microsoft Excel documents
.ppt for Microsoft Power Point documents
.mpp for Microsoft Project

Note: the files shall have the <u>following naming convention</u> ("#" represents the sequential numbering of files and the suffix is for illustration, and may be .pdf, .doc, .xls, .ppt, or .mpp). All annexes, appendices or other attachments must follow the same convention.

I.	Executive Summary Cross Reference Matrix	exec#.pdf and exec#.doc crm#.pdf and crm#.doc
II.	Affordability (Air Vehicle Subfactor)	airv#.pdf and airv#.doc
III.	Affordability (Autonomic Logistics Subfactor)	auto#.pdf and auto#.doc
IV.	Affordability (Remaining Life Cycle Cost	rlcc#.pdf and rlcc#.doc

	Subfactor)	
V.	EMD (Technical Subfactor)	tech#.pdf and tech#.doc
VI.	EMS (Management Subfactor)	mgmt#.pdf and mgmt#.doc
VII.	EMD (Cost Subfactor)	cost#.pdf and cost#.doc
VIII.	Past Performance Factor	past#.pdf and past#.doc
IX.	Contract Documentation	
	Front Matter	front#.pdf and front#.doc
	SF30 and Model Contract (Sections B - J)	con#.pdf and con#.doc
	Statement of Work	sow#.pdf and sow#.doc
	Contract Specification	spec#.pdf and spec.doc
	IMP	imp#.pdf and imp#.doc
	CWBS	cwbs#.pdf and cwbs#.doc
	CDRL Items	cdrl#.pdf and cdrl#.doc
	Small Bus Subcontract Plan	sbus#.pdf and sbus#.doc
	Propulsion System Management Plan	psmp#pdf and psmp#.doc
	Tech Data & Computer S/W	tdata#.pdf and tdata#.doc
	Program Introduction Document	pid#.pdf and pid#.doc
	Contract Security (DD254)	dd254#.doc and dd254#.doc
	Representations and Certifications	rep#.pdf and rep#.doc
	Government Furnished Property	gfp#.pdf and gfp#.doc
	Exceptions	excp#.pdf and excp#.doc
X.	Acquisition Streamlining	stream#.pdf and stream#.doc

1.13.5.8. **Classified Files.** The work proposed under this solicitation may be classified. Classified sections of the proposal, if any, must be properly submitted on a separate CD ROM(s) or ZIP disk(s) as separate electronic files in strict accordance with DoD Security instructions and regulations and the above file naming and other requirements. The main proposal shall be unclassified.

1.13.5.9. **Hyperlinks.** The Offeror may use hyperlinks within and among proposal volumes. However, there shall be no links from any other volume into either the Affordability - Remaining Life Cycle Cost Subfactor or EMD - Cost Subfactor volumes. The Offeror may create links from the Affordability - Remaining Life Cycle Cost Subfactor and/or EMD - Cost Subfactor volumes into other volumes. Classified files may use hyperlinks within their separate CD ROM(s) or Zip disks per paragraph 1.13.5.8. However, there shall be no links between any classified files or data submitted on separate media required for isolating either classification level or security caveat.

1.13.5.10. **Evaluation Notices and Additional Proposal Submittals.** If additional input, such as evaluation notices or additional proposal submittals, is required from the Offeror at the request of the JSF program, these inputs may be required to be submitted electronically. Specific instructions will be given to the Offeror in this event.

1.13.5.11. **Virus Free Electronic Submission.** The Offeror shall be responsible for ensuring that their electronic proposals are virus free. The Offeror shall certify in their proposal cover letter that all electronic proposal information has been checked for viruses, and what software, version and virus definition were used to check the data. The Offeror shall also ensure and certify that any subsequent proposal information (e.g., evaluation notices, and Final Proposal Revisions) is also virus free.

1.13.5.12. **Electronic Information Dissemination.** JSF information, announcements and updates, including contract information and questions and answers regarding this CFI will be made available through electronic interchange coordinated by the Contracting Officer.

1.13.5.13. **Multimedia.** The Offeror shall not embed sound or video (e.g., MPEG) files into the proposal documents.

1.13.5.14. **Graphics.** Large files require greater computer system resources and are discouraged. The Offeror shall:

- Limit colors to 256 colors at 1024x768 resolution; avoid color gradients.
- Simplify the color palette used in creating figures.
- Minimize size of graphics files
- Avoid scanned images.

2.0. **SPECIFIC PROPOSAL CONTENT INSTRUCTIONS.** The Offeror shall present its proposal information in a manner that facilitates a one for one comparison between the presented information and the proposal information required. The Offeror should not repeat information in more than one section of the proposal; simply reference the location of the initial information if required in more than one section of the proposal. Likewise, unless specifically requested for completeness, such as accomplishing a specific worksheet, the Offeror may simply reference previously provided data. A copy of the reference data shall be provided. This reference data will not count against allocated page count requirements. The suspense date for previously provided data is as of the completion of the outbrief of the Government's assessment of each Offeror's Summer 2000 configuration update. The Offeror may request, in writing, an exception to the suspense date for additional data submittals from the Contracting Officer. The Contracting Officer will approve, in writing, additional data submittals on a case-by-case basis.

2.1. **Volume I - Executive Summary.** The Executive Summary shall provide a concise abstract of the Offeror's entire proposal, proposed SOW, and basic approach to be utilized. The Offeror's Executive Summary shall also include briefing charts in accordance with the Section L-12, Attachment (2), Executive Summary Templates. The executive summary briefing charts will be in a form suitable for release under the Freedom of Information Act (no classified information or restricted technical or cost data). This volume will not be evaluated, but will be checked for consistency with the total proposal. Content and format are the Offeror's option.

2.2. **Volume II - Affordability (Air Vehicle Subfactor).** This section shall contain information which identifies how the design of the JSF Air Vehicle (previously referred to as the Preferred Weapon System Concept (PWSC) during the Concept Demonstration Program (CDP)) will meet the requirements of the JMS, while reducing the Life Cycle Cost, and EMD development risk of the JSF Air Vehicle. The Offeror shall also identify those critical technologies, processes and system characteristics for the Air Vehicle subfactor. The Offeror shall provide the following information in its written proposal.

2.2.1. **General.** Proposal information provided under this section concerning Mass properties, Flight Controls system description, Propulsion performance and Avionics will be used in the evaluation of the other sections of the Affordability Air Vehicle Subfactor, paragraphs 2.2.2 - 2.2.8 and will also be used as input to the Air Vehicle weight estimates for the Affordability Remaining Life Cycle Cost Subfactor.

2.2.1.1. A key focus of the JSF EMD program is to enter EMD with an affordable and reduced risk approach to develop the JSF Air Vehicle that reduces system cost, meets stated USN, USAF, USMC, and Royal AF and Navy requirements, and is flexible for system growth over its 30 year life. Provide a narrative description of the family of JSF Air Vehicles, identifying those critical design features, processes and system characteristics for each area below which enables this key focus.

2.2.1.2. The Offeror shall complete the Excel spreadsheets and Word tables provided as Section L-12, Attachments (3) through (12) to provide the Government with the information needed to evaluate its conceptual aircraft designs for the JSF Air Vehicle. The requested information should be provided for each variant (CTOL, CV, STOVL) of the Offeror's family of JSF Air Vehicles. Additionally, specify where any CDP data (specifically CDP flight test results and wind tunnel results), simulations, computational analyses, and other objective data are used as substantiation for any portion of the requested information. An explanation of all discrepancies between CDP flight test results and claimed EMD performance must be provided. All the requested information shall be presented in accordance with the definitions provided in the JMS. While the requested information must still be addressed, all of the spreadsheets may be modified by the Offeror to more accurately reflect its family of aircraft. In cases where the requested information is not compatible with spreadsheet format, the Offeror need only indicate where the particular plot or drawing is located in the proposal.

2.2.1.3. The Offeror shall highlight/annotate changes to previous designs, if appropriate. References to the previous designs can be made to conserve space, however, specific tabular worksheets/attachments need to be filled in their entirety to ensure completeness and continuity.

2.2.1.4. **Mass Properties.**

2.2.1.4.1. **General.** Mass properties data shall be provided for a fully developed family of aircraft in accordance with the JMS. Consideration should be given to technology development risks and historical weight growth. All appropriate data shall be provided in Microsoft Excel 97 worksheet form. Contractor format is acceptable provided all indicated information is included. Additional narrative information shall be provided as indicated or otherwise appropriate for each variant.

2.2.1.4.2. **Drawings and Dimensional Data.** Drawings and dimensional data shall be provided in accordance with Section L-12, Attachment (4). All paper copy drawings shall be to 1/40th scale or larger. Large drawings showing several pieces of information such as 3-view, cross sections, area distribution, etc. are desired. The information called for in Section L-12, Attachment (4) can be provided on the drawing(s) or elsewhere at the Offeror's discretion.

2.2.1.4.3. **Weights.** Provide, for each variant, all the data included in a Society of Allied Weight Engineers Recommended Practice #8A (SRP#8A, Part I) Group Weight Statement, including Airframe Unit Weight derivation. Provide design, dimensional and descriptive information in accordance with Section L-12, Attachments (5), (6), and (7).

2.2.1.4.3.1. Provide useful load breakdowns for the USAF (CTOL), USN (CV), and STOVL Missions (as defined in the JMS), and the combat maneuvering condition. For each variant, provide derivations of all structural design weights and identify associated design load factors (including taxi load factors, catapult horizontal load factor, and CVSG 12 degree ski-jump launch load factor, as appropriate) and landing sink speeds (specify limit or design).

2.2.1.4.3.2. Provide weight increments or decrements included for unique requirements, advanced state-of-the-art (e.g., advanced materials and manufacturing practices), and design features, including carrier suitability, E3 protection, survivability, and low observability. Include description and basis for increments.

2.2.1.4.3.3. Provide substantiation of all weight estimates. For estimated weights provide the methods used, including definitions of parameters and correlation with actual weights of existing hardware. Identify any insights learned from the demonstrator aircraft or other technology maturation sources, which provide support of the weight estimates.

2.2.1.4.3.4. Provide moments and products of inertia (Ixx, Iyy, Izz, Ixy, Ixz) for the USAF (CTOL), USN (CV), and STOVL Missions (as defined in the JMS) at 50% internal fuel weight, for Flight Design Gross Weight, and for CV/STOVL max bringback configurations, as defined in the JMS.

2.2.1.4.3.5. Provide summary weight empty center of gravity information, as well as fuel burn variations during the USAF (CTOL), USN (CV), and STOVL Missions (as defined in the JMS). Define the maximum forward and aft CG limits, the forward and aft CG limits for normal operations, and the criteria used in their determination. Describe the Air Vehicle's ability to handle variations in CG of useful load items and the effects of fuel slosh.

2.2.1.4.4. **Structure Mass Properties**

2.2.1.4.4.1. Provide, for each variant, a brief, top-level description of material(s), fabrication and assembly approaches for each major structural component.

2.2.1.4.4.2. Provide, for each variant, material breakdown by percentage weight for each major structural component (e.g., wing, tails, landing gear, body, air induction system), and each manufacturing module or assembly (e.g., forward fuselage, center fuselage, inner wing panel). Identify critical design allowables (those which influence part thickness) for any non-standard materials used (i.e., materials which do not have material properties that have been fully characterized for production usage in military aircraft applications).

2.2.1.4.4.3. Provide, for each variant, design speed vs. altitude envelopes with limiting factors identified.

2.2.1.4.4.4. Provide, for each variant, service life, maneuver exceedance spectrum and design usage assumptions for Gust, Vibration /Aeroacoustics, Buffet, and Landings.

2.2.1.4.5. **Propulsion Mass Properties.** Provide, for each variant, a detailed weight breakdown and source of data for all propulsion system components (e.g., turbo-machinery, exhausts, transfer ducts, blockers, valves, fans, gearboxes). Provide data relating proposed propulsion weights to CDP propulsion system weights showing scaling factors and advanced technology impacts as indicated in Section L-12, Attachment (6). Attachment (6) format may be modified to provide additional detail as available or to more accurately reflect the Offeror's JSF family.

2.2.1.4.6. **Systems.** Provide, for each variant, a brief description of the aircraft systems listed below. Include drawings and schematics. For non-traditional subsystem technologies such as JSF/Integrated Systems Technology (J/IST) that are baselined on the air vehicle, identify how they functionally replace traditional systems. For appropriate subsystems, provide a load analysis showing derivation of system design capacities, including any growth provisions.

2.2.1.4.6.1. **Secondary Power and Emergency Power.** Description shall include output power capabilities and system operating envelopes, and growth capacity.

2.2.1.4.6.2. **Environmental/Thermal Control.** Description shall include type and capacity (Btu/hr) of cooling system, medium for heat rejection (e.g., ambient, fuel), environmental control system functions, Chemical & Biological protection and auxiliary/alternate cooling devices for ground/deck operation (e.g., cooling fans), as well as growth capacity. Description shall address thermal management of the entire air vehicle and identify any thermal limitations on air vehicle operations for both extreme and normal environmental conditions.

2.2.1.4.6.3. **Hydraulic.** Description shall include system operating pressures, fluid type, main and emergency hydraulic system flow rates' redundancy, emergency power sources, material used for lines, and functions.

2.2.1.4.6.4. **Electrical.** Description shall include the type, number and ratings of generators, major conversion units and batteries, generator power source(s), power distribution system, emergency power system, and other electrical system design features, as well as growth capacity.

2.2.1.4.6.5. **Crew Station.** Description shall include physical arrangement, emergency escape system, controls and displays, oxygen system, and other crew provisions.

2.2.1.4.6.6. **Emergency Provisions.** Description shall include any fire detection, fire extinguishing and/or explosion suppression features.

2.2.1.4.6.7. **Fuel System.** Description shall include type, number and volume of fuel tanks (internal and external), total fuel system capacity (usable and unusable), in-flight refueling system, dump systems and capacities, inerting systems and any other vulnerability enhancements. Describe the derivation of the fuel tank usable volumes.

