NOAA THOMAS JEFFERSON
MCCS CONTRACT DATA REQUIREMENTS

FOREWORD

The Contract Data Requirements List (CDRL) identifies Contractor Data Item requirements in support of the NOAA THOMAS JEFFERSON Ship Centralized Machinery Control System (CMCS) Technology Refresh program. This foreword provides general guidance to the Contractor personnel and is intended to clarify issues of an administrative and procedural nature that are not otherwise addressed. Emergent issues that are not addressed herein or otherwise provided for in source documents should be referred to the Contracting Officer.

Detailed information concerning the content of the Data Item requirements is provided in the Glossary. A complete listing of addressees for this CDRL is provided herein.

I. CONTENT AND FORMAT OF SUBMITTALS

Submittals shall be prepared in the Contractor's format unless otherwise specified. Each submittal shall be clear, legible, and electronically developed and formatted (keyed/typed) unless otherwise specified. All submittals shall be prepared in the English language. Calculations and design data shall be provided in English units unless otherwise specified, or in inch-pound system where existing documentation is in the inch-pound system.

Data Items shall be assigned a sequential one-character alphabet designation in the Revision Block to signify a change from the previous submittal. Revision letter designations shall be in alphabetical order. The first submittal of any data item shall be identified as Revision "-".

Electronic media and digital files shall be compatible with Windows 10 operating system, unless otherwise specified. The latest available versions of the following software products shall be utilized in the generation of data items, unless otherwise specified: Microsoft Office™ including Microsoft Project™ (version 2016), Adobe Acrobat™, WinZip™, or IGES™. Electronic files shall not be password protected.

Drawings shall be submitted in AutoCAD™ (versions 2012-2019 acceptable) and PDF format, unless otherwise specified, and shall not be in "read only" format. Schedules shall be submitted in a Microsoft Project compatible format and PDF format.

All submittals, including drawings, reports and machine-produced listings shall be prepared with the following information:

1. Contractor's serial number and date.
2. The contract number, data item number, and data item title. When multiple submissions are made under the same data item (such as drawings, purchase orders, or test reports), a subtitle shall be included to further identify the content.
3. A list of all enclosures being submitted in the data package.
4. A revision letter and date shall be included to reflect the revision of any previously submitted document. The cover sheet shall provide a brief explanation of the reason for the change or a more detailed discussion shall be included in the content of the submittal.
5. Distribution and quantity of copies being sent.
6. Updates and revisions to plans, reports, and procedures shall include a Record of Revisions to annotate what has changed since the previous submittal change bar in the left margin

Each Data Item submittal shall include Distribution Statement C at the bottom of each cover sheet, as follows:

"DISTRIBUTION Statement C: Distribution authorized to the U.S. Government agencies and their Contractors. Other request for this document shall be referred to the NOAA Marine Engineering Department"

Note that the distribution statement for technical manuals (affixed on the individual covers) shall be Distribution Statement C. Details are included in the data item for technical manuals.

Each file extension shall be the three or four-character default extension automatically assigned by the applicable software in which the document is saved. If the software does not automatically assign the three or four-character extension, the Contractor shall assign a three or four-character extension and specify the file's applicable software and version in the letter of transmittal.

Each Data Item shall be submitted with a separate letter of transmittal. Multiple documents may be submitted under the same letter of transmittal; subtitles, revision designations, and sheet quantities shall be identified for each document.

Each letter of transmittal shall contain the following:

1. Ship Acronym and applicable Hull Numbers.
2. Contractor's name, correspondence serial number, and actual date of transmittal.
3. Contract Number.
4. Data Item Number and Data Item Title.
5. Applicable revision letter and revision date.
6. Electronic media or digital file name and respective file date.
7. Each transmittal letter shall provide a brief explanation of the submittal and the reason for the document's change.
8. Submittals requiring approval shall state: "This document requires Government approval." If approval of a document is contingent upon incorporation of comments, the document shall be resubmitted. If approval has been granted, the approved version shall state: "The previous version of this document has been reviewed and approved by the Government." Include identification of the Government approving document serial number and date.
9. Distribution and quantity of copies being sent (not applicable to reproducibles provided at a shared Government and Contractor location).

Where hard copies or electronic media are required, the Contractor shall deliver the Data Item submittals using properly sized envelopes or boxes in accordance with good commercial practice to prevent damage.

II. SUBMISSION SCHEDULE

The Contractor shall develop and maintain scheduling data relating to the submission requirements of all individual data items and shall ensure that actual deliveries are made on or before computed due dates. Submission criteria are usually based on key events. Key events identified herein apply to the lead ship and

awarded options. Days After Contract (DAC) refers to award of lead ship Contract Line Item Number (CLIN). Days After Option Exercised (DAOE) refers to option exercise of each appropriate CLIN.

It is the responsibility of the Contractor to notify the Government of changes which impact the content and accuracy of a previously submitted document so that the Government may make a determination as to whether the document warrants a revision. If the Government determines that there are significant enough changes which impact the content and accuracy of the document, the document shall be revised appropriately and resubmitted within 30 days or as otherwise agreed to between the Government and the Contractor.

III. QUALITY CONTROL

The Contractor shall maintain internal quality control to ensure submittals are complete, adequate, and shall not rely on NOAA review comments to ensure the technical accuracy of data.

NOAA review and approval time periods identified in the applicable Data Item commence at receipt of the data by NOAA. This is the date of posting when the submittal is posted to a shared location.

In some cases, issues will be raised by review comments. Issues shall be successfully resolved, and the Contractor shall correct and resubmit the data. In the event the Contractor disagrees with the intent of the review comments or is unable to comply with and/or resolve issues raised, the Contractor shall submit correspondence explaining the disagreement and propose suitable alternatives with supporting rationale. NOAA acceptance of the Data Item does not alleviate the Contractor from meeting the requirements of the specification if in fact the Data Item contains errors or omissions.

It is anticipated that changes to the Data Requirements List will take place after Contract Award and will be implemented in accordance with the requirements of the Contract. Such change packages will incorporate specified changes and replacement pages will be provided. Change pages will be prepared by the NOAA Data Manager. Each change package will include an updated Table of Contents.

IV. ACRONYMS

An alphabetical list of acronyms follows. The list includes those acronyms used most frequently in the Data Requirements List.