2.2.1.4.6.8. **Armament.** Description shall include all internal and external weapon carriage provisions, gun provisions, and description of suspension and release equipment.

2.2.1.4.7. **Avionics.** Provide, for each variant, all processing system weight derivation data (e.g., avionics, vehicle management system, store management, engine controls) as indicated in Section L-12, Attachment (7). Attachment (7) format may be modified to provide additional detail as available, or to more accurately reflect the Offeror's JSF family.

2.2.1.5. **Description of Flight Control System.** Description shall include types and function(s) of control surfaces, surface authorities and rates, stability margins, thrust vectoring authorities and rates, feel forces, types of actuation devices, sources of power for actuation, redundancy, EMI hardening and air data system. Include schedule of all movable surfaces for combat, maneuvering and cruise modes.

2.2.1.6. **Propulsion Performance**

2.2.1.6.1. **Design Description.** For all variants, the Offeror shall completely define the JSF Air Vehicle propulsion system design and performance features. (Note: Whenever the term "propulsion system" is referenced in the following section the Offeror shall assume this reference to include all main cruise engine, augmentor, and STOVL lift components.) The proposal submission shall contain the following:

2.2.1.6.1.1. A top-level breakdown of the propulsion system by major assembly (e.g., fan, compressor, combustor, turbine, controls/accessories) with a description of each as well as performance, structural design and systems effectiveness considerations inherent in the design (e.g., reliability, maintainability, survivability, durability, operability).

2.2.1.6.1.2. A complete breakdown of the propulsion system, inlet, and exhaust system by various systems including detailed description of all mechanical, material, aerodynamic, thermodynamic and engineering design features. Provide substantiating data where applicable.

2.2.1.6.1.3. Descriptions of the propulsion system mounting provisions, airframe thermal protection, engine bay cooling, engine starting system(s), and lubrication system(s).

2.2.1.6.1.4. A description of the Offeror's plan for propulsion system growth including impacts on: Airflow, Fan Pressure Ratio (PR), Fuel Flow, engine size, materials, turbine temperature, cost and schedule.

2.2.1.6.1.5. Provide the propulsion system maximum installed and uninstalled thrust(s).

2.2.1.6.2. **Performance Analysis**

2.2.1.6.2.1. Provide, for each variant, an uninstalled engine performance computer program, conforming to the format and content described in the JSF Engine/Propulsion System Specification (Dates TBI). This model shall simulate both up-and-away and STOVL operation by direct program input. Substantiating data and documentation shall be submitted by Zip disk or CD-ROM.

2.2.1.6.2.2. The installed performance parameters that define the propulsion side of the thrust-drag bookkeeping system shall be provided. Substantiating analysis, data and documentation shall be submitted by Zip disk or CD-ROM.

2.2.1.6.2.3. The installed engine performance model, including throttle/engine dependent effects, that was used to generate proposal weapons system performance shall be submitted. The users manual documentation shall also be submitted on the Zip disk or CD-ROM.

2.2.1.7. **Avionics**

2.2.1.7.1. Provide, for each variant, description of the avionics system and its subsystem components, including any growth capability. Detail subsystem component commonality within a single aircraft; commonality among JSF variants; and commonality between the JSF and existing aircraft and weapons systems. Where necessary, explain the unique aspects associated with the different variants, if any. Describe the features and performance aspects of the sensors and their ability to meet the JMS.

2.2.1.7.2. Describe the approach for achieving the warfighting capabilities for a precision weapon delivery system to include day/night adverse weather. Include both Air-to-Air (A/A) and Air-to-Surface (A/S). Describe how required standoff ranges are achieved. Provide an allocation of requirements and error budgets from system to subsystem level to substantiate required performance in the context of missions and mission timelines. These allocations should be expressed in the context of the requirements allocation and design toolset(s) proposed.

2.2.1.7.3. The Offeror shall describe to what extent common, inherent JSF Air System design characteristics, among JSF variants and between the JSF and other existing aircraft and weapon systems, as listed in the JMS, were considered in the design to enhance interoperability.

2.2.2. **Air Vehicle Open Architecture.** The Offeror shall provide information, and models of the Air Vehicle open architecture, to substantiate the ability of the JSF Air System to achieve the performance required by the JMS, within the context of the Air System open architecture.

2.2.2.1. The Offeror shall provide an Air Vehicle Functional Model, to include all functional elements, their contents, and interfaces required in the performance of the missions identified in the JMS, including interfaces to Air System components external to the Air Vehicle and interfaces between the Air Vehicle and external systems required to satisfy the requirements of the JMS.

2.2.2.2. The Offeror shall provide an Air Vehicle Hardware Model to include all hardware components and associated packaging, power, and cooling to perform the functions mapped to the Hardware Model from the Functional and Software Models.

2.2.2.3. The Offeror shall provide an Air Vehicle Software Model to include all software components and their interfaces required to perform the functions mapped to the Software Model from the Functional Model, in the context of the Dynamics Model.

2.2.2.4. The Offeror shall provide an Air Vehicle Information Model to include all data elements, data source and use elements, storage and retrieval mechanisms, system information products (internal and external), information interfaces (internal and external), and information prioritization logic required to perform the missions listed in the JMS, consistent with the Functional Model. The Air Vehicle Information Model shall include mapping of data and information routing, sources and uses, prioritization, and transformation processes to the Hardware and Software Models as appropriate, in the context of the Dynamics Model.

2.2.2.5. The Offeror shall provide an Air Vehicle Dynamics Model to include discrete functional activities, arrayed along a mission timeline, necessary to perform the missions identified in the JMS. The Air Vehicle Dynamics Model shall include mapping of activity execution times and event deadlines to the relevant components of the Functional, Hardware, and Software Models.

2.2.2.6. The Offeror shall provide a technical standards profile for the JSF Air Vehicle.

2.2.3. **Interoperability.** The Offeror shall describe the implementation of JSF Information Exchange Requirements (IERs) and JSF Internal IERs (IIERs) within the Air System design to achieve interoperability with Operational Facilities (OPFACs) in accordance with the JMS and consistent with the JSF C4I Support Plan (C4ISP). This implementation shall be expressed within the context of the Air System open architecture to substantiate the ability of the JSF Air System to achieve the performance required by the JMS.

2.2.4. **Data Fusion and Information Management.** The Offeror shall provide the following information to substantiate the ability of the JSF Air System to achieve the performance required by the JMS. The Offeror shall describe the proposed JSF Air System ability to perform in the tactical situations defined by the Use Cases in Section L-12, Appendix D. The Offeror shall also describe the method and tools used to assess this performance. This information shall be expressed in the context of the Air System open architecture.

2.2.4.1. The Offeror shall describe JSF Air Vehicle data fusion design. This description shall include fusion with offboard sources, fusion algorithms, internal fusion structure, and rationale for the selection of specific implementation techniques chosen.

2.2.4.2. The Offeror shall describe JSF information management design. This description shall include the priorities and logic employed across the system to derive situational awareness and to support pilot-system, and subsystem interactions to accomplish mission tasks.

2.2.4.3. The Offeror shall describe JSF mission planning interfaces among the Air System components and the information products and services that support information management tasks on the Air Vehicle.

2.2.4.4. The Offeror shall present evidence of, or otherwise describe, risk identification and mitigation (e.g., demonstration) activities undertaken relative to fusion, information management, and mission planning.

2.2.5. **Lethality.** The Offeror shall provide information to substantiate the ability of the JSF Air System to achieve the performance required by the JMS.

2.2.5.1. The Offeror shall provide a description of the approach for integrating avionics and stores to ensure lethality against air-to-air and air-to-surface threats and targets. Included in this description should be weapon system performance (projected Circular Error Probable (CEP) (A/S) or exchange ratio (A/A)

as defined in the JMS) based on considerations of mission and mission phases, environment, threats/targets, and payload for a desired probability of kill. This description shall cover all stages of the attack (acquisition/track/prioritize/identification, weapon release / support, and Battle Damage Indications/Assessment for A/S; situational awareness, acquisition/track/prioritize/identification, weapon release/support, engage or avoid.

2.2.5.2. The Offeror shall provide a description of the proposed JSF Air System's ability to perform in the tactical situation defined by the following Use Cases, defined in Section L-12, Appendix D. The Offeror shall also describe the method and tools used to assess this performance.

2.2.5.3. **Payload.** The Offeror shall provide stores carriage and employment data as indicated in Section L-12, Attachment (11). The spreadsheet may be modified to more accurately reflect Offeror's Air Vehicle family. Additionally, delineate specific modifications/adapters that would be required to any variant in order to carry/employ the stores called out in the JMS.

2.2.5.4. **Weapon Delivery Accuracy (WDA).** The Offeror shall provide weapon delivery accuracy assessment information and complete error budget to include equations, assumptions and all error sources for all delivery modes that satisfy the JMS.

2.2.6. **Survivability.** Describe the Offeror's approach to achieving the susceptibility and vulnerability requirements that lead to a survivable solution for the Offeror's family of aircraft. The Offeror shall provide the following information to substantiate the ability of the JSF Air System to achieve the performance required by the JMS.

2.2.6.1. **Missile Endgame Survivability.** Provide counter-tactics employment effectiveness data based on analysis of the following Use Cases, defined in Section L-12, Appendix D, and as required by the JMS. The Offeror shall also describe the method and tools used to assess this performance.

2.2.6.1.1. In the context of an engagement by a threat missile, describe how the Offeror's proposed Air Vehicle capabilities for pilot situational awareness, reduced signature (including visual, infrared (IR), RF and Emissions Control (EMCON)) and countermeasures are able to avoid the threat missile.

2.2.6.1.2. In the context of a threat missile impact, describe how the Offeror's proposed Air Vehicle countermeasures and vulnerability design will withstand the missile's damage effects.

2.2.6.2. **Radar Cross Section (RCS)**

2.2.6.2.1. Provide a RCS for the conditions identified in the JMS. Describe all signature-critical components, including vendor-supplied avionics and propulsion components, with estimates of performance as installed in the Offeror's family of aircraft, as appropriate.

2.2.6.2.2. Provide the Air Vehicle RCS in Classified Attachment (12), Excel spreadsheet or Word format, in accordance with the JMS.

2.2.6.3. **Electronic Protection.** The Offeror shall provide a complete description of their approach to electronic protection.

2.2.7. **Up and Away Performance.** The Offeror shall provide the mission and maneuver performance data as outlined in Section L-12, Attachment (3) in accordance with definitions provided in the JMS to substantiate the ability of the JSF Air Vehicle to achieve the performance required by the JMS. For all of

the listed mission profiles, provide breakdown by segment showing time, distance, altitudes, speeds, fuel used, initial and final weight. Include climb schedule as a function of altitude for climb segments. Any other information (e.g., such as turn rate diagrams, flight envelopes) to help describe the capabilities of the Offeror's concept may be included.

2.2.7.1. **Aerodynamics/Stability and Control.** Provide aerodynamics and stability and control/flying qualities data in the up and away configurations as indicated in Section L-12, Attachment (8), Excel spreadsheet format. The spreadsheet may be modified to provide additional detail as available or to more accurately reflect the Offeror's variants. Provide increments due to thrust vectoring, if applicable.

2.2.8. **Carrier Variant (CV) Performance.** The Offeror shall describe and substantiate the ability of the CV variant to achieve required performance capability in accordance with the JMS.

2.2.8.1. **Aerodynamics.** Provide aerodynamics data in the catapult launch/arrested landing configurations as indicated in Section L-12, Attachment (9), Excel spreadsheet format. The spreadsheet may be modified to provide additional detail as available or to more accurately reflect the Offeror's CV variant. Provide increments due to thrust vectoring, if applicable.

2.2.8.2. **Stability and Control/Handling Qualities.** Provide qualitative and quantitative data that substantiates that the air vehicle design has the necessary control power and system bandwidth to achieve Level I Handling Qualities for nominal environmental conditions and prescribed bringback loading, as defined in the JMS.

2.2.8.3. Provide temperature and acoustic environment at the jet blast deflector (JBD) and at deck impingement; design weight and overload weight thrust settings, if applicable.

2.2.9. **STOVL Variant Performance.** The Offeror shall describe and substantiate the ability of the STOVL variant to achieve required performance capability in accordance with the JMS.

2.2.9.1. **Aerodynamics/Stability and Control**. Provide aerodynamics and stability and control/flying qualities data in the STOVL configuration as indicated in Section L-12, Attachment (10). The spreadsheet may be modified to provide additional detail as available or to more accurately reflect the Offeror's STOVL variant.

2.2.9.2. **Stability and Control / Handling Qualities.** Provide qualitative and quantitative data that substantiates that the air vehicle design has the necessary control power and system bandwidth to achieve Level I Handling Qualities for nominal environmental conditions and prescribed bringback loading, as defined in the JMS.

2.2.9.3. Provide temperature and acoustic environment at the jet blast deflector and at deck impingement; design weight and overload weight thrust settings, if applicable. (Aircraft Carrier (CV), L-class and UK Legacy Aircraft Carrier (CVSG)

2.2.9.4. Provide temperature, velocity, dynamic pressure and acoustic environment for all operations (including wheels on ground at maximum vertical landing configuration, max short takeoff (STO) thrust in STO configuration and at ground idle) on AM-2 mat, asphalt surfaces, and concrete; design weight and overload weight thrust settings, if applicable.

2.2.9.5. Provide the jet temperature and pressure at (immediately above) the surface as a function of wheel height for a maximum vertical landing weight vertical landing and a waveoff. Define the location

of the maximum temperature point and the distribution of temperature and pressure around the maximum. Define the movement of the impingement point (if any) as a function of wheel height, using a height range from 50 ft extended gear height to compressed gear height.

2.2.10. **Robustness.** The Offeror shall provide the following information to substantiate the ability of the JSF Air Vehicle to achieve the performance required by the JMS.

2.2.10.1. Provide in an annotated tabular form the service life of Air Vehicle to include all major avionics, structure, flight controls and subsystem assemblies, components and interconnects in accordance with the JMS. Annotate the table to describe any limitations and mitigation plans.

2.2.10.2. Provide a maturity assessment of the Air Vehicle design's ability to be developed in the proposed schedule and Offeror's block development approach. Describe how the Offeror's family of Air Vehicles and Air Vehicle open architecture in the context of the Air System open architecture (per the JMS) affordably accommodates incorporation of customer unique requirements. Describe areas of expected Air Vehicle growth in accordance with the JMS for the service life of the Air System and how the Offeror's family of Air Vehicles affordably accommodate the expected growth to include interchangeability between the primary and alternate engines per SOO paragraph 3.2.

2.2.10.3. Provide a description of the Offeror's provisions for growth and missionized equipment in accordance with the JMS.

2.3. **VOLUME III - Affordability (Autonomic Logistics Subfactor).** The Offeror shall provide the following information in its proposal.

2.3.1. **Operational Logistics Effectiveness.**

2.3.1.1. **Sortie Generation Rate.** The Offeror shall provide a JSF Supportability mission level Logistics Composite Model (LCOM) WINLCOM Version 1.0 database used to support their Sortie Generation, and Manpower submission in accordance with the JMS. The Offeror shall identify any differences since the previous submissions.

2.3.1.1.1. The database shall have incorporated the Offeror's reliability and maintainability (R&M) and task analysis data at the Line Replaceable Component level of detail for each variant.

2.3.1.1.2. The Offeror shall provide the results from running the database in accordance with the following methodology:

2.3.1.1.2.1. The first run or set of runs shall establish the basic sortie generation capability of the aircraft based on the R&M of the aircraft and operational constraints (e.g., sortie duration, mission configuration). The runs shall be performed with manpower, spares, and support equipment set at a high enough value to ensure resources are always available immediately upon demand. These runs are referred to as Fly-When-Ready (FWR) runs as the simulation is set to attempt to fly as many sorties as possible within the daily time constraint (or flying day window). Two types of FWR runs shall be performed: with no failures or scheduled maintenance; and with failures and scheduled maintenance. The first value shall describe the sortie generation capability based on the operational environment only and the second factors in failures and scheduled maintenance. The outputs shall be:

- Sortie rate by period (without maintenance and with maintenance).

- Maintenance Man-hours per Flight Hour.

2.3.1.1.2.2. The second set of runs shall determine manpower and sparing levels at the most demanding period by skill and Work Unit Code (WUC). This shall be achieved by bringing the manpower levels lower in each skill set and spares lower in each WUC until the threshold sortie generation rate (SGR) is breached. This shall be corrected to re-establish the SGR threshold value and the figure taken as the constrained value. These values shall be identified by period to ensure that the total manpower values correspond to the high drivers by period. The outputs shall be:

- Maintenance Man-hours per Flight Hour.

- Manpower by Air Force Specialty Code (AFSC)/Manpower Occupational Specialty (MOS)/Navy Enlisted Classification (NEC)/Trade as appropriate and Utilization by Period. The Offeror shall also provide a full manpower document for each Service including overhead and management.

- Spares Demands by WUC (High Drivers).

2.3.1.2. **Logistics Footprint.** The Offeror shall provide all support equipment, spares and resources data to support the specified aircraft in accordance with the JMS. The Offeror shall identify any differences from any previously submitted data.

2.3.1.2.1. The Offeror shall provide the logistics data in respect to CTOL and STOVL (USMC) expeditionary forces by size and weight and compatible with the Computer Aided Load Manifest (CALM 5.4) and output data in equivalent C-17 pallet loads.

2.3.1.2.2. The Offeror shall provide logistics data in respect of CV, STOVL (UK) and STOVL (USMC) afloat by weight and volume.

2.3.1.3. **Mission Reliability.** The Offeror shall submit their preliminary mission profile analysis that describes mission sequence, pertinent environments, functions required for the mission, to support their mission reliability prediction program in accordance with the JMS. The Offeror shall also supply the Mean Flight hours Between Operational Mission Failure and Mean Corrective Time for Operational Mission Failures at the 3-digit WUC.

2.3.2. **Reliability and Maintainability Attributes.** The Offeror shall provide R&M predictions traceable to the Failure Modes Effects and Critical Analysis (FMECA), reliability block diagrams and mathematical models in accordance with the JMS. The information shall include reliability predictions and supporting documentation for the proposed design at the Line Replaceable Component (LRC) level. The Offeror shall identify the significant maintenance and supportability features of the Air Vehicle design. The Offeror shall identify any differences from any previously submitted data.

2.3.3. **Support System Concept.** The Offeror shall provide the following information:

2.3.3.1. The plan of how the support system will be owned, and sustain planned peacetime and wartime operations in accordance with the JMS, and how it will address the following functions:

- Maintenance planning in accordance with the JMS

- Manpower and personnel in accordance with the JMS

- Supply support in accordance with the JMS
- Support equipment in accordance with the JMS
- Technical data in accordance with the JMS
- Computer resource support in accordance with the JMS
- Facilities which include training facilities in accordance with the JMS
- Packaging, handling, and transportation in accordance with the JMS
- Depot capability in accordance with the JMS
- Design interface to include product improvement across the Air System.

2.3.4. **Training System Concept.** The Offeror shall describe how the JSF Training System shall be owned, and operated in accordance with the JMS. This description shall include:

- The quantity of training devices, deployable elements and all courseware in accordance with the JMS
- The use, extent and functionality of embedded training in accordance with the JMS
- The process to support that the JSF Training System shall reduce the time to train.
- The application of the Instructional Systems Development (ISD) process.
- The use, extent and functionality of the training management system.

2.3.5. **Information System Concept.** The Offeror shall provide a description of the process, rationale, and estimated software development required to include the total system functionality and to integrate the proposed JSF autonomic logistics information system with the external and Air System interfaces in accordance with JMS.

2.3.5.1. The offeror shall describe the information management design. This description shall include the performance features within the context of the Air System open architecture in accordance with the JMS.

2.3.5.2. The offeror shall describe JSF mission planning interfaces among the Air System components and the information products and services that support information management tasks from the Air Vehicle to offboard resources in accordance with the JMS.

2.3.5.3. The offeror shall provide an Autonomic Logistics functional model to include all functional elements, contents, and interrelationships required to satisfy the JMS.

2.4. **VOLUME IV - Affordability (Remaining Life Cycle Cost Subfactor).** The Offeror shall provide the following information in its proposal.

2.4.1. **General Information**

The cost instructions apply to Offerors and all major subcontractors greater than 10% of JSF Remaining Life Cycle Cost. Remaining Life Cycle Cost includes Unit Recurring Flyaway, Other Procurement Costs (Non-recurring Rate Tooling, Data, Training, Peculiar Support Equipment, and Initial Spares), and Operating and Support Costs. Since cost information will be used by the Government team to evaluate each proposal relative to the factors in Section M, "Evaluation Factors for Award," adequate substantiation is required to enable the Government to determine whether the estimating methodology is acceptable. The cost estimating approach and data input to this approach of all proposals will be evaluated to determine whether the estimate is realistic and reasonable, and to ensure all SOO and requirements are included in the cost proposal. A well-organized proposal with adequate supporting documentation will assist in Government evaluation and ensure all Offeror assumptions and methodologies are understood. The burden of proof for cost credibility rests with the Offeror.

The evaluation of Remaining Life Cycle Cost will be conducted using the Joint Common Cost Model (JCCM) and will be based on the Notional Production Profile Section L-12, Appendix A. Section L-12, Attachments (14-18, and 23) included in the CFI will be used as part of this evaluation. The Government will use the JCCM and attachment inputs to generate the Most Probable Cost estimate(s) for each Offeror. Although formats are provided, contractor-generated Cost Attachments are acceptable provided the attachments present the same information requested on the Government forms and are provided in equivalent filenames and in the same application programs. The Offeror's inputs shall assume no configuration updates between EMD and Production. In developing the cost estimate, the Offeror shall follow the format of Section L-12, Attachment (14). All cost information shall be submitted in Government Fiscal Year 1994 dollars (GFY 94$).

The Offeror shall provide page and volume, and filename references for data that is concurrent in other volumes. This facilitates the crosscheck between the Cost sections and other proposal volumes/sections.

2.4.2. **Groundrules and Assumptions.** An explanation of all groundrules and assumptions that affect the cost estimates shall be provided. Topics to be addressed include, but are not limited to, programmatic variables (e.g., inflation/escalation, location, make/buy decisions, prime/subcontractor relationships, and business base concerns).

2.4.3. **Basis of Estimate**. The Basis of Estimate is not required for the Unit Recurring Flyaway as long as there are no major estimating changes from previously submitted data. For Other Procurement Costs (Non-recurring Rate Tooling, Training, Data, Peculiar Support Equipment, and Initial Spares), and Operating and Support Costs state how the estimate was developed, as well as any assumptions that were used to develop the estimate. Provide an explanation for the selection of the historical data that forms the basis of the estimate. General statements such as "estimates were derived from engineering judgment" or "estimates were derived from comparison with similar systems" are not acceptable substantiation unless the details of the engineering analysis and/or similar systems analysis are provided. Estimates based on "vendor quote" by itself do not provide a basis of estimate. Offerors must provide an evaluation of the reasonableness of the costs. Engineering judgment is not recommended as an estimating methodology without the inclusion of the similar programs that formed the basis of the engineering judgment. Historical data from comparable programs shall be used to support the estimates to the maximum extent possible. The cost estimate for Peculiar Support Equipment, Training, Data, Initial Spares, and Operating and Support Costs shall tie to the support solutions proposed. In order to demonstrate understanding of the provisions of Section H-4, the Offeror shall provide nominal T1 and Affordability Improvement Curves (AIC) in accordance with the provisions of Section H-4, Price Affordability Improvement Curve (APIC).

2.4.4. **Mathematical Formula/ Calculation.** Provide all calculations/steps to track between historical data and proposed effort for Other Procurement Costs (Non-recurring Rate Tooling, Training, Data, Peculiar Support Equipment, and Initial Spares), and Operating and Support Costs. This includes conversion of historical data, as well as any complexity factors, adjustments, or allocations.

2.4.5. **Commonality Database.** Provide all information requested in the Commonality database sheet [see Section L-12, Attachment (15)]. Although formats are provided, a contractor-generated Commonality database attachment is acceptable provided the attachment presents the same information requested in the Government format and is provided in an equivalent filename and in the same application program.

2.4.6. **Affordability Initiatives.** Provide all information requested in the Affordability Initiative attachment [see Section L-12, Attachment (16)]. Describe Production Affordability Initiatives (e.g., acquisition reform, cost reduction, process changes, business practices, technical maturation) being pursued for the production phase, the impact these initiatives have on the proposed technical and programmatic approaches, and the resultant impact these have on the proposed costs. Provide detailed substantiation for the estimated implementation costs and savings associated with each initiative. Offeror shall provide a discussion on processes or business practices that are not captured by the JCCM. It is imperative that the Offeror ensure that the substantiation provided is understandable and consistent as this information is critical to the Government's evaluation.

2.4.7. **Autonomic Logistics Support.** Section L-12 Attachment 14 (Procurement Cost Summary) must include all procurement costs for the Offeror's autonomic logistics support concept described in Section L-12, paragraph 2.3.

2.4.8. **Mission Systems/Purchased Equipment/Armament.** Provide all hardware and software information requested in the mission systems attachment [see Section L-12, Attachment (17)]. Although Government format is provided, contractor-format is acceptable provided that the attachment presents the same information requested in the Government format and is provided in an equivalent filename and in the same application program.

2.4.9. **Non-recurring Rate Tooling.** Describe Non-recurring Rate Tooling concept including any impact by proposed affordability initiatives. Provide detailed substantiation for the estimated rate tooling costs. Provide all information requested on the Non-recurring Rate Tooling attachment [see Section L-12, Attachment (18)]. Although formats are provided, a contractor-generated attachment is acceptable provided the attachment presents the same information requested in the Government format and is provided in an equivalent filename and in the same application program.

2.4.10. **Operating & Support Costs.** Provide all information requested in the Operating and Support Cost Section L-12, Attachment (23). Provide cost data and analysis that demonstrate valid GR&A, and model element definition for O&S costs by CAIG element to include proposed affordability initiatives. Methodologies (techniques) may differ throughout the O&S estimate based on the supporting data available. The O&S cost estimate shall be consistent with the Autonomic Logistics support concept described in section L-12, paragraph 2.3. There are four major cost estimating methodologies (techniques) that are acceptable:

- Analogy

- Parametric (Statistical)
- Engineering (Bottoms Up)
- Extrapolation from Actual Costs

2.4.11. **Government Property.** Provide a list and description of property required from the Government that will be included on each variant of the production aircraft. The description shall be in sufficient detail to allow the Government to generate a cost estimate for the listed items.

2.4.12. **Rates**

2.4.12.1. **Proprietary Rates.** Due to the proprietary nature of company rates, the Offeror shall provide a separate file (or files) for each site where work is performed and for major subcontractors. For the Prime Contractor and each major (greater than 10%) subcontractor or Prime division/site, provide the following ground rule and assumption data/inputs for your Business Base, Direct rates, Indirect/Overhead Rates and Wrap Rates.

2.4.12.2. **Business Base Assumptions.** For the Prime Contractor and each major (greater than 10%) subcontractor or Prime division/site:

- Provide 100% of your JSF EMD & URF business base for engineering and manufacturing by year.
- Provide 100% of your Non-JSF Business Base for engineering and manufacturing by year. Provide documentation to justify any significant (>3%) non-JSF business base hour increases from your final Contractor/JSFPO Cost Reconciliation position.
- Provide the calculations/methods for any and all Business Base hour adjustments for distributed directs (i.e., typical direct functions performed in indirect/overhead/G&A pools) or interdivision/intercompany work authorizations (i.e., IWAs/IDWAs) made to generate the total Business Base hours used to generate overhead rates within your corporate overhead rate model.