ABS	American Bureau of Shipping
AT	Acceptance Trials
BT	Builder's Trials
CAGE	Commercial and Government Entity
CDR	Critical Design Review
CDRL	Contract Data Requirements List
DAC	Days After Contract Award

NOAA THOMAS JEFFERSON
MCCS CONTRACT DATA REQUIREMENTS

DARC	Days After Receipt of Comments
DARP	Days After Reporting Period
DATC	Days After Test Completion
DI	Data Item(s)
DPT	Days Prior To
DR	Design Review
FAT	Factory Acceptance Test
LT	Letter of Transmittal
MHE	Material Handling Equipment
MTHLY	Monthly
NLT	Not Later Than
OEM	Original Equipment Manufacturer
PAC	Post Award Conference
QRTLY	Quarterly
R/ASR	Revisions as Required
SPPC	Shipbuilding Production Progress Conference
SWBS	Ship Work Breakdown Structure
TM	Technical Manual
WBS	Work Breakdown Structure
WKLY	Weekly
3-D	3-Dimensional

V. GLOSSARY

The items listed below are explanations of the headings and blocks on the Data Requirements List (DRL).

PROGRAM NAME: The name of the program.

CONTRACT NO.: The Procurement Instrument Identification Number (PIIN), such as the Contract number, Purchase Request (PR) number, the Request for Proposal (RFP) number, or other appropriate designator.

CLIN: The Contract Line Item Number (CLIN) that is associated with the DRL.

CONTRACTOR: The Contractor's name.

PREPARED AND APPROVED BY: The name and organization responsible for the contractual approval of the DRL.

DATE: The date the Contractual DRL was approved.

BLOCK 1-DATA ITEM NO.: An identification number to support each Data Item identified in the Statement of Work (SOW) or the Contract.

BLOCK 2-DATA ITEM TITLE: The title of the Data Item.

BLOCK 3-REFERENCE: The specific location within the SOW or Contract that contains the tasking that generates a requirement for the data.

BLOCK 4-DATA DESCRIPTION: Details regarding the Data Item's content characteristics and format requirements, if applicable.

BLOCK 5-APPROVAL/REVIEW REQ.: The Government will review the Contractor's submittal as indicated. The time period required for Government review will be as specified. The Government will comment on Data Items that require Government comment and/or approval within the timeframe noted. Non- response to a Government approval Data Item shall be taken as disapproval. The Government reserves the right to comment on all deliverables.

BLOCK 6-SUBMITTAL SCHEDULE: The scheduled date for initial data submission, incremental submittals, and resubmittals, shall be as specified. In addition, details regarding Data Item submittal requirements are included. Submittal dates are often based on Contract events. Days identified are calendar days unless otherwise identified. Where scheduled date for data submission falls on a Saturday, Sunday or Federal Government holiday, the submission due date shall be the following Federal Government working day. Revisions and subsequent periodic submissions shall incorporate the resolution of Government comments.

BLOCK 7-DISTRIBUTION: All deliveries shall be in digital format submitted to the NOAA representatives as listed below. The numbers specified in Block 7 are the quantities of hard copies and digital copies to be provided to the addressees. Data provided at a shared location shall meet the requirements for digital copies.

ADDRESSEE	COMPLETE ADDRESS
Contracting Officers Technical Representative (COR)	To Be Provided at Contract Award
Marine Operations – Engineering Branch	To Be Provided at Contract Award
Technical Point of Contact (TPOC)	To Be Provided at Contract Award
S 222 Port Engineer	To Be Provided at Contract Award

NOAA THOMAS JEFFERSON
MCCS CONTRACT DATA REQUIREMENTS

TABLE 1 - CDRL LIST

CDRL	CDRL DESCRIPTION
001	Post Award/Kickoff Meeting
002	General Meeting Agendas, Presentations, And Minutes
003	Design Review Agendas, Presentations, And Minutes
004	Design Verification Ship Check Plan
005	Design Verification Ship Check Report
007	Integrated Master Schedule (IMS)
008	Regulatory Body Certificates
009	Regulatory Body Communications and Correspondence with Enclosures
010	Monthly Status Report
011	Engineering Change Proposals (ECPs)
013	Request for Deviation/ Waiver
014	Shipboard Installation Plan and Procedures
015	FMEA
017	Purchase Orders
018	Engineering Calculation Records (ECRs)
019	Ship Drawing Index
020	Drawings and Associated Lists
021	Software Development Plan
022	Requirements Verification Matrix
023	System Architecture and System Requirements Specification
024	Software Requirements Specification
025	Interface Requirements Specification
026	Software Design Description
027	Database Design Description
028	HMI Design Guide and Report
029	Interface Design Description
030	Software Product Specification
031	Software Version Description document
032	Software User's Manual
033	Firmware Support Manual
034	Software Transition Plan
035	Recommended Spares Listings, Statistics, And Locations
037	Data for Provisioning
039	Crew Training Plan
040	Student and Instructor Guides
042	MCCS Technical Manual
044	Packaging and Preservation Procedures
045	Notification of Testing
046	Factory Test Plan
047	Factory Test Procedures
048	Factory Test Report
049	Installation Shipboard Test Plan
050	Post Installation Shipboard Test Procedures
051	Post Installation Shipboard Test Reports
052	MCCS Design Verification Test Procedures
053	Periodic Safety Test Procedures
054	Condition Found Reports

BLOCK 1-DATA ITEM NO.: **DI-001**

BLOCK 2-DATA ITEM TITLE: **POST AWARD CONFERENCE AGENDA, PRESENTATION, AND MINUTES**

BLOCK 3-REFERENCE: **SOW 4.1.1**

BLOCK 4-DATA DESCRIPTION:

1. The Post Award Conference (PAC) Agenda shall identify the meeting name, date, time and location of the PAC. Materials to be presented during the PAC shall be provided with the agenda.
2. The agenda and presentation shall include as a minimum a discussion of the following:
    a. Introductions
    b. Organizations and Points of Contact
        1) All major organizations involved in the Contract, such as NOAA, On-site Government Representatives, Contractor, Design Agent (if used), CMCS Contractors, Regulatory Body representative, and others.
        2) Roles and Responsibilities of Organizations and Points of Contact.
    c. Program Overview
        1) Schedule (proposed dates for milestone events, the overall plan and duration for the preliminary and detail design, production, factory testing, equipment delivery, removal of legacy CMCS equipment, installation of new CMCS equipment, shipboard testing, and trials.
        2) Conferences, Meetings, and Reviews including Weekly Telephone Conference with NOAA and ABS.
        3) Contractor Facilities Access Control.
        4) Government Expectations.
        5) Contractor Expectations.
    d. Program Administration
        1) Management.
        2) Contracts Administration.
        3) Change Order Process.
        4) Equivalent Equipment Substitution Request.
        5) Production Control, Inspection Systems and Quality Assurance.
        6) Integrated Logistics Support
        7) Delivery and warehousing of CMCS equipment
        8) Installation Assist Team Needs
        9) Test and Trials.
        10) CMCS Final Delivery.
        11) Warranty Management.
    e. Communications
        1) Authorized Government Representatives.
        2) Authorized Contractor Representatives.
        3) Project Management System.
        4) Email and letter correspondence.
        5) Regulatory Body Correspondence.
        6) Submission of Data Requirements List. (Continued on Next Page)
    f. Action Item Review
    g. Conclusion
3. The PAC Minutes shall identify date, time, and location of the PAC and a chronological listing of each topic discussed. The minutes shall include applicable discussions, concerns, action items assigned and completed,

and a list of the documentation discussed. A list of attendees shall be included. Copies of each presentation or document reviewed shall also be included and identified in the minutes by document name, document revision, document date, and the digital file name and date.

BLOCK 5-REVIEW REQ.:

Allow 5 days for Government review and comment for the agenda and presentation.
Allow 7 days for Government review and comment for the minutes.

BLOCK 6-SUBMITTAL SCHEDULE:

10 DPT PAC; R/ASR 5 DARC. Draft of materials to be presented during the PAC shall be provided with the agenda. Minutes and final presentation materials to be submitted 7 days after the PAC; R/ASR 3 DARC.

BLOCK 7-DISTRIBUTION:	**Addressee**	**QTY**
	TBD at time of Award	TBD at time of Award

* Hard copy presentation materials shall be provided for each attendee at the meeting.

NOAA THOMAS JEFFERSON
MCCS CONTRACT DATA REQUIREMENTS

BLOCK 1-DATA ITEM NO.: DI-002

BLOCK 2-DATA ITEM TITLE: **GENERAL MEETING AGENDAS, PRESENTATIONS, AND MINUTES**

BLOCK 3-REFERENCE: **SOW 4.1.1**

BLOCK 4-DATA DESCRIPTION:

1. Agendas shall provide information concerning purpose, location, and schedule of joint Contractor and Government conferences and meetings.
2. Presentations shall include the following for each forthcoming meeting: purpose and objective; location, date, and duration; a daily chronological list of each major topic for discussion and a time schedule; brief description of progress on action items and problems identified at previous meetings; a complete list of all documentation to be available for review; pertinent information, open items, status of items relative to critical items and logistics requirements.
3. Minutes shall identify date, time, and location of the applicable review and a chronological listing of each topic discussed. The minutes shall include applicable discussions, concerns, action items assigned and completed, and a list of the documentation discussed. A list of attendees shall be included. Copies of each presentation or document reviewed shall also be included and identified in the minutes by document name, document revision, document date, and the digital file name and date.

BLOCK 5-REVIEW REQ.:

Allow 4 days for Government review and comment.

BLOCK 6-SUBMITTAL SCHEDULE:

Agendas and presentations 7 DPT each meeting; R/ASR 3 DARC.

Minutes to be submitted 7 days after each meeting; R/ASR 7 DARC.

BLOCK 7-DISTRIBUTION:	**Addressee**	**QTY**
	TBD	TBD

* Hard copy presentation materials shall be provided for each attendee at the meeting.

NOAA THOMAS JEFFERSON
MCCS CONTRACT DATA REQUIREMENTS

BLOCK 1-DATA ITEM NO.: 003

BLOCK 2-DATA ITEM TITLE: DESIGN REVIEW AGENDAS AND MINUTES

BLOCK 3-REFERENCE: SOW 4.1.1

BLOCK 4-DATA DESCRIPTION:

Design reviews shall be held at conclusion of the System Design, Preliminary Design, Detail Design, during the Human/Machine Interface Design, and prior to the beginning of Testing periods and shall address those areas identified in the CMCS Technical Specification consistent with the Integrated Master Schedule, Data Item No. 007.

1. The Design Review Agendas shall include a discussion on the following topics, as applicable.

    a. Design Phase Entrance and Exit Criteria
    b. Engineering Status and Project Schedule
    c. Review of Action Items
    d. Material Status
    e. Equipment Production Status
    f. Software Development Status
    g. Testing and Certification Status
    h. Documentation Status
    i. ILS Status
    j. Miscellaneous Items
    k. ECP Status
    l. Proposed ECPs

In addition, the Design Review Agendas shall provide information regarding potential problems/decisions that may be encountered. Information regarding system design and construction status, issues and results shall also be discussed. Items that will be updated prior to the next Design Review shall also be discussed.

2. The DR Presentations shall include discussion on the following topics, as applicable.

    a. Scope of effort required to accomplish and updated schedules.
    b. Detailed status of the evolving detail design.
    c. 3-D Model/Design Product completion criteria for production readiness and status.
    d. Risk review including mitigation plans for all moderate and high risks.
    e. Requirements Efforts accomplished by any major subcontractors.
    f. Primary design drivers, constraints and other issues that are influencing the ship design.
    g. Assumptions and/or interpretations related to omissions, inconsistencies, errors, and conflicts, if any, in the requirements.
    h. Status of regulatory body comments and issues related to design approval and certification, including ABS status.
    i. Summary of technical analyses and tradeoffs with supporting calculations and resulting derived design details.
    j. Status of Mockups
    k. Status of data required by DRL Attachment TBD and discussion of major unresolved Government comments.
    l. Status of any Working Groups.
    m. Review of Action Items.
    n. ECP, NECP, RFD/RFW Status.
    o. Equipment, receipt, warehousing and installation.

3. Minutes shall identify date, time, and location of the applicable review and a chronological listing of each topic discussed. The minutes shall include applicable discussions, concerns, action items assigned and completed, and a list of the documentation discussed. A list of attendees shall be included. Copies of each presentation or

document reviewed shall also be included and identified in the minutes by document name, document revision, document date, and the digital file name and date. The DR Minutes shall reflect items in the sequence covered at DR Meetings and shall include the following:

a. Documentation of technical information and data required recording joint Contractor and Government decisions and agreements reached during DR Meetings.
   b. List documentation reviewed or distributed at meeting, including applicable dates, revisions and source.
   c. Identify and include presentation documentation, handouts reviewed or distributed at meeting, including applicable dates, revisions and source of each.