2.4.12.3. **Direct Rates.** The Offeror shall submit for the Prime Contractor and each major (greater than 10%) subcontractor or Prime division/site, a projection of direct labor rates based on the current Forward Pricing Rate Agreement (FPRA), if available for each of the JCCM labor categories:

- Engineering
- Manufacturing
- Tooling
- Quality Control

2.4.12.3.1. The Prime Contractor and each major (greater than 10%) subcontractor or Prime division/site shall submit a projection of direct rates which includes award of the JSF program, and the associated FPRA or special direct rate study on which they are based. Provide your direct labor rate starting points for 2005, and any dilution factors/calculations/methods used.

2.4.12.3.2. Provide direct labor rates by year in Government Fiscal Year (GFY) 94$.

2.4.12.4. **Indirect /Overhead Rate/Model Assumptions.** The Offeror shall submit for the Prime Contractor and each major (greater than 10%) subcontractor or Prime division/site where work is performed, indirect rates (current Forward Pricing Rate Agreement (FPRA) or special indirect rate study) for all indirect rate accounts included in the proposal. The indirect accounts may include, but are not limited to:

- Engineering Overhead
- Manufacturing Overhead
- General & Administrative (G&A)
- Material Handling Overhead
- Cost of Money (COM)

2.4.12.4.1. Provide a copy of your overhead rate model and rates by year for the Prime and each major subcontractor or Prime site greater than 10%. Provide your fixed/variable ratio for indirect pool costs used in your Overhead/Indirect Rate model. Please provide documentation and justification if it is different from your fixed/variable ratio used in your final JSF Cost Assessment results.

2.4.12.5. **Cost to Sell Equations (Wrap Rates).** Provide a copy of your wrap rate model and rates using a weighted average from 2005 to the end of the URF program for each of the 6 JCCM cost categories (ENG, MFG, QA, Tooling, RM/PP, and PE) for the Prime and each major subcontractor or Prime site greater than 10%. Provide your wrap rates in GFY 94$. Provide supporting documentation for all factors used in your wrap rate calculations and models.

2.4.12.6. **Accounting System Changes.** Provide an explanation of any accounting changes in your Business Base, overhead rate and wrap rate processes and procedures (e.g., direct to indirect costs changes or vice versa; moving from a Total Cost Basis to a Value Added Basis; additions or deletions of a rates or factors) since the Government's final assessment. For the Prime and each major subcontractor or Prime site greater than 10% provide the address and phone number for the local Defense Contract Audit Agency (DCAA) (or other Government organization) that is responsible for conducting rate negotiations.

2.5. **VOLUME V - EMD (Technical Subfactor).** The Offeror shall provide the following information in its written proposal.

2.5.1. **Ground and Flight Test Plan.** The Offeror shall provide:

2.5.1.1. A detailed Ground and Flight Test Plan showing how the EMD Test Program shall be executed. This plan shall provide in graphical and narrative format a description of the flight test plan showing number of test assets, including a breakdown of the number of each variant, number of ground test hours, number of flights and flight hours planned, aircraft test months, average sortie duration, planned test sequence, and major test milestones where appropriate. The test plan shall be broken down to show the amount of testing and test aircraft assets, ground test hours, flights, and flight hours required for each of the three major EMD Blocks. The plan shall also show how the alternate engine ground and flight test

program will be integrated into the 126 month EMD time span but the details and flights/flight hours for the alternative engine test plan shall be broken out and reported separately. Flight testing shall be proposed from a zero-based approach that uses Modeling and Simulation (M&S) to the greatest extent practicable. The plan should demonstrate how the Offeror's approach is model based, meaning ground and flight testing will be conducted to verify models, simulations, and perform those evaluations that can not be accomplished in any other manner. The plan shall demonstrate how operationally significant test objectives are inserted into flight test planning throughout the program, when system maturity allows, to demonstrate readiness for Operational Test (OT). The Contractor verification and test and evaluation plan shall describe a test and evaluation approach that is robust enough to unequivocally state readiness of the Air System for OT at the end of each block.

2.5.1.2. A narrative and graphical description of the ground test program shall also be presented showing what building blocks will be utilized to provide airworthiness certification data for flight testing. Examples might include a description of the wind tunnel program, computational fluid dynamics plan, structural ground test and qualification program, mission systems laboratory development plan, weapons integration ground test plan, low-observables ground test development plan, and flight controls laboratory development plan and other ground test plans as considered appropriate by the Offeror. All facilities, such as integration laboratories and iron birds, shall be described as to location and intended usage.

2.5.1.3. In establishing these plans, the Offeror shall include in the SOW and IMP the tasks required to develop and implement the EMD program in accordance with the following:

2.5.1.3.1. The Offeror shall describe in general terms how the weapon integration plan will be executed, including the processes, schedules and resources to integrate and certify all Block 1, 2, and 3 stores; demonstrate appropriate provisions for all JMS stores; and monitor store modernization. This integration plan will identify the general approach for integrating stores in Blocks 1, 2, and 3 including necessary ACAs and other relationships, modeling and simulation, analysis, integration, test/certification tasks, schedule, and responsibilities. The plan shall address Air System store-related hardware and software development required to interface with and employ all stores.

2.5.1.3.2. The contractor has responsibility for successfully prosecuting EMD test and evaluation activities leading up to a successful Operational Test Readiness Review (OTRR) for each EMD development block.

2.5.1.3.3. The ground and flight test program shall utilize existing government facilities at the following primary test sites, as appropriate, to provide best value to the government. UK or other countries' facilities may be utilized but are not directly reimbursable by the JSFPO and shall be charged as a direct cost under the contract.

- -USAF Flight Test Center, Edwards Air Force Base
- -Naval Air Warfare Center, Aircraft Division, Patuxent River
- Note: For clarification, Edwards Air Force Base will include ranges and facilities associated with the Western Test Range, Vandenburg AFB, Naval Air Warfare Center - Weapons Division (China Lake and Pt. Mugu), Patuxent River will include Lakehurst facilities as well as associated East Coast off-shore ranges.

2.5.1.3.4. The JSFPO will reimburse approved DoD facilities used as Government Furnished Facilities (GFF) for all support costs directly associated with testing the JSF aircraft as in previous DoD EMD Programs. Salaries of all government Integrated Test Force (ITF) members and supporting IPT government engineering personnel will also be provided directly by the JSFPO.

2.5.1.3.5. GFF range support will be extended to the Offeror's Avionics Test Bed when utilizing ranges associated with Edwards or Patuxent River. All other ranges used by the Avionics Test Bed will be funded directly by the contractor to the providing range.

2.5.1.3.6. Other testing (e.g., RCS measurement, climatic, jet blast deflector, chem-bio) will take advantage of existing DoD capabilities as appropriate to provide best value to the government. These approved facilities will be provided as GFF on a detachment basis during the course of the EMD program.

2.5.1.3.7. The Contractor shall develop an Air System integration facility or facilities at a prime contractor chosen site. This shall include laboratories and integration facilities sufficient to support system integration, to include all JMS stores, and concurrent development, verification and validation activities. The facilities will be used by both the government and contractor during Integrated Flight Test, including Operational Assessments and dedicated OT usage.

2.5.1.3.8. For budgeting purposes, jet fuel, chase aircraft, tanker support, non-peculiar support pods, and target and support aircraft will also be provided as Government Furnished Equipment (GFE) for the duration of the EMD program.

2.5.1.3.9. Aircraft built during EMD for flight testing will be certified airworthy and cleared for flight by a joint-service certification/clearance process leveraging lessons learned during the CDA program. The government will maintain oversight of airworthiness certification and flight clearances. The IPTs shall develop certification criteria, means for satisfying the criteria (e.g., by analysis, ground test), necessary guidelines/procedures, and data elements necessary for airworthiness certification of the Air Vehicle, its systems and subsystems. The flight clearance will be transportable between test sites. Final approval and release for flight will be the responsibility of the Director, JSF program.

2.5.1.3.10. The Offeror shall plan to create and maintain a joint deficiency tracking and reporting database that will allow all Participating Test Organizations and the JPO both read and write privileges. The system will be required to be online starting no later than contract award plus 42 months.

2.5.1.4. All required government facilities shall be specified in the Offeror's Program Introduction Document (PID), using USAF format. The PID should specify the location of the desired Government test facilities, amount and type of facilities required, utilization rate, special test facilities, support aircraft requirements, telemetry support, data reduction, data analysis, space positioning support, communications links, and other types of government support as may be required. All EMD government support costs will be added to the contractor's cost to determine overall cost to the government.

2.5.1.5. The JSF EMD program shall have a fully integrated customer & contractor flight test team referred to as the Integrated Test Force (ITF). Government members of the ITF team shall consist of USAF, USN, USMC and UK Developmental Test (DT) and Operational Test (OT) pilots, flight test engineers, maintainers and training personnel. OT pilots and maintainers shall have an active role throughout the Integrated Flight Test phase. The ITF shall be organized with the Contractor leading and managing day to day operations and setting priorities. The Contractor shall plan on no more than 40% of the ITF being government personnel. Specific ratios and numbers of Government/Contractor pilots, flight test engineers, maintainers, and logistics personnel shall be proposed by the Offeror. The Offeror shall

plan on providing all the support personnel (e.g., administrative, security, scheduling) that support day to day operation of the ITF. The Government Autonomic Logistics group shall be a mixture of DT and OT personnel that will evaluate and verify all logistics and training concepts, verify technical orders, and interface with the Joint Reliability and Maintainability Evaluation Team (JRMET), Logistics Advisory Council (LAC), Maintenance Systems Advisory Panel (MSAP) and user organizations.

2.5.1.5.1. **A notional organizational chart is presented in Figure 1 below.**

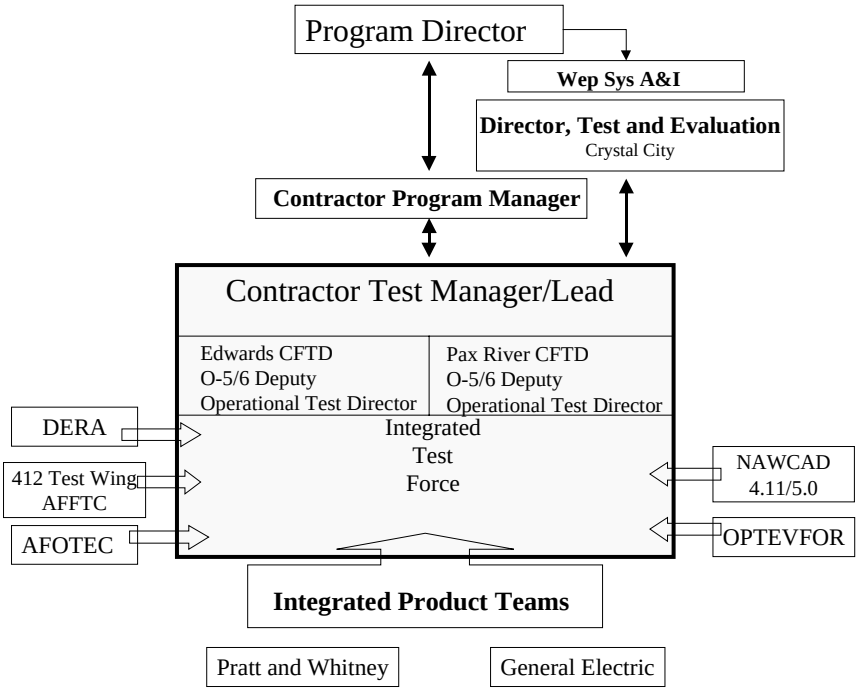

Figure 1: Notional Organizational Chart

2.5.1.5.2. The ITF will be required to submit detailed test plans/test cards through the joint Air Force Flight Test Center (AFFTC)/Naval Air Warfare Center Aircraft Division (NAWCAD) Safety Review Board process. The Government will retain safety oversight for all flight and flight-related events.

2.5.1.5.3. The detailed ITF working relationships and procedures used to execute the ground and flight test plan will be delineated in an appropriate Memorandum of Understanding (MOU). This MOU shall be developed after contract award between the successful Offeror and the government.

2.5.1.6. The Offeror's plan shall describe a detailed instrumentation concept that embraces state of the art instrumentation technology and design that is fully compatible and supportable with major DoD test facilities. The preferred concept is an encrypted L-band telemetry system that is frequency selectable to ensure maximum flexibility. The concept must support model validation data requirements and must allow signature verification of each variant. The hardware and software design and installation concept should be detailed and show growth capability, system reconfiguration flexibility, and sound installation procedures and processes. The Offerors must show the concept for transitioning to Government-only support of these systems following the completion of EMD. Use of Telemetry Attribute Transfer Standards (TMATS), if part of the Offeror's instrumentation plan, should be described as referenced in chapter 9 of IRIG Document 106. The Offerors should also provide information on the real-time, near

real-time, and post-flight data reduction and analysis concepts that will be used to facilitate testing and provide the necessary information for timely and accurate decision-making by the flight test team.

2.5.1.7. The Offeror's plan shall show how the autonomic logistics system will be tested (e.g., processes, metrics, and procedures), evaluated (e.g., simulation, bench test, flight test), and validated/verified during EMD. The plan shall include schedules and required resources.

2.5.1.8. The Operational Test Activities (OTAs) will conduct an Operational Assessment (OA) of Blocks 1, 2, and 3. This will not include dedicated sorties for all Block testing, but will involve synthesis of all verification, M&S, ground, and flight test activities to date. The Offeror shall continue to provide technical and M&S support to the OTAs beyond OTRR. Specifically, the Contractor should plan dedicated government OTA time in the most appropriate EMD M&S facilities to accomplish dedicated OT evaluations. Low Rate Initial Production (LRIP) aircraft will be used for dedicated OT. Support for LRIP aircraft will be otherwise provided for. The OTAs plan to use the logistics, support, maintenance and training systems, and mission planning systems planned for fleet operations to evaluate the supportability and training systems during OA and dedicated OT testing.

2.5.1.9. The Offeror's Block Development Plan shall include the following milestones:

2.5.1.9.1. Demonstration of Block 1, 2, and 3 functionality and stores certification.

2.5.2. **Validation and Verification Plan.** The Offeror shall describe how the Verification and Validation Plan will be executed to show that the performance objectives of the JSF Model Specification have been achieved. The Verification and Validation Plan shall discuss methods to be utilized in the test program, amount of testing to be performed, integration and coordination of ground test and flight testing, and how M&S will be utilized to reduce the amount of flight testing compared to legacy programs. Where appropriate, exit criteria that defines successful completion of the Verification and Validation Task should be described. The Verification and Validation Plan shall be divided up by discipline, i.e., Structural Verification, Air Vehicle Performance, Flying Qualities, Advanced Basing, Mission Effectiveness, Weapons Integration, Survivability, R&M, and other disciplines as appropriate to the Offeror's plan, and shall reflect the phasing of capabilities inherent to a block development approach. The Offeror shall provide a description of its airframe design/build process development and verification of airframe performance including manufacturing process maturity. The specific individual verification and validation tasks will be determined based on the Offeror's breakdown of tasks. The Offeror shall utilize a Use-Case methodology to develop their Validation and Verification Plan where appropriate. The Verification and Validation Plan will also show how sufficient data will be gathered to provide substantiating data for issuance of flight clearances for EMD and production aircraft. This substantiating data will be utilized by the government to issue operational flight clearances.

2.5.3. **EMD Manufacturing Plan.** The Offeror shall provide an Air System Manufacturing Plan showing how the JSF Manufacturing Program will be executed. The manufacturing plan should discuss the product definition activities and processes which define a manufacturable product and enable maximum leverage on achieving product cost and quality during the earliest stages of the product definition process, the manufacturing development activities/demonstrations which will mature manufacturing processes as the program transitions from EMD to LRIP to full rate production, and risk mitigation plans to resolve industrial base related issues to ensure a low risk transition into the production phase. The plan shall also discuss key attributes of sound manufacturing processes including product definition processes, manufacturing capability assessment and risk management processes, key supplier partnerships and strategic business alliances, key characteristics/processes practices, an EMD variability

reduction program, a product and process validation strategy, and definitive plans and resources to develop and implement a "LEAN" solution for the production of the JSF.

2.5.4. **Software Development Plan.** The Offeror shall provide a JSF Air System software development plan (SDP) that details the processes, schedules, and resources, for implementing the development, test, and integration of all software. This plan will address the management and subcontractor management of cost, schedule, technical performance, and risk throughout the program. The SDP shall also include the Offeror's objectives and processes for competition of software component development within the context of the Air System open architecture. The SDP will identify specific practices and standards, System/Software Engineering Environment (S/SEE) tools and facilities, test approaches, metrics and assessments, and time-phased development, test, and integration schedules that will be used to accomplish the software development effort, to include linkage to MS&A resources and products. Re-use of software, either proprietary or COTS, and design of software for future re-use shall be described, to include criteria for selection of re-used components and defined levels of re-use. The SDP shall also specify what plans, methods, and data are required to ensure the satisfactory consideration of all interoperability, mission, and safety criticality requirements to support safety, flight clearance, and interoperability certifications. The Offeror shall present a concept for post-deployment support, to include identification of processes and resources for development, test and fielding of software updates to the air system. The Offeror shall describe the degree to which their software processes and capabilities, and those of their vendor subcontractors, comply with SEI CMM Level 3, or equivalent (e.g., SDCE), including assessment criteria and processes employed to achieve the rating, planned frequency of reassessment or maintenance of SEI or equivalent rating. If the Offeror's software development capabilities and processes are not certified to SEI CMM Level 3 or equivalent, the Offeror shall provide a management plan and a schedule to describe how the deficiencies that preclude Level 3, or equivalent, will be mitigated and the plan for achieving SEI Level 3 or equivalent rating during the E&MD phase.

2.5.5. **Interoperability Plan.** The Offeror shall provide a systems engineering and management process plan that defines the approach for establishing and maintaining JSF Air System interoperability with external operational facilities (OPFACs) in accordance with the JMS and consistent with the JSF C4I Support Plan (C4ISP). This plan shall address the addition, modification, or removal of air system functions and interfaces as required to achieve interoperability with off-board systems. Methods for Information Exchange Requirement (IER) verification, documentation of standards conformance, interoperability assessments, test, and certification shall also be identified.

2.5.6. **Architecture Strategy.** The Offeror shall provide a plan that describes the JSF open system strategy in support of minimizing total ownership cost (TOC). This strategy shall include planned vendor subcontractor competition; use of commercially supported practices, products, specifications, and standards; and the criteria for selection of such products and standards. The open system strategy shall address the Offeror's definition of open system design principles and the application of these principles to the JSF Air System and the Air System Block development approach. The open system strategy shall also address the periodic assessment, and assessment criteria, for Air System open architecture maturity, progress towards minimizing TOC, and criteria for managing the orderly transition from one block development to the next. The Offeror shall illustrate the application of proposed processes for management of technology insertion, functionality changes, and diminishing manufacturing source impacts within the context of the Air System open architecture.

2.5.7. **Simulation Based Acquisition (SBA) Plan.** The Offeror shall provide a plan on how it intends to use SBA to ensure best value and reduce air system development risk in the areas of cost, schedule, and technical performance. The SBA Plan shall be in accordance with the Section L-12, Appendix E,

Government M&S Support Plan. Since SBA impacts all program areas, the SBA Plan shall cross-reference other areas in the proposal discussing the use of M&S.

2.5.7.1. **Collaborative Environments (CEs).** The Offeror's SBA Plan shall show its proposed processes for use of the Government-managed Strike Warfare Collaborative Environment (SWCE) and the Contractor-managed JSF Engineering and Manufacturing Collaborative Environment (EMCE). CEs include the people, processes, and tools necessary to more efficiently accomplish certain tasks. The JSF CEs shall identify necessary facilities, support design trades and engineering assessments, and aid in JMS Section 4 verification, cost reconciliations, manufacturing, and developmental and operational test (including ground and flight test). The SBA Plan shall also address how the CEs assist in Support concept development, as well as Training system development, implementation, and maintenance.

2.5.7.2. **Distributed Product Description (DPD).** The SBA Plan shall include creation, maintenance, and access controls of a DPD with associated Data Interchange Formats. The DPD shall manage the authoritative data that describes the operational performance, engineering design data, logistics characteristics, and costs of the air system (the DPD will feed both the SWCE and the EMCE). The goals of the DPD should include improving data coherency/consistency, reducing translations, accelerating inputs to the M&S Suite of Models, and increasing information availability. The Offeror shall demonstrate how their DPD approach will be compatible with the government's configuration management process as outlined in the M&S Support Plan.

2.5.7.3. **Digital System Models (DSMs).** The Offeror shall include a plan for creating and maintaining authoritative DSM representations of its JSF design in the JSF Suite of Models as stated in the Section L-12, Appendix (E), Government M&S Support Plan. In contrast to the DPD, DSMs are the representation of the JSF in a particular model. DSMs are fed from information contained in the DPD - they may be created from information taken directly from the DPD, and/or from information aggregated from the DPD. The SBA Plan shall address delivery of DSM updates in accordance with the Government M&S Support Plan for the government-owned models.

2.5.7.4. **Ground & Flight Test.** The Offeror shall describe how his ground and flight test program extensively uses SBA to improve efficiency and reduce the total number of flight test hours relative to legacy programs during the EMD phase (effectively promoting a "Zero Based" flight test program).

2.5.7.5. **Autonomic Logistics Test.** The Offeror shall describe how SBA will be used to improve appropriate autonomic logistics elements, such as improving training and reducing costs through software reuse and/or reduced time to train.

2.5.7.6. **Government Simulators.** The SBA Plan shall identify the Offeror's approach to maintaining authoritative representations of the EMD aircraft in the Government owned manned simulators at the Manned Flight Simulator (MFS) at NAS Patuxent River, the Simulation & Analysis Facility (SimAF) at Wright-Patterson AFB, and the Air Warfare Modeling and Simulation (AWMS) facility at Edwards AFB. These authoritative functional representations shall replace existing generic simulators at those locations and will be used by the government for environment validation, requirements trades, Concept of Operations (CONOPS) development and refinement, test planning, pilot training and operational test. The Offeror will also have access to these Government simulators during the EMD program.

2.5.7.7. **Government Simulation Events.** In the SBA Plan, the Offeror shall address participation in government-sponsored simulation events (e.g., Joint Expeditionary Force Experiments (JEFX), SWCE exercises, Advanced Warfighting Experiments (AWEs), and/or Fleet Battleforce Experiments (FBEs)). These events will expose the Offeror to various government-owned simulation environments, allow them

to garner more operational exposure, and ensure that his JSF design is accurately represented and implemented. The schedule of planned events is contained in the Government M&S Support Plan. The Offeror's minimum participation in this area shall be to assist in planning the JSF-sponsored exercises; however, greater levels of participation are encouraged.

2.5.7.8. **Contractor Simulation Events.** In the SBA Plan, the Offeror shall address Government participation in contractor-sponsored analysis and simulation efforts, to include detailed design trades, integration strategies, and test & evaluation.

2.5.7.9. **Tracking M&S Use.** The Offeror shall explain their approach to tracking and cross-referencing all M&S activities within the program in order to reduce duplicative efforts, improve data consistency, and allow government insight. The government SBA team will maintain awareness of all M&S activities during the EMD phase; therefore, the SBA Plan shall propose an approach for notifying the government SBA team of all modeling and simulation tools used during EMD.

2.5.8. **Alternate Engine EMD Plan.** The Offeror shall provide a detailed Ground and Flight Test Plan showing how the Alternate Engine Ground and Flight Test Program will be executed as well as identifying any major system engineering integration issues identified at the time of proposal and the approach to resolve these as well as future issues identified during the conduct of the EMD program. The plan shall also describe the engine Plug-and-Play concept, as currently defined at the time of proposal, and the approach to Engine Interchangeability within the Propulsion IPT Management philosophy. This plan shall also provide in graphical and narrative format a description of the proposed ground and flight test plan showing number of required test engines and spares, number of test aircraft, which baseline EMD aircraft will be required for the Alternative Engine EMD Program, ground test hours, number of flights and flight hours to be flown, and what disciplines will require testing to ensure sufficient data are available to certify the JSF aircraft in an operational environment with the alternate engine installed. The Alternate Engine EMD Plan shall also discuss how many engines will be required for both ground tests at General Electric (GE), as well as the flight test engines required, including spares. The plan shall also show how the Alternate Engine EMD Program fits in from a schedule and asset requirement viewpoint with the baseline EMD Program. For the purposes of this proposal, the information shall be presented at a level sufficient to provide the Government with insight into the Offeror's approach and an understanding of what is required to certify the alternate engine and how it relates to the baseline EMD Program.

2.5.9. **Autonomic Logistics Plan**

2.5.9.1. The Offeror shall provide a plan that describes the approach to the development and design of the autonomic logistics system that meets all autonomic logistics requirements in accordance with the JMS. The plan shall describe:

- How the Government Field Team shall be integrated into the contractor's organization including facilities and admin support and how it shall interface with the contractor's management team. The Government Field Team will be based at the contractor's main manufacturing site. The Government Field Team will consist of 8 enlisted and 2 civilian maintainers and 1 officer; the enlisted maintainers will come from the USAF, USN, USMC and the UK. The Government Field Team will provide the contractor with insight into peacetime and operational maintenance and training issues pertinent to the air system design.

- The process and tools used during the design process to monitor and control total ownership costs.

- The engineering process that ensures logistics considerations are addressed in all design changes.
- The schedule that shows the integration of all autonomic logistics tasks with other JSF program milestones.
- The approach used to ensure that technology is appropriately inserted throughout the program.
- The process used to ensure that autonomic logistics information requirements are fully integrated into the C4I structure.
- The process used to ensure that the aircraft structural integrity is managed throughout the JSF life cycle.
- The GFE required to support the development of the autonomic logistics system.
- The database the Offeror will use to manage all autonomic logistics data, reports, and studies.
- The development process for all peculiar resource requirements, including the approach which minimizes new peculiar resource requirements and a detailed list of all peculiar support equipment.
- Identify all the autonomic logistics metrics and describe how the metrics will be tracked and managed during EMD.
- The approach to develop all training requirements.
- The approach to manage the supportable LO program.
- The approach to the integration of the autonomic logistics information interfaces with the air system, and external interfaces in accordance with the JMS.

2.5.9.2. The Offeror shall describe his R&M and Prognostics and Health Management (PHM) approach for EMD. The approach shall describe the test disciplines and techniques that shall be used to ensure compliance with the JMS. At minimum, the approach shall include an Air System R&M and PHM growth profile as detailed in the JMS. The following elements shall be addressed in the approach:

- R & M and PHM Test program and procedures.
- Failure Reporting and Corrective Action System (FRACAS) procedures
- Reliability predictions, allocation, and mathematical models and procedures
- PHM system description and design procedures

2.5.9.3. The Offeror shall describe the support and training system requirements needed to support flight test of the JSF air vehicle including a list of unique and common resources (including GFP) and training system requirements needed for development and dedicated operational tests. All of the integrated logistics resources necessary to accomplish flight test of the Air Vehicle shall be included. These

resources shall include unique and common support equipment, facilities, unique and common training devices, etc.

2.5.9.4. The Offeror shall describe its processes that will lead to a fleet management program that interfaces with existing fleet management systems (e.g., Aircraft Structural Integrity Program and Naval Aviation Maintenance Program).