BLOCK 5-REVIEW REQ.:

Allow 7 days for NOAA review and comment.

BLOCK 6-SUBMITTAL SCHEDULE:

Agendas NLT 14 DPT each Design Review, and R/ASR NLT 3 DPT
Design Review. Minutes NLT 7 days after Design Review and R/ASR NLT 7 DARC.
Revisions shall incorporate resolution of NOAA comments.

BLOCK 7-DISTRIBUTION:	**Addressee**	**QTY**
	TBD	TBD

NOAA THOMAS JEFFERSON
MCCS CONTRACT DATA REQUIREMENTS

BLOCK 1-DATA ITEM NO.: DI-004

BLOCK 2-DATA ITEM TITLE: **Detailed Design Verification Ship Check Plan**

BLOCK 3-REFERENCE: **SOW4.4.1**

BLOCK 4-DATA DESCRIPTION:

The Detailed Design Verification Ship Check Plan shall be prepared that outlines the Contractors plans for conducting the ship check. The plan shall address topics such as:

1. List of Contractor's Ship Check Team names and roles
2. Schedule for conducting the survey
3. Plans for verification of CMCS Signal I/O List
4. Plans for cable survey
5. Drawings to be validated or marked up
6. List required access to secured spaces including voids
7. Ship's crew support requirements
8. Checklists or forms planned for use in the survey

Contractor format for report is acceptable.

BLOCK 5-REVIEW REQ.:

Allow 7 days for NOAA review and comment.

BLOCK 6-SUBMITTAL SCHEDULE:

NLT 10 days prior to ship check
Revisions shall incorporate resolution of NOAA comments.

BLOCK 7-DISTRIBUTION:	**Addressee**	**QTY**
	TBD	TBD

BLOCK 1-DATA ITEM NO.: DI-005

BLOCK 2-DATA ITEM TITLE: **Detailed Design Verification Ship Check Report**

BLOCK 3-REFERENCE: **SOW 4.4.1**

BLOCK 4-DATA DESCRIPTION:

The Detailed Design Verification Ship Check Report shall document the findings of the detailed design verification ship check and shall include:

1. A summary of findings during the design verification ship check
2. A list and description of activities completed
3. A list of issues requiring further investigation with a summary description of each
4. Photographic survey copy
5. A list of problems identified with a summary description (these are to be detailed in individual Condition Found Reports in CDRL 054)
6. Activities that could not be completed
7. Listing of cabling and sensors identified for replacement.
8. A list detailing any new cabling and sensors to be procured, along with ordering information and cost

Contractor format for report is acceptable.

BLOCK 5-REVIEW REQ.:

Allow 7 days for NOAA review and comment.

BLOCK 6-SUBMITTAL SCHEDULE:

NLT 14 days after completion of ship check
Revisions shall incorporate resolution of NOAA comments.

BLOCK 7-DISTRIBUTION:	**Addressee**	**QTY**
	TBD	TBD

NOAA THOMAS JEFFERSON
MCCS CONTRACT DATA REQUIREMENTS

BLOCK 1-DATA ITEM NO.: DI-007

BLOCK 2-DATA ITEM TITLE: **INTEGRATED MASTER SCHEDULE**

BLOCK 3-REFERENCE: **SOW 4.1.1**

BLOCK 4-DATA DESCRIPTION:

The Contractor shall prepare an Integrated Master Schedule that presents the overall integrated plan for the design, construction, coding, testing, installation and commissioning of the new CMCS.

1. The schedule shall include management, design, integration, and all testing activities, along with schedule for deliverable items. The information will be used to verify attainability of program objectives and evaluate progress.
2. The schedule shall depict all activities required for the performance of this Contract.
3. The schedule shall portray in chronological sequence, the actions, events, and requirements with corresponding planned start and completion dates and the actual start and completion dates, which shall be retained on each issue of that schedule. Each schedule shall be kept current with schedule modifications and completed tasks. Human resources shall be expressed in man-hours. As appropriate, remarks, comments and explanations of problems encountered shall be provided for clarification. This information shall be provided in columns, lines or spaces on the Integrated Master schedule.
4. The Schedules shall incorporate summary, intermediate and detailed schedules. Summary schedules shall present key events and milestones. Detailed schedules shall include all efforts required to complete milestones.
5. The schedule shall be provided in MS Project format.
6. The IMS shall be prepared in accordance with DI-MGMT-81650.

BLOCK 5-REVIEW REQ:

Allow 14 days for NOAA review and comment.

BLOCK 6-SUBMITTAL SCHEDULE:

14 DAC, R/Monthly and R/ASR NLT 7 DARC. Revisions shall incorporate resolution of NOAA comments.

BLOCK 7-DISTRIBUTION	**ADDRESSEE**	**QTY**
	TBD	TBD

NOAA THOMAS JEFFERSON
MCCS CONTRACT DATA REQUIREMENTS

BLOCK 1-DATA ITEM NO.: 008

BLOCK 2-DATA ITEM TITLE: **REGULATORY BODY CERTIFICATES**

BLOCK 3-REFERENCE: **SOW 4.3**

BLOCK 4-DATA DESCRIPTION:

1. Regulatory Body Certificates, Statements of Fact, and Certificates of Compliance shall contain the Contract number, a statement that identifies the purpose, applicability of this certification, and verification that the Contractor has complied with the Contract requirements.
2. Where Regulatory Body Certificates of Compliance are presented as evidence of quality, such certificates shall indicate that the material or equipment was previously tested and met all performance requirements and shall contain verification data, refer to witnessing inspectors or present other verifiable quality data.
3. Each Regulatory Body Certificate, Statement of Fact, and Certificate of Compliance shall be provided with an updated list of all such documents provided. The list shall include all Regulatory Body Certificates, Statements of Fact, and Certificates of Compliance with serial numbers and date of the transmitting documents. Include the date the original document is provided to the ship and identify the Government representative who has taken receipt of the document.

BLOCK 5-REVIEW REQ.:

Allow 7 days for Government review and comment

BLOCK 6-SUBMITTAL SCHEDULE:

Copies of certificates shall be submitted 7 days after receipt; original certificates shall be provided 10 DPT SD. Certification verification data shall be submitted 10 days after request from the Government for copy of the verification of equipment/test certification.