2.6. **Volume VI - EMD (Management Subfactor).** The management volume shall describe the Offeror's overall program management approach and rationale for its potential effectiveness to meet the management subfactor criteria. The Offeror shall describe how this management approach will ensure the successful completion of the EMD program and delivery of an air system (air vehicle and autonomic logistics) which meets the technical requirements for the program within the cost and schedule constraints. The following paragraphs provide additional description of the material required in the management volume.

2.6.1. **Organization and Infrastructure.** The Offeror shall provide:

2.6.1.1. A description of the program management approach and organizational structure including rationale for its potential effectiveness. Provide organizational charts including key personnel, geographical location, associated activities, and their position within the corporation. Explain where teaming partners and subcontractors fit into the overall program structure. The Offeror shall provide coordinated (full or partial) copies of all intended Associate Contractor Agreements, as well as an executed copy of the Propulsion System Management Plan in accordance with Section H-2 of the CFI. Describe lines of authority, levels of responsibility and accountability, and reporting relationships. Describe the IPT managed propulsion approach, and the approach to managing a program involving multiple international customers. Discuss how management will be involved in the problem identification and resolution process. Describe how management responsibilities are linked to the CWBS, SOW, IMP, and other management data products or tools. Provide a map from CWBS organization and infrastructure to Section L, Attachment (13) JCCM EMD Cost Summary. The Offeror shall submit their IMS as an attachment to the EMD Management Volume VI.

2.6.1.2. A description of the design, manufacturing, integration and test facilities required to execute the program. Discuss the primary work content performed at each facility, as well as the estimated manpower at each site. Describe provisions for co-located government personnel (U.S. and International).

2.6.1.3. A description of the Offeror's enterprise-wide management information system including its ability to provide timely and accurate information on the status of program earned value, cost, schedule, and performance. Describe how automated tools will be used as part of the management information system. Describe the Offeror's approach to developing and implementing electronic information exchange and storage with the JSFPO and sharing/exchange between the Offeror and all teaming partners and subcontractors to include international partners. Describe the Offeror's approach for managing, accessing, transmitting and life-cycle archiving of data generated during the JSF EMD phase.

2.6.2. **Systems Engineering.** The Offeror shall provide:

2.6.2.1. A description of the integrated product development processes proposed to integrate all technical disciplines, functional processes (including mass properties management), and requirements to ensure the EMD design will meet the contract requirements. Describe the processes and tools to identify, track, and

execute CAIV and technical studies during EMD. Describe key tools and enabling processes required to develop the final EMD design.

2.6.2.2. Describe processes to allocate and trace requirements from the Air System Specification to lower tier specifications. Provide references to previously submitted data (Tier II/III specification) that demonstrate the Offeror's ability to appropriately allocate requirements

2.6.2.3. The Offeror shall submit a Risk Management Plan that addresses the proposed processes used to identify, assess, mitigate, and monitor risk for the EMD program. Key processes shall be described, as well as how risk management processes are integrated into the Offeror's organization, technical performance measurement, cost and schedule control, and management information systems.

2.6.2.4. A description of the processes proposed to define, control, maintain, and verify configurations across the multiple service variants. Discuss tools, processes, and planned level of configuration control for the program, as well as how the Offeror expects the Government to participate in Configuration Control Board (CCB) activities. Describe how key interfaces will be documented and controlled for the program.

2.6.3. **Subcontractor Management.** The Offeror shall provide:

2.6.3.1. The approach to subcontract management, addressing chain of command and authority and specific procedures for coordinating work and resolving conflicts. Describe processes for soliciting, selecting, allocating requirements, and monitoring of suppliers. Describe processes that will ensure subcontractor competition will be conducted fairly, ensure Program Office insight, fully take into account international Partner sources, and result in the best value for the Government. Describe how supplier risks are integrated into the program integrated risk management system. Describe how effective communications will be achieved with numerous geographically separated suppliers through the use of shared information technology products.

2.6.3.2. A description of how earned value management data, appropriately tied to the IMP, IMS and SOW, is flowed down to suppliers. Describe how supplier data is collected, analyzed, and integrated into the earned value management system.

2.6.3.3. A description of how the Offeror plans to use small business, HUBZone small business, small disadvantaged business and women-owned business concerns during contract performance. The description shall address planned processes to ensure such concerns have the maximum practicable opportunity to participate as subcontractors throughout the JSF Program life cycle.

2.6.3.4. The process to acquire and manage Government Property with minimal Government involvement.

2.6.4. **Cost Schedule and Control.** The Offeror shall provide:

2.6.4.1. The methodology for internal management of cost and schedule. This shall include how the Offeror proposes to measure performance against plan (metrics) to compute earned value and how technical performance measurements described in other sections of the proposal will be linked to cost and schedule management systems.

2.6.4.2. A description of the schedule and method proposed to develop the performance measurement baseline to support the EMD phase, including subcontractor efforts. Describe how earned value

management data will be collected and reported at the prime, subcontractor, and supplier levels. Identify processes and tools proposed to track EACs, plan and execute strategies to control costs and mitigate schedule and cost risks, and provide timely reporting. Discuss how cost and schedule data is integrated with key management information systems.

2.6.4.3. A description of the processes proposed to develop, implement, manage, update, and maintain the IMP, IMS, and how they are integrated with EVMS and other key management information systems. Provide a combined plan and schedule that consists of task descriptions, schedules, milestones, events, timelines, and criteria for acceptable accomplishment of each task/activity. Include appropriate Air System block development plan descriptions as referenced in SOO paragraph 3.4.

2.6.5. **Program Security.** The Offeror shall provide:

2.6.5.1. A Program Protection Implementation Plan that addresses the required tasks identified in the Section L-12, Appendix F, Program Protection Development Plan dated August 2000.

2.6.5.2. Plans to certify contractor-owned systems are in place to support development activities.

2.6.5.3. Export license strategies and agreements to support transfer and protection of data with foreign teaming partners and subcontractors.

2.7. **Volume VII - EMD (Cost Subfactor).** The Offeror shall provide the following information in its written proposal.

2.7.1. The cost instructions apply to Offerors and all major subcontractors greater than 10% of JSF EMD costs. Since cost information will be used by the Government team to evaluate each proposal relative to the factors in Section M, "Evaluation Factors for Award," adequate substantiation is required to enable the Government to determine whether the estimating methodology is acceptable. The cost estimating approach and data input to this approach will be evaluated to determine whether the estimate is realistic and reasonable, and to ensure all SOO and requirements are included in the cost proposal. A well-organized proposal with adequate supporting documentation will assist in Government evaluation and ensure all Offeror assumptions and methodology are understood. The burden of proof for cost credibility rests with the Offeror.

The evaluation of EMD Cost will be conducted using the JCCM. The Government will use the JCCM and Section L-12 cost Attachments (13, 15-22) inputs to generate the Most Probable Cost estimates for each Offeror. In developing the cost estimate, the Offeror shall follow the format of the Work Breakdown Structure (WBS) included as section L-12, Attachment (13). Contractor provided Cost Attachments are acceptable in lieu of entering data on established Government forms, on the condition they include the same information as the established Government forms.

The Offeror shall provide page and volume, and filename references for data that is concurrent in other volumes. This facilitates the crosscheck between the Cost sections and other proposal volumes/sections.

2.7.2. **Groundrules and Assumptions.** An explanation of all GR&A that affect the cost estimates shall be provided. Topics to be addressed include programmatic variables (e.g., inflation/escalation, location, make/buy decisions, prime/subcontractor relationships, and business base concerns).

2.7.3. **Basis of Estimate.** For areas other than training, data, PSE, and initial spares, the basis of estimate is not required for the EMD phase as long as there are no major estimating changes from previously

submitted data. For the areas of Training, Data, Peculiar Support Equipment, and Initial Spares state how the estimate was developed, as well as any assumptions that were used to develop the estimate. Provide an explanation for the selection of the historical data that forms the basis of the estimate. General statements such as "estimates were derived from engineering judgment" or "estimates were derived from comparison with similar systems" are not acceptable substantiation unless the details of the engineering analysis and/or similar systems analysis are provided. Estimates based on "vendor quote" by itself do not provide a basis of estimate. Offerors must provide an evaluation of the reasonableness of the costs. Engineering judgment is not recommended as an estimating methodology without the inclusion of the similar programs that formed the basis of the engineering judgment. Historical data from comparable programs shall be used to support the estimates to the maximum extent possible. The cost estimate for Peculiar Support Equipment, Data, training equipment, and Initial Spares shall tie to the support solutions proposed.

2.7.4. **Affordability Initiatives.** Provide all information requested in the Affordability Initiative attachment [see Section L-12, Attachment (16)]. Describe Affordability Initiatives (e.g., acquisition reform, cost reduction, process changes, business practices, technical maturation) being pursued during the EMD phase, the impact these initiatives have on the proposed technical and programmatic approaches, and the resultant impact these have on the proposed costs. Provide detailed substantiation for the estimated implementation costs and savings associated with each initiative. Offeror shall provide a discussion on processes or business practices that are not captured by the JCCM. It is imperative that the Offeror ensure that the substantiation provided is understandable and consistent, as this information is critical to the Government's evaluation.

2.7.5. **Autonomic Logistics Support.** Section L-12 Attachment (13) (JCCM EMD Cost Summary) must include all EMD costs for the Offeror's integrated logistics support concept described in Section L-12, paragraph 2.3. A detailed breakout of EMD ILS Ground Software technical data must be provided as shown in Section L-12, Attachment (22).

2.7.6. **Government Property.** Provide a list and description of required Government Property for EMD. The description shall be in sufficient detail to allow the Government to generate a cost estimate for the listed items.

2.7.7. **Mission Systems/Purchased Equipment/Armament.** Provide all hardware and software information requested in the mission systems attachment [see Section L-12, Attachment (17)]. Although Government format is provided, contractor-format is acceptable provided that the attachment presents the same information requested in the Government format and is provided in an equivalent filename and in the same application program.

2.7.8. **Rates**

2.7.8.1. **Proprietary Rates.** Due to the proprietary nature of company rates, the Offeror may provide a separate file (or files) for each of the Prime's sites where work is performed and for major subcontractors. For the Prime Contractor and each major (greater than 10%) subcontractor or Prime division/site, provide the following ground rule and assumption data/inputs for your Business Base, Direct rates, Indirect/Overhead Rate.

2.7.8.2. **Business Base Assumptions.** For the Prime Contractor and each major (greater than 10%) subcontractor or Prime division/site:

- Provide 100% of your JSF EMD & URF business base for engineering and manufacturing by year.

- Provide 100% of your Non-JSF Business Base for engineering and manufacturing by year. Provide documentation to justify any significant (>3%) non-JSF business base hour increases from your final Contractor/JSFPO Cost Reconciliation position.

- Provide the calculations/methods for any and all Business Base hour adjustments for distributed directs (i.e., typical direct functions performed in indirect/overhead/G&A pools) or interdivision/intercompany work authorizations (i.e., IWAs/IDWAs) made to generate the total Business Base hours used to generate overhead rates within your corporate overhead rate model.

2.7.8.3. **Direct Rates.** The Offeror shall submit for the Prime Contractor and each major (greater than 10%) subcontractor or Prime division/site, a projection of direct labor rates based on the current Forward Pricing Rate Agreement (FPRA), if available for each of the JCCM labor categories:

- Engineering

- Manufacturing

- Tooling

- Quality Control

2.7.8.3.1. The Prime Contractor and each major (greater than 10%) subcontractor or Prime division/site shall submit a projection of direct rates which includes award of the JSF program, and the associated FPRA or special direct rate study on which they are based. Provide your direct labor rate starting points for 2001, and any dilution factors/calculations/methods used.

2.7.8.3.2. Provide direct labor rates by year in GFY 94$, and TY$ (by government fiscal year) using contractor assumed annual escalation factors by year.

2.7.8.3.3. Provide non-labor escalation rates (and appropriate bases) by year if different from your direct labor escalation rates.

2.7.8.4. **Indirect/Overhead Rate /Model Assumptions.** The Offeror shall submit for the Prime Contractor and each major (greater than 10%) subcontractor or Prime division/site where work is performed, indirect rates (current Forward Pricing Rate Agreement (FPRA) or special indirect rate study) for all indirect rate accounts included in the proposal. The indirect accounts may include, but are not limited to:

- Engineering Overhead

- Manufacturing Overhead

- General & Administrative (G&A)

- Material Handling Overhead

- Cost of Money (COM)

2.7.8.4.1. Provide a copy of your overhead rate model and rates by year for the Prime and each major subcontractor or Prime site greater than 10%. Provide your fixed/variable ratio for indirect pool costs used in your Overhead/Indirect Rate model. Provide documentation and justification if it is different from your fixed/variable ratio used in your final JSF Cost Assessment results.

2.7.8.5. **Cost to Sell Equations (Wrap Rates).** Provide a copy of your wrap rate model and rates by year for each of the 6 JCCM cost categories (ENG, MFG, QA, Tooling, RM/PP, and PE) for the Prime and each major subcontractor or Prime site greater than 10%. Provide your wrap rates in both GFY 94$ and TY$ (by government fiscal year) using contractor selected escalation rates from 1994 to 2011. Provide supporting documentation for all factors used in your wrap rate calculations and models.

2.7.8.6. **Accounting system changes.** Provide an explanation of any accounting changes in your Business Base, overhead rate and wrap rate processes and procedures (e.g., direct to indirect costs changes or vice versa; moving from a Total Cost Basis to a Value Added Basis; additions or deletions of a rates or factors) since the Government's final assessment. For the Prime and each major subcontractor or Prime site greater than 10% provide the address and phone number for the local Defense Contract Audit Agency (DCAA) (or other Government organization) that is responsible for conducting rate negotiations.

2.7.8.7. **Government Termination Liability Costs.** The Offeror shall provide an estimate of the government's total termination liability costs for each fiscal year, from the start of the development effort to the end of the contract.

2.7.8.8. **System Test & Evaluation.** In reference to the EMD Quantities and System Test & Evaluation Parameters [see Section L-12, Attachment (19)], the Offeror shall provide in a spread sheet format a breakdown of planned number of flights by technical discipline and individual EMD test aircraft. The test disciplines should include, at a minimum, Aerodynamics, Structural Integrity, Carrier Suitability, Propulsion, Subsystems, Avionics, Armament, Observables and Electromagnetic Environment areas. Supporting data shall be provided by the following categories: CTOL, STOVL, and CV Configurations. If the information is included somewhere else in the proposal, reference that section. The information should be broken down to a level that provides a rationale and understanding of the data submitted.

2.7.8.8.1. The Offeror shall specify planned test locations and associated calendar span time for each EMD aircraft. Substantiation of Number of Flight Test hours by the location shall be presented in the narrative description. This discussion shall include rationale of the projected flight hour rate and number of test flights per month and how these hours will be achieved based on historical data bases and new and innovative approaches to reducing flight test requirements.

2.7.8.8.2. For Wind Tunnel Occupancy Hours, the Offeror shall show planning information that specifies which individual wind tunnels will be utilized. This breakdown shall include Government and contractor wind tunnel utilization and how much occupancy time is planned for each.

2.7.8.8.3. The substantiation details discussed above should be reflected in the Offeror's EMD Flight Test Schedule which rolls up the overall Flight Test Program by unique EMD aircraft as a function of calendar time.

2.7.9. Provide fiscal year funding profiles for EMD costs using the fiscal EMD Phasing attachment [see Section L-12, Attachment (20)]. The level of reporting is specified in the cost attachment. The funding

profiles shall be provided in Government Fiscal Year 1994 dollars (GFY94$) and Then Year Dollars (TY$) by Government Fiscal Year (October 1 through September 30).

2.7.10. Provide EMD Workshare information using the EMD Workshare [see Section L-12, Attachment (21)]. When completing a Cost Attachment, provide all information requested.

2.8. **VOLUME VIII - PAST PERFORMANCE FACTOR.** Each Offeror shall provide present and past performance information in accordance with the following guidelines.

2.8.1. **Past Performance Volume.** The Offeror shall submit a past performance volume that includes a cover page, index, and all required past performance information required herein. The Offeror shall deliver early past performance information in accordance with Section L-12, paragraph 1.13.4.1, and abide by the page limitations set forth in Section L-12, paragraph 1.13.1.

2.8.2. **Performance History Matrix.** The Offeror shall complete a separate Performance History Matrix [see Section L-12, Attachment (24)] for each active or completed contract that the Offeror considers relevant in demonstrating their ability to perform the JSF Program. The information provided shall include relevant efforts performed by the Offeror's other divisions, subsidiaries, corporate management, critical subcontractors, and teaming partners, if such resources will be used in the proposed effort. The Offeror shall not include performance data from other divisions, subsidiaries, or corporate management entities not planned for direct involvement during the execution of the program. Contracts listed may include those with the Federal Government, state and local governments, foreign governments, and domestic and foreign commercial customers.

2.8.3. **Performance History Matrix/Relevant Contract Submission.** Past Performance Information (PPI) shall be provided to address the broad range of activities that will be accomplished in the JSF Program. The Offeror shall focus Performance History Matrix responses so that they clearly correlate present and past performance with source selection factors and subfactors identified in Section M-1. The Offeror shall explain what aspects of the contracts are deemed relevant to the JSF Program. Relevant experience with, but not limited to, air vehicle design, development and manufacturing, avionics and weapons systems design, development, integration, and interoperability, ground and flight test efforts, low observable technology development and materials production, development of carrier suitable and STOVL capabilities, air system logistics program development and implementation, and air system training program development should be addressed. Activities such as program management control and execution, systems engineering and integration, earned value management, technology implementation, developmental ground and flight testing, manufacturing and production planning and execution, software development and integration, and product assurance should also be addressed.

2.8.4. **Performance History Matrix Constraints.** For the prime contractor, the number of completed Performance History Matrix responses shall not exceed ten. The Offeror is not required to complete a Performance History Matrix for the JSF CDP contract. For each teaming partner or critical subcontractor, the number of completed Performance History Matrix responses shall not exceed five. For all past performance efforts submitted, the completion date of the contract being identified shall not be more than five years prior to the date this CFI is issued. The total length of each completed Performance History Matrix shall not exceed five pages. The Offeror shall provide current information for the points of contact identified on the Performance History Matrix.

2.8.5. **Classified Past Performance Information.** The Offeror may provide a Performance History Matrix response for contracts classified at the Secret and/or Top Secret level. Prior to submission of information on a classified contract, the Offeror shall be responsible for coordinating the clearance of

members of the JSF PRAG with the Government program office responsible for the classified contract. The Offeror shall coordinate submission of classified information with the JSF PRAG representative prior to the early past performance due date and formal proposal due date.

2.8.6. **Active/Completed Contract List.** The prime, teaming partners, and critical subcontractors shall each submit a list identifying the 30 largest (by dollar value) contracts (Government and/or Commercial) (within the same division, subsidiary, or cost center) active or completed within the past 3 years (organized chronologically by date of award). This list is to include the contract number, program title and short description of the effort (limited to 25 words per contract), principle location of performance, dollar amount, and procuring contracting officer's name and phone number. For efforts where the Offeror was a subcontractor, the Offeror shall report the subcontract value of the contract, not the total contract value. The Offeror shall mark an asterisk on each relevant contract listed (including those contracts submitted under a Performance History Matrix.

2.8.7. **Adverse Past Performance Information.** Adverse PPI is defined as PPI that supports a less than satisfactory rating on any contract or any unfavorable comments received from sources without a formal rating system. For all adverse PPI the Government obtains for relevant contracts from sources other than the Offeror, the Offeror will be given an opportunity to comment on this information. For any efforts where: 1) the Offeror, or its subcontractors, are aware of its customers/clients having made unfavorable/marginal past performance ratings or reports; 2) the Offeror feels that significant progress has been made since the unfavorable/marginal rating or report; and 3) the Offeror feels it has not been credited for such progress, the Offeror shall address such issues in a separate narrative. This additional narrative shall not exceed two pages per identified effort and will include program name, contract number, current information for the Procuring Contracting Officer (PCO), Contractor Program Manager, and Administrative Contracting Officer, and a description of corrections/improvements made and the demonstrated impact on the program. In the case of DoD CPARS, if the Offeror has already provided input and the rationale/circumstances have not changed, the contractor response to the CPARS is not to be repeated here.

2.8.8. **Subcontractor Consent Forms/Client Authorizations.** The Offeror shall provide a signed Subcontractor Consent Form [see Section L-12, Attachment (25)] for each of the critical subcontractors or teaming partners that Past Performance History Matrix responses are submitted. In the event commercial contracts are presented as sources of PPI, a Client Authorization Letter [see Section L-12, Attachment (26)] shall be issued to those commercial points of contact authorizing them to complete a questionnaire and to return it directly to the Government PRAG representative identified in this CFI. A copy of all client authorization letters shall be included in the Offeror's Past Performance volume.

2.8.9. **Past and Present Performance Questionnaire Distribution.** No later than five calendar days prior to the date set for receipt of the Past and Present Performance Volume, the Offeror shall send the JSF Program Director Cover Letter and Questionnaire [see Section L-12, Attachment (27)] to all points of contact (POCs) listed in Performance History Matrix responses. The POCs shall be required to forward their completed Questionnaires directly to the Government PRAG representative at the address specified in the JSF Program Director Questionnaire Cover Letter [see Section L-12, Attachment (27)] - Not back to the Offeror**.** The Offeror shall not hand deliver questionnaires directly to the POCs. Normal mailing channels shall be used. The Offeror shall not request a copy of the completed questionnaire from any of the POCs. Furthermore, the Offeror shall not follow-up with respondents to ensure they have completed the questionnaires. The Government will conduct such follow-ups with any of the POCs as necessary.

2.8.10. **Organizational Structure Change History.** Many companies have acquired, been acquired by, or otherwise merged with other companies, and/or reorganized their business entity (e.g., divisions,

subsidiaries, business groups, subsidiary companies). In many cases, these changes have taken place during the time of performance of relevant present or past efforts or between conclusion of recent past efforts and this source selection. As a result, it is sometimes difficult to determine what past performance is relevant to this acquisition. To facilitate this relevancy determination, the Offeror shall include in this proposal volume a "roadmap" describing all such changes in the organization of the company. As part of this explanation, show how these changes impact the relevance of any efforts identified for past performance evaluation/performance confidence assessment. Since the Government intends to consider PPI provided by other sources as well as that provided by the Offeror(s), the "roadmap" shall be both specifically applicable to the efforts identified and general enough to apply to efforts on which the Government receives information from other sources.

2.9. **VOLUME IX – Contract Documentation**

The Offeror shall provide an electronically signed paperless copy of all proposal documentation (with the exception of the 15 paper drawings) including Standard Form 30, Contract Documentation (with appropriate data provided where requested in Sections B through J), and any other documentation required by this Call For Improvement.

2.9.1. **Appendices to Volume IX.** Provide the following appendices to VOLUME IX:

2.9.1.1. **Appendix A, Exceptions.** Identify any exceptions taken to the terms and conditions of the CFI. A contingent offer may render the entire proposal non-responsive. The Offeror is asked to add as appropriate, at the end of each exception, a statement substantially as follows: This offer (is) (is not) contingent upon acceptance of the exception.

2.9.1.2. **Appendix B, Authorized Representative.** Provide the name, title, telephone number and FAX number of the company/division point of contact and alternate regarding source selection decisions.

2.10. **Volume X - Acquisition Streamlining**

2.10.1. **General Information.** The Offeror is encouraged to propose acquisition streamlining initiatives that it reasonably expects will reduce the cost or improve the performance, effectiveness and/or efficiency of the JSF Program. These suggestions may include investment in process improvements that increase the proposed EMD contract cost, but that are expected to reduce program life cycle cost. Proposed initiatives affecting all plans, processes, and CDRLs are encouraged. Proposed initiatives that increase utilization of commercial and non-developmental items to facilitate increased technical refreshment are also encouraged. Acquisition streamlining suggestions shall not involve any change that would cause a breach of JMS or SOO requirements. The Offeror is cautioned that all changes must have some demonstrable benefit to the Government.

2.10.2. **Contents.** The Offeror shall provide a general description of each proposed acquisition streamlining initiative, a detailed description of its proposed approach for implementing each proposed initiative, a quantitative and/or qualitative description of the expected benefits to be realized if the proposed initiative is implemented, and the cost impact (if any) resulting from implementing the proposed initiative. As appropriate, the Offeror shall provide a risk assessment, cost/benefit analysis and/or tradeoff analysis that clearly demonstrates the expected value and potential risks to the Government of each proposed initiative. Where practicable, visibility into the effect the change will have on the overall program Work Breakdown Structure, IMP or IMS should be provided. If the proposed acquisition streamlining initiative affects the proposed EMD contract cost, an updated proposed estimated cost for CLIN 0001 shall be provided. Updated CLIN 0001 estimated cost proposals shall be considered firm

proposals, not estimates. All streamlining suggestions will be considered as stand-alone suggestions unless the Offeror specifically notes otherwise in its proposal. The Acquisition Streamlining volume shall be submitted in two versions, versions A and B. Version A shall contain all information necessary to allow for a rapid and accurate evaluation of the proposed initiatives. All streamlining costs or savings shall correspond to the level of data submitted in the Remaining Life Cycle Cost and/or EMD Cost Volumes and be substantiated in a similar manner. Version B shall duplicate version A, except it shall exclude all cost information. However, when it is necessary to characterize the benefit to be realized by the Government, version B may summarize the effect on contract cost as a percent increase or decrease to an appropriate, clearly defined base [e.g., 7% decrease to estimated baseline proposal (excluding acquisition streamlining suggestions) training cost].

3.0. **LIST OF APPENDICES AND ATTACHMENTS TO SECTION L**

3.1. **Appendices.** The Offeror is provided with the following Section L appendices for guidance in preparing the proposal and contractual documents:

List	Title
Appendix (A)	JSF EMD Ground Rules and Assumptions, dated 08 Nov 2000
*Appendix (B)	Classified Solicitation Requirements
Appendix (C)	Air System Block Development Demonstration
*Appendix (D)	Use Cases
Appendix (E)	Government Modeling and Simulation Plan, dated 08 Nov 2000
Appendix (F)	Program Protection Development Plan, dated 08 Nov 2000
Appendix (G)	Operations and Support, Ground Rules and Assumptions
Appendix (H)	Statement of Objectives, dated 21 Sep 2000
Appendix (I)	JSF Model Specification, dated 08 Nov 2000

* These Section L-12 Appendices are provided under separate cover.

3.2. The Offeror is provided with the following Section L attachments to help in preparing the proposal and contractual documents:

List	Title
Attachment (1)	Cross Reference Matrix
Attachment (2)	Executive Summary Templates
Attachment (3)	Mission and Maneuver Performance
Attachment (4)	Drawings and Dimensional Data
Attachment (5)	Structural Data
Attachment (6)	Propulsion System Weight
Attachment (7)	Avionics Weight
Attachment (8)	Up and Away Data - Aerodynamics and Flying Qualities/Stability and Control Data
Attachment (9)	Carrier Suitability Data - Aerodynamics and Flying Qualities/Stability and Control Data
Attachment (10)	STOVL Operability Data - Aerodynamics and Flying Qualities/Stability and Control Data
Attachment (11)	Stores Carriage and Employment
*Attachment (12)	Radar Cross Section
Attachment (13)	JCCM EMD Cost Summary
Attachment (14)	Procurement Cost Summary
Attachment (15)	Commonality Database
Attachment (16)	Affordability Initiatives Cost
Attachment (17)	Mission Systems and Purchase Equipment
Attachment (18)	Rate Tooling
Attachment (19)	EMD Quantities and System Test and Evaluation Parameters
Attachment (20)	EMD Phasing
Attachment (21)	EMD Workshare
Attachment (22)	EMD ILS Ground Software
Attachment (23)	Operating and Support Cost
Attachment (24)	PRAG Performance History Matrix
Attachment (25)	PRAG Subcontractor Consent Form
Attachment (26)	PRAG Client Authorization Letter
Attachment (27)	PRAG Program Director Cover Letter and Questionnaire

* This Section L-12, Attachment is provided under separate cover.