BLOCK 7-DISTRIBUTION	**ADDRESSEE**	**QTY**
	TBD	TBD

* Originals shall be delivered to the NOAA On-site representative

NOAA THOMAS JEFFERSON
MCCS CONTRACT DATA REQUIREMENTS

BLOCK 1-DATA ITEM NO.: 009

BLOCK 2-DATA ITEM TITLE: **REGULATORY BODY CORRESPONDENCE**

BLOCK 3-REFERENCE: **SOW 4.3**

BLOCK 4-DATA DESCRIPTION:

1. Provide copies of all incoming and outgoing communications and correspondence on technical matters, including attachments/enclosures, between the Contractor and Regulatory Bodies and Subcontractors and the Regulatory Bodies in accordance with the Contract. Copies shall be provided in electronic format.

2. Communications include letters, faxes, memos, electronic mail, and memos of phone conversations. Attachments/enclosures include drawings, sketches, photographs, slides, viewgraphs, presentations, specifications, manuals, studies, calculations, analyses, requests for change of class, applications for inspection, Contracts, scopes of work, and related communications.

3. Communications shall be assigned serial numbers, ESWBS, issues, and applicable dates. A cross-reference shall be made from Contractor assigned serial numbers to actual incoming communication's serial numbers, where applicable.

4. Correspondence submitted to ABS via the ABS Eagle Construct (O2E and O2K), where the Government has unrestricted review privileges in the ABS Eagle Construct, shall not be submitted under this DRL. This includes all related follow-up comments and tracking within the ABS Eagle Construct.

5. Each submittal shall include a cross-reference index. Each cross-reference shall be cumulative to date. communication's serial numbers, where applicable.

6. In addition to obtaining ABS approval, NOAA shall conduct an independent review, provide comment, and have its issues addressed with respect to the documents and drawings submitted for regulatory approval. NOAA approval is required prior to implementing the design, production, or testing as appropriate.

BLOCK 5-REVIEW REQ.:

Allow 14 days for NOAA review and comment.

BLOCK 6-SUBMITTAL SCHEDULE:

3 days after incoming or outgoing communications have been issued or received;
R/ASR 7 DARC.

BLOCK 7-DISTRIBUTION	**ADDRESSEE**	**QTY**
	TBD	TBD

NOAA THOMAS JEFFERSON
MCCS CONTRACT DATA REQUIREMENTS

BLOCK 1-DATA ITEM NO.: 010

BLOCK 2-DATA ITEM TITLE: **MONTHLY PROGRAM STATUS REPORT**

BLOCK 3-REFERENCE: **SOW 4.1.1**

BLOCK 4-DATA DESCRIPTION:

The Contractor shall prepare and submit Monthly Program Status Reports.

1. The content of the Status Report shall be in accordance with DI-MGMT-80368A, except that data item paragraph
2. 3.2.3 only requires reporting of cost expenditures and funds remaining.
3. This CDRL shall be coordinated with and address CDRL 007 monthly deliverables.

BLOCK 5-REVIEW REQ.:

Allow 14 days for NOAA review and comment.

BLOCK 6-SUBMITTAL SCHEDULE:

14 DAC, R/Monthly and R/ASR NLT 7 DARC. Revisions shall incorporate resolution of NOAA comments.

BLOCK 7-DISTRIBUTION	**ADDRESSEE**	**QTY**
	TBD	TBD

NOAA THOMAS JEFFERSON
MCCS CONTRACT DATA REQUIREMENTS

BLOCK 1-DATA ITEM NO.: 011

BLOCK 2-DATA ITEM TITLE: **ENGINEERING CHANGE PROPOSALS (ECPs)**

BLOCK 3-REFERENCE: **SOW 4.5.1**

BLOCK 4-DATA DESCRIPTION:

The Contractor shall prepare and submit Engineering Change Proposals (ECPs) that describe changes to configuration items and associated configuration documents affected by proposed engineering changes. Documentation shall include the engineering change and the documentation by which the changes are described and suggested.

1. Engineering Change Proposals (ECPs) shall describe changes to configuration items and associated configuration documents affected by proposed engineering changes. Documentation shall include the engineering change and the documentation by which the changes are described and suggested. ECPs shall be provided on Standard DD Form 1692; continuation sheets shall be used when additional space is required.

2. ECPs, at a minimum, shall contain the following information: Originator name and address; submittal date; Contract number; procuring contracting officer; ECP number/revision/amendment; title of change; description of change; need for change; Commercial and Government Entity (CAGE) code; specifications affected, including section and page; drawings affected; effect on associated equipment, production, ILS, technical manuals; and delivery schedule; estimated costs/savings; ship/class impacts; consequences if disapproved; and submitting activity authorized signature.

3. A brief narrative and supporting illustrations or calculations, as necessary, shall be included to summarize changes required to supporting documentation identified. Existing drawings, technical manuals and logistics support elements impacted by the change shall be listed along with a brief narrative explanation of needed changes to incorporate the ECP, if approved.

BLOCK 5-REVIEW REQ.:

NOAA requires approval of proposed changes, including cost, schedule, content, detail, and the need for change. Allow 30 days for NOAA review.

BLOCK 6-SUBMITTAL SCHEDULE:

ECPs shall be submitted NLT 14 days after the need for change is identified or as requested by NOAA, and R/ASR 14 DARC.

BLOCK 7-DISTRIBUTION	**ADDRESSEE**	**QTY**
	TBD	TBD

BLOCK 1-DATA ITEM NO.: 013

BLOCK 2-DATA ITEM TITLE: **REQUEST FOR DEVIATION/WAIVER**

BLOCK 3-REFERENCE: **SOW 4.5.1**

BLOCK 4-DATA DESCRIPTION:

1. A Request of Deviation/Waiver (RFD/RFW) shall be submitted for Government approval as soon as occurrences meeting the following definitions become known:

a. Deviation. A departure from a particular requirement or requirements of an item's current approved configuration documentation for a specific number of units or a specified period of time. A deviation differs from an engineering change in that an approved engineering change requires corresponding revision of the item's current approved configuration documentation, whereas a deviation does not. Deviations must be authorized by the Government and granted to the Contractor prior to the manufacture of an item.

b. Waiver. Government acceptance of an item, which during manufacture, or after having been submitted for Government inspection or acceptance, is found to depart from specified requirements, but nevertheless, is considered suitable for use "as is" or after repair by an approved method.

2. MIL-STD-973 shall be used as general guidance. RFDs/RFWs shall be prepared on DD Form 1694. Continuation sheets shall be used when additional space is required.

3. RFDs and RFWs shall include detailed justification and consequences of approval and technical details explaining the degree of non-compliance or effect on ship equipment or system operation constraints. RFWs shall document the "as built" configuration that departs from baseline documentation, and shall include any proposed corrections or modifications to better meet the intent of the baseline documentation.

BLOCK 5-REVIEW REQ.:

NOAA approval based on content. Allow 14 days for NOAA review.

BLOCK 6-SUBMITTAL SCHEDULE:

NLT 10 days after need for deviation or waiver is identified, and R/ASR 14 DARC. Revisions shall incorporate resolution of NOAA comments.

BLOCK 7-DISTRIBUTION	**ADDRESSEE**	**QTY**
	TBD	TBD

NOAA THOMAS JEFFERSON
MCCS CONTRACT DATA REQUIREMENTS

BLOCK 1-DATA ITEM NO.: 014

BLOCK 2-DATA ITEM TITLE: SHIP EQUIPMENT REMOVAL AND INSTALLATION PLANS AND PROCEDURES

BLOCK 3-REFERENCE: SOW 4.5.1

BLOCK 4-DATA DESCRIPTION:

The Subcontractor shall prepare and submit Ship Removal and Installation Plans and Procedures. The following information shall be provided:

1. Details of the existing system removals, new system installations and integration with existing shipboard systems. It shall provide the sequence of events required to perform the work in the defined availability. It shall clearly define required project hold points/checkpoints for ABS and NOAA Representative sign off.

2. Shipyard removal, installation and modification work items.

3. Rip-out and installation procedures required to supplement the rip out and installation drawings shall be provided to support the modifications required to the vessel.

4. The shipyard drawings required for rip-out and installation activities shall be provided under this CDRL. Redline/strikeout drawings may be provided in PDF only when no AutoCAD version is available.

4. The plan and procedures shall document directly or reference the following details, as applicable, when essential for modifications to the vessel, logistics support, repair, and maintenance:

    a. Performance Ratings.
    b. Dimensional Data.
    c. Critical Assembly Sequences.
    d. Input and Output Characteristics.
    e. Diagram of Mechanical and Electrical Connections.
    f. Physical Characteristics
    g. Parts Lists.
    h. Identification of Exterior Protective Coatings.
    i. Test and Evaluation Criteria for Commissioning.
    j. Equipment Calibration Requirements.
    k. Requirements for Special Environmental Conditions

Work Item preparation shall be in accordance with NOAA Work Item Preparation Instructions.

BLOCK 5-REVIEW REQ.:

NOAA approval based on content. Allow 14 days for NOAA review.

BLOCK 6-SUBMITTAL SCHEDULE:

Plans, procedures, work item and their revisions shall be submitted in accordance with the Schedule(s), Data Item No. 007, and its revisions, and R/ASR 21 DARC.

Revisions shall incorporate resolution of PCS comments, Revisions required through the Guaranty Period, and additional submittals shall be as specified on Attachment 1 to Data Item No. 020.

NOAA THOMAS JEFFERSON
MCCS CONTRACT DATA REQUIREMENTS

BLOCK 7-DISTRIBUTION	ADDRESSEE	QTY
	TBD	TBD

NOAA THOMAS JEFFERSON
MCCS CONTRACT DATA REQUIREMENTS

BLOCK 1-DATA ITEM NO.: 015

BLOCK 2-DATA ITEM TITLE: **Failure Modes, Effects, Criticality Analysis**

BLOCK 3-REFERENCE: **SOW 4.3**

BLOCK 4-DATA DESCRIPTION:

The Contractor shall prepare and submit a Failure Modes and Effect Analysis (FMEA) for the new CMCS.

The FMEA is to be sufficiently detailed to cover all the systems' major components and is to include but not be limited to the following information:

1. A description of all the systems' major components and a functional block diagram showing their interaction with each other
2. All significant failure modes
3. The most predictable cause associated with each failure mode
4. The transient effect of each failure on the CMCS system operation
5. The method of detecting that the failure has occurred
6. The effect of the failure upon the rest of the system's ability to operate in normal modes
7. An analysis of possible common failure mode
8. Where parts of the system are identified as non-redundant and where redundancy is not possible, these parts are to be further studied with consideration given to their reliability and mechanical protection at the last CMCS interface point to the machinery plant. The results of this further study are to be submitted.
9. MIL-STD-1629 shall be used as guidance in preparation of this analysis.

BLOCK 5-REVIEW REQ.:

30 DPT PDR initial draft for NOAA review and comment. 30 DPT CDR final version for NOAA and ABS review and comment.

BLOCK 6-SUBMITTAL SCHEDULE:

90 DAC and R/ASR NLT 14 DARC.
Revisions shall incorporate resolution of NOAA and ABS comments.

BLOCK 7-DISTRIBUTION	**ADDRESSEE**	**QTY**
	TBD	TBD

NOAA THOMAS JEFFERSON
MCCS CONTRACT DATA REQUIREMENTS

BLOCK 1-DATA ITEM NO.: 017

BLOCK 2-DATA ITEM TITLE: **PURCHASE ORDERS**

BLOCK 3-REFERENCE: **SOW 4.3**

1. Purchase Orders (PO) shall include all attachments and revisions and shall contain complete information including all material, services and equipment required for the design, construction, verification, inspection, testing, and support of the ship and its use. Each PO shall be complete and legible as applicable and contain the following:
   a. PO Number.
   b. PO Date of Issue.
   c. Date Purchased Item Released for Manufacture.
   d. Government Contract Number.
   e. Subcontractor or Vendor's Name and Address.
   f. Original Equipment Manufacturers' (OEM) Commercial and Government Entity (CAGE) Code.
   g. Proper Noun Name of procured item.
   h. Government designation of the ship for which material is intended.
   i. Complete identification of each purchase order line item shall include use of the equipment, material specifications, commercial standards, regulatory body requirements, and model number, etc.
   j. Quantity ordered per line item.
   k. Applicable System Specification, Attachment J-1 requirement.
   l. Contractor's design code designation, including drawing number, piece or part number, and material/ local control number.
   m. Logistics Support requirements (VRS, TMs, Crew Familiarization, where applicable).
   n. Contractor's PO Technical Specifications.
   o. Required Test and Inspections.
   p. Warranty, if applicable.
   q. PO Revisions and Amendments.
   r. Additional information as may be required.

BLOCK 5-REVIEW REQ.:

Allow 14 days for Government review and comment.