4.0. **Proposal Submission**

4.1. The schedule of proposal deliveries is as follows:

4.1.1. **Early Past Performance Proposal Information.** Past Performance written submission (Volume VIII) shall be received by 2:00 PM EDT on 12 January 2001. Two (2) electronic (diskettes and/or CD-ROM) copies of the requested information shall be submitted to:

JSF Contracting Officer, Mr. Daniel C. Nielsen, Code: AIR-2.2.4, Crystal Gateway 4, Suite 600, Arlington, VA 22202-4304

4.1.2. **Proposal Due Date.** Written submission of all proposal information (including submission of the electronic proposals and paper drawings shall be received by 2:00 PM EST on 8 February 2001. Two (2) electronic (diskettes and/or CD-ROM) copies of the requested information shall be submitted to:

JSF Contracting Officer, Mr. Daniel C. Nielsen, Code: AIR-2.2.4, Crystal Gateway 4, Suite 600, Arlington, VA 22202-4304

4.2. FAR clause 52.215-1 “Instructions to Offerors – Competitive Acquisitions,” (OCT 1997) is hereby incorporated by reference.

Appendix A - JSF EMD GROUND RULES & ASSUMPTIONS

1) BASELINE DEVELOPMENT EFFORTS

Air System

- Conduct development, integration and verification of Air System combat capability in accordance with Block approach to support Integrated Flight Test (IFT) and each Service's IOC
  - Includes Air Vehicle and Autonomic Logistics (i.e., support & training) systems and mission planning interface
  - Complete integration of all Block 1, 2 and 3 stores
  - Complete integration of a CTOL internal gun system and a STOVL missionized gun system. The gun system is to be fully qualified and certified Contractor Furnished Equipment and includes the gun ammunition, and ammunition handling and feed system.
  - Demonstrate an open avionics architecture with ability to minimize regression testing in compliance with JMS
  - Include flight test aircraft and an adequate number of ground test articles. The plan should not include use of LRIP aircraft.
  - Provide verified Air System to support each Block OPEVAL/IOT&E period
    - Contractor IFT verification should complete prior to end of each Block to allow for OPEVAL/IOT&E testing and reporting
  - OPEVAL/IOT&E support should mirror that to be provided to warfighter
- Within EMD, conduct engineering analysis and system design to provide for growth beyond Blocks 1, 2, 3
  - Within EMD, provide Air System hardware and software provisions to allow integration and support for Post-Block 3 weapons specified in the JMS. Provisions are also defined in the JMS.
  - Sustain operational capabilities in response to evolving threat
- Provide a JSF C4I architecture that enables the information exchange required for JSF Air System to operate in the DoD and UK System of Systems architectures with legacy and planned future systems
  - Includes Air Vehicle, Autonomic Logistics (support & training) and Mission Planning
- Provide mission planning capability and environment enabling mission collaboration, strike coordination, and information access and distribution to the Air System.
  - Joint Mission Planning System Version 1.0 will be GFE and must be utilized in the WSC mission planning design.
- Support, training and mission planning conducted under same EMD contract as rest of Air System
- Government retains joint flight certification and overall airworthiness responsibility for aircraft.
- Conduct planning to support transition to LRIPs and retrofit of early LRIPs to Block 3 capability
- Develop a prime integration facility at an optimal site with capability sufficient to support Air System integration and test efforts
  - For use by both government and contractor during Integrated Flight Test
  - Provide capacity adequate for EMD and be able to evolve to an efficient post-EMD support facility
  - Does not preclude other facilities contractor determines are needed for best-value proposal, such as at flight test site or key subsystem site

Propulsion

- Provide engineering support for integration of the IPT-managed propulsion system

- Provide engineering support for the development and integration of a fully interchangeable alternate propulsion system for production competition
- Plan to support two sequential propulsion flight test programs, P&W then GE, prior to the award of long-lead for LRIP VI (or full-rate)

Autonomic Logistics

- The JSF EMD proposal and costs should include the identification and development of all unique resources for your proposed autonomic logistics system, plus the production of those items needed to conduct development test and operational test and evaluation of the air system. The Government will assess the suitability of unique items for their intended use in the service's environment through participation on joint Government/Contractor IPTs.
- Provide Contractor field engineering and technical support, logistics support, and training throughout development test. Autonomic logistics system will be tested as part of development test program.
- Autonomic logistics system will be used for operational test.
- Develop a best value autonomic logistics system that meets the following boundary conditions:
  - Organization level maintenance is organic.
  - Operational combat squadron functions must be organic military.
  - All field level ordnance handled by Government personnel
  - Logistics support will capitalize fully on public & private partnering opportunities.
  - System must address USN shore rotation, USAF CONUS billets and UK deployment rotation to retain maintenance proficiency; may include use of maintainers at commercial or GOCO facility.
  - Contractors' proposed transportation system(s) must interface with the services' pipeline & it must be flexible.
  - Total Asset Visibility will be provided and compatible with the DOD/UK systems.
  - JSF inventory; centrally-managed & joint service with Government priority assignment authority.
  - Commercial support of training is acceptable under Government control. Military instructors will provide in-flight instruction; civilian instructors may be used in ground school and simulator events.
  - Common core training will be provided with service-unique modules for aircrew and maintainers, as appropriate.
  - Training capability does not use operational aircraft to support JSF maintenance training.
  - JSF autonomic logistics information system must be designed to interface with legacy systems.
  - JSF information system must meet Defense Information Infrastructure (DII) Common Operating Environment (COE) interoperability standards.
  - Full access (not delivery) electronically to technical data and drawings; data rights will be identified, assessed & acquired, based on business case analyses, for potential future organic support and/or re-competition
  - Depot repair capability will be established that complies with applicable Title 10 Statutes and FAR regulations.
  - Government approval is required for changes in which form, fit, function, or interface are affected. Improvements to the configuration management process in a manner that provides a collaborative approach between the WSC and the Government will be evaluated & implemented. Any change shall not introduce a substance, component or environmental factor which will increase the risk level, for damage or injury to personnel. Where an increased risk level has been identified change proposals will be subject to government approval.

2) CONTRACT PERIOD OF PERFORMANCE

- Projected prime contractor authority to proceed date: (SAMP)
  - Projected P&W EMD contract authority to proceed date: TBD
- Prime contract period of performance
  - Total Contract Period of Performance is 126 months
- Contractor has flexibility to propose moving Air System capabilities to an earlier Block in order to optimize development
- Can't move any capability (e.g., weapon, avionics function) to a later Block

3) JSF ORGANIZATION

- Contractors should plan on integral international participation on the JSFPO staff in accordance with national disclosure policy
  - Intent is efficient and timely facility and data access in accordance with national disclosure policy
- Contractor should propose plan and resources for a virtual enterprise that effectively links government and contractor team members at geographically-separated locations; this virtual enterprise must interface with the JSF Virtual Enterprise (the Government IT system which will support the access, storage, processing, and archiving of JSF data for JSFPO Government users)
  - Intent is to make efficient use of evolving Information Technology
- Contractors should make arrangements to accommodate a JPO contingent of approximately 25 personnel assigned full time on-site at the EMD prime contractor facility

4) IOC SCHEDULES

- USMC
  - IOC estimated to occur in FY 2010

- USAF
  - IOC estimated to occur in FY 2011

- USN
  - IOC estimated to occur in FY 2012

- UK
  - Operational Employable Date (OED) 1 is estimated to occur in FY 2012

5) TWO SEAT JSF

- No current Service requirements for two seat trainer and/or mission capability
  - Each variant will consist of a single place cockpit operational aircraft. STOVL maintains the option for a two-seat variant
  - This statement notwithstanding, JSF EMD program does not include a two seat JSF
- No budget or other consideration included in EMD
  - No basic design, group A, OML compatibility or other

6) WEAPONS INTEGRATION & CERTIFICATION

- Provide hardware and software engineering, development, integration, manufacturing and test for effective employment of Block 1,2, and 3 stores. Provide hardware and software provisions to support Post-Block 3 stores. Verify and validate Air System is compatible with all stores in the JMS. At a minimum:
  - Conduct fit and mechanical function analysis to determine stores/loadouts with potential interface conflicts (e.g., arming wire routings, close fit, umbilical connections).
  - Perform fit and mechanical function ground tests (except a GVT of each configuration) on identified JMS stores with potential interface conflicts
  - Analyze all loadings in the JMS to determine PWSC specific design critical loadouts for, at a minimum, separation, acoustics, loads, flutter, flying qualities and drag and performance
  - Perform necessary ground/wind tunnel tests for PWSC specific design critical loadouts and the JMS loadouts
  - Demonstrate power and logical interface compatibility for all stores/modes in the JMS
  - Develop, validate and use models to support development, integration and test
- Complete flight certification of EMD block stores and gun systems
  - Complete system verification sufficient to ensure basic aircraft design is suitable for all JMS stores/weapons modes across a range of internal and external configurations
    - Support with verified models as appropriate
- Complete ground testing including emergency jettison analysis and fly (captive carriage) flight critical envelope for following external configurations.
  - Loading 1: four external pylons and external tanks on inboard pylons
  - Loading 2: maximum weight configuration on each of four pylons
  - Loading 3: worst case flying qualities
  - Loading 4: critical external store loading for flutter margin determination
  - Loading 5: maximum asymmetric store configuration
- Store Drop for G jump and ejection loads impacts

7) LIVE FIRE TEST & EVALUATION (LFT&E)

- JSFPO will develop LFT&E plan and waiver package prior to MSII
  - Includes lethality LFT&E for gun and vulnerability LFT&E for air vehicle
  - LFT&E plan will be officially submitted in draft TEMP - April 2000
  - JSFPO will coordinate plan with DOT&E prior to TEMP release
- Requesting relief from LFT&E on full-up, production-representative aircraft for all three variants
  - Provide full scale LFT&E for baseline variant, but request a waiver from 100% production-representative (i.e., relief from fully functioning high-value mission systems)
  - LFT&E on other variants limited to addressing variant-specific issues

- Basis for waiver request is alternative test and evaluation program that uses a build-up approach including M&S and localized component test articles, culminating in large scale test article(s)
    - Contractor provides analyses for placement of full-scale test articles into LFT&E schedule (e.g., drop test article, X-aircraft, EMD aircraft, engine)
- Complete LFT&E report 120 days prior to DAE IPR5
    - To support OSD need for report 60 days prior

8) SIMULATION BASED ACQUISITION (SBA)

- The Offeror shall use the Government M&S Support Plan (MSSP) as a reference document when creating their proposal. The MSSP describes Government and industry responsibilities, defines the SWCE Toolset, details M&S management practices, and outlines near-time M&S events.
    - Give consideration to reuse and application to other DoD programs
    - Involve all JSF program areas, such as design, build, integration, test & evaluation and manufacturing
- Contractor may employ government M&S facilities and expertise, in accordance with government partnering rules, for best value proposal
- General EMD M&S philosophy:
    - EMD contractor provides the digital representation of the Air System
    - Government provides simulation environment in which it will operate
- Contractor will use the Strike Warfare Collaborative Environment (SWCE) toolset to reduce cost, schedule, and risk of Air System development, integration and verification by employing both constructive and virtual simulation
    - Includes air vehicle, autonomic logistics (i.e., support and training) and mission planning interface issues
        - Assist in developing the training & support concept
- Contractor will create and maintain a Distributed Product Description (DPD) and associated Data Interchange Formats (DIFs), using guidelines in the MSSP, and include:
    - Data, algorithms, and/or source code describing the air system
    - Standard source of information to feed the SWCE toolset
        - Including performance, cost, structural, manufacturing, T&E, logistics
    - Distribution means and access controls
    - Performance and process models, including engineering level M&S as necessary
- The contractor will aggressively employ M&S to support design trade studies and impact assessments, build, integration, test, mod & retrofit throughout the air system lifecycle
- The engineering level models should synergistically interact with the higher level effectiveness models

9) ABILITY TO INCORPORATE CUSTOMER UNIQUE REQUIREMENTS

- Objective is to develop an affordable JSF Air System that allows for evolution within an open architecture (e.g., aircraft structure, electronics, software, autonomic logistics, and mission planning) sufficient to allow a block development and upgrade approach, for inclusion of partner country unique requirements.

10) GOVERNMENT FURNISHED PROPERTY (GFP)

- JSFPO policy is to minimize GFP
    - GFP = production; research property; special tooling/test equipment; facilities; agency peculiar property; material; MILSTRIPed items

- Intent is to streamline GFP process during EMD contract execution
- Contractor responsible for all consumables, except POL and stores
- Provisions established in model contract enabling contractor use of MILSTRIP
- Per a 10 April 2000 JSFPO contracts letter, any DoD test facility required for execution of proposed EMD ground and flight test programs (EMD aircraft or LRIP assets as required) will be provided as GFF
- In terms of EMD wind tunnel facilities, per the same letter, Contractors shall continue to work with NASA and DoD to provide best value to the Government on a Contractor direct payment basis. This objective includes making DoD rates available to Contractors.

11) SEA TRIALS

- STOVL Initial Sea Trials (IST) will be conducted during EMD to ensure there are no major design problems for handling suitability and supportability to support DAE IPR 3 decision
  - STOVL IST will include operations from both an "L-class" ship and from a UK ski-jump equipped carrier
- CV variant IST will be completed after first flight of the carrier suitability EMD test aircraft to support LRIP III decision
  - Intent is to evaluate the CV variant in an actual carrier environment to ensure there are no major design problems
  - CV IST will consist of actual catapults and arrested landings in the middle of the shipboard envelope
- Sea trials for both CV and STOVL variant will be complete prior to LRIP IV and/or DAE IPR 4