BLOCK 6-SUBMITTAL SCHEDULE:

14 days after each purchase order or purchase order revision has been signed and until all purchase order activity is complete; R/ASR 14 DARC.

BLOCK 7-DISTRIBUTION	**ADDRESSEE**	**QTY**
	TBD	TBD

NOAA THOMAS JEFFERSON
MCCS CONTRACT DATA REQUIREMENTS

BLOCK 1-DATA ITEM NO.: 018

BLOCK 2-DATA ITEM TITLE: **Engineering Calculation Records (ECRs)**

BLOCK 3-REFERENCE: **SOW 4.3**

BLOCK 4-DATA DESCRIPTION:

The Contractor shall prepare and submit information to support the CDRL deliverable requirements. The following information shall be provided:

1. Engineering System Calculations/Models used to verify system operating parameters in support of validating/verifying system design compliance with performance and/or specification requirements.
2. Software and/or mathematical algorithms used for the modeling and the results of each system calculation effort.
3. Contractor format is acceptable.

BLOCK 5-REVIEW REQ.:

Allow 30 days for NOAA review and comment.

BLOCK 6-SUBMITTAL SCHEDULE:

ASR (to be coordinated with DRA and simulation software) and R/ASR NLT 14 DARC. Revisions shall incorporate resolution of NOAA comments.

BLOCK 7-DISTRIBUTION	**ADDRESSEE**	**QTY**
	TBD	TBD

NOAA THOMAS JEFFERSON
MCCS CONTRACT DATA REQUIREMENTS

BLOCK 1-DATA ITEM NO.: 019

BLOCK 2-DATA ITEM TITLE: SHIP DRAWING INDEX (SDI)

BLOCK 3-REFERENCE: SOW 4.3

BLOCK 4-DATA DESCRIPTION:

The Contractor shall maintain and update the GFI provided, Ship Drawing Index (SDI) spreadsheet, that reflects modifications made to the ship drawing set as part of the new CMCS in Ship Drawings and Associated Lists, Data Item No. 020,

1. The Index shall include the following information:
    a. Drawing title.
    b. Drawing number.
    c. Hull number.
    d. Outstanding engineering change notice numbers.
    e. Latest drawing revision designation.
    f. Actual completion dates and revision dates.
    g. Computer file names.
2. Selected Record Drawings shall be identified.
3. The Index shall be prepared in a commercial spreadsheet or database format capable of being searched and sorted.
4. Changes from the previous SDI submission shall be identified in a revisions column.

BLOCK 5-REVIEW REQ.:

Allow 14 days for NOAA review and comment.

BLOCK 6-SUBMITTAL SCHEDULE:

Concurrent with distribution of Ship Drawings and Associated Lists, Data Item 020, and its revisions, and R/ASR.

BLOCK 7-DISTRIBUTION	**ADDRESSEE**	**QTY**
	TBD	TBD

NOAA THOMAS JEFFERSON
MCCS CONTRACT DATA REQUIREMENTS

BLOCK 1-DATA ITEM NO.: 020

BLOCK 2-DATA ITEM TITLE: **Drawings and Associated Lists (See Attachment 1 to CDRL 020)**

BLOCK 3-REFERENCE: **SOW 4.3**

BLOCK 4-DATA DESCRIPTION:

The Contractor shall prepare and submit Drawings and Associated Lists identified in Attachment 1 to Data Item No. 020.

1. The Drawings and Associated Lists shall include drawings, supporting calculations, associated lists, and their revisions. Additional calculations required to support the design and construction not identified on Attachment 1 to Data Item No. 020 shall be provided in accordance with this Data Item.
2. Drawings and Associated Lists shall provide the design information necessary for installation, assembly, disassembly, repair and maintenance. The drawings shall reflect the end product and provide engineering data sufficient to support modifications to the vessel, logistics support, repair, and maintenance.
3. The Ship Drawing set shall include any applicable rip-out and installation procedures required to supplement the ship drawings and support the modifications required to the vessel.
4. Drawings shall document directly or reference the following details, as applicable, when essential for modifications to the vessel, logistics support, repair, and maintenance:
    a. Performance Ratings.
    b. Dimensional Data.
    c. Critical Assembly Sequences.
    d. Input and Output Characteristics.
    e. Diagram of Mechanical and Electrical Connections.
    f. Physical Characteristics
    g. Parts Lists.
    h. Identification of Exterior Protective Coatings.
    i. Test and Evaluation Criteria for Commissioning.
    j. Equipment Calibration Requirements.
    k. Requirements for Special Environmental Conditions
5. All parameters required to define each unit, assembly, part or material shall be presented on the applicable drawing to define fabrication, acceptance, interface, or installation information and shall include all necessary mechanical dimensions, electrical parameters, physical parameters and environmental conditions.
6. Drawing preparation shall be in accordance with MSC Drawing Standard 803-7080803.
7. Drawings and documentation shall be assigned a Government drawing number and a descriptive computer file name. Drawing numbers shall follow the NOAA CONVENTION. Drawing revisions shall be lettered sequentially. Drawing Title Block shall include the total number of pages on the drawing in the format “Sheet YY of Total”.
8. Drawings shall make reference to and be consistent with other related drawings and other technical documentation. The latest revision of each drawing shall accurately reflect the current status.
9. Drawing numbers alone shall not be used as the associated computer file name but may be included. Computer file names shall be used to save or retrieve drawing files using drawing, viewing, or file management software.
10. A summary of the revisions shall be included on the first sheet of each drawing in a tabular format. When a drawing summary will not fit on the first sheet, a reference shall be made to the sheet(s) where the summary is located. For each revision, the summary shall specify the following:

1) Revision Description.
2) The revised area location by drawing sheet and zone.
3) Revision Date.
4) Originator.
5) Government and Regulatory Body Approval Signatures, as required.
6) Approving correspondence by serial number and date, as applicable.
7) Other data, as may be required

11. Final drawings shall be legible such that every line, number, letter and character is readable.
12. Drawings shall be two or three-dimensional.
13. "Paper space" shall only be used for formats, general notes, and title blocks. All other entities shall be created in "model space," at full size.
14. Viewports shall be placed on one layer and shall be frozen prior to submittal to the Government. All other layers shall be turned on. The Contractor shall identify the drawing layering convention used including the layer name and basic description of entities on that layer. Each drawing shall identify the status of each layer, such as, on, off, or frozen, as applicable.
15. All dimensions shall appear in "decimal" units.

BLOCK 5-REVIEW REQ.:

Allow 30 days for NOAA review and comment, unless otherwise specified on Attachment 1 to Data Item No. 020.

BLOCK 6-SUBMITTAL SCHEDULE:

Drawings and their revisions shall be submitted in accordance with the Schedule(s), Data Item No. 007, and its revisions, and R/ASR 21 DARC.

Revisions shall incorporate resolution of NOAA comments, Revisions required through the Guaranty Period, and additional submittals shall be as specified on Attachment 1 to Data Item No. 020.

BLOCK 7-DISTRIBUTION	**ADDRESSEE**	**QTY**
	TBD	TBD

* Reproducible shall be in AutoCAD™ (versions 2012-2019 acceptable). Media shall be on Compact Disk. Final drawings and lists shall be provided as three (3) paper copies and two (2) electronic copies in both AUTOCAD read/write format and PDF compatible read only format. Redline/strikeout drawings may be provided in PDF only when no AutoCAD version is available.

** Upon mutual agreement between NOAA and the Contractor, hard copy submittals may be submitted with electronic submittals of equivalent quality, including necessary software installations, for intended submittal review and use.

NOAA THOMAS JEFFERSON
MCCS CONTRACT DATA REQUIREMENTS

ATTACHMENT 1 TO DATA ITEM NO. 020

DATA ITEM NO. (BLOCK 1)	DATA ITEM TITLE AND REFERENCE (BLOCKS 2 & 3)	DATA DESCRIPTION (BLOCK 54	REVIEW REQUIREMENTS (BLOCK 5)	SUBMITTAL SCHEDULE (BLOCK 6)	DISTRIBUTION (BLOCK 7)
020-01	New CMCS Drawings and Lists	The Contractor shall prepare a set of new CMCS drawings and lists that include: i. Machinery Control System Block wiring/computer system architecture diagram showing locations of all major equipment, interconnecting cables, UPS, and power supplies ii. CMCS unit assembly drawings, including all operator workstations, Pilothouse Console drop in panel, remote control panels, and local control panel face arrangements, iii. Connection diagrams, schematics, iv. Elementary wiring diagrams v. Hardware procurement specifications This drawing set shall reflect the as-built ship configuration.	Allow 30 days for NOAA review and comment.	See Data Item No. 007	TBD
020-02	Updated Non-CMCS Ship Drawings	The Contractor shall prepare a set of updated redline/strikeout Ship Drawings that reflect the as-built ship configuration. The updated ship drawing package shall include new arrangement drawings for spaces where the new CMCS has affected other arrangement drawings. These drawings and procedures shall be provided as a complete package.	Allow 30 days for NOAA review and comment.	See Data Item No. 007	TBD

NOAA THOMAS JEFFERSON
MCCS CONTRACT DATA REQUIREMENTS

ATTACHMENT 1 TO DATA ITEM NO. 020

DATA ITEM NO. (BLOCK 1)	DATA ITEM TITLE AND REFERENCE (BLOCKS 2 & 3)	DATA DESCRIPTION (BLOCK 54	REVIEW REQUIREMENTS (BLOCK 5)	SUBMITTAL SCHEDULE (BLOCK 6)	DISTRIBUTION (BLOCK 7)
020-03	Updated List of Instrument and Controls (LIC)	An updated version of the List of Instrument and Controls (LIC) Signal List shall be prepared by and provided by the Contractor. The LIC provided as part of this technical specification shall be updated by the Contractor to reflect any modifications identified during ship checks and modifications required to satisfy new system requirements.	Allow 30 days for NOAA review and comment.	See Data Item No. 007	TBD

NOAA THOMAS JEFFERSON
MCCS CONTRACT DATA REQUIREMENTS

BLOCK 1-DATA ITEM NO.: 021

BLOCK 2-DATA ITEM TITLE: **Software Development Plan**

BLOCK 3-REFERENCE: **SOW 4.3**

BLOCK 4-DATA DESCRIPTION:

The Contractor shall prepare and submit a CMCS Software Development Plan to describe the plans for conducting and managing the software development process for the CMCS software product.

1. This plan shall include new development, modification, reuse, reengineering, maintenance, use of COTS software, other new development software, and all other activities related to developing the CMCS software product.
2. The software development plan shall also include a software quality plan.
3. The Contractor shall prepare the plan in accordance with Data Item Description DI-IPSC-81427B. An alternative format may be used if agreed upon between the Contractor and NOAA.

BLOCK 5-REVIEW REQ.:

Allow 14 days for NOAA review and comment.

BLOCK 6-SUBMITTAL SCHEDULE:

30 DAC and R/ASR 30 DARC.

.

BLOCK 7-DISTRIBUTION	**ADDRESSEE**	**QTY**
	TBD	TBD

NOAA THOMAS JEFFERSON
MCCS CONTRACT DATA REQUIREMENTS

BLOCK 1-DATA ITEM NO.: 022

BLOCK 2-DATA ITEM TITLE: **Requirements Traceability Matrix**

BLOCK 3-REFERENCE: **SOW 4.3**

BLOCK 4-DATA DESCRIPTION:

The Contractor shall provide a traceability matrix that provides a flow down of requirements established in the System Architecture and System Requirements, Software and Interface Requirements Specifications, Software and Interface Design Descriptions, and Acceptance Test Procedures.

Contractor format is acceptable. The document shall be provided in electronic format that may be editable.

BLOCK 5-REVIEW REQ.:

Allow 30 days for NOAA review and comment.

BLOCK 6-SUBMITTAL SCHEDULE:

30 ATC and R/ASR 14 DARC.

BLOCK 7-DISTRIBUTION	**ADDRESSEE**	**QTY**
	TBD	TBD

NOAA THOMAS JEFFERSON
MCCS CONTRACT DATA REQUIREMENTS

BLOCK 1-DATA ITEM NO.: 023

BLOCK 2-DATA ITEM TITLE: **System Architecture and Requirements Specification (SARS)**

BLOCK 3-REFERENCE: **SOW 4.3**

BLOCK 4-DATA DESCRIPTION:

The Contractor shall prepare and submit a System Architecture and Requirements Specification. This document shall provide a description of the top-level architecture of the CMCS system and identify and decompose the hardware, software, and operational requirements of the system.

This document shall also allocate system requirements among these items and identify the hardware configuration items, software configuration items and manual operations for this system. Traceability shall be provided from the NOAA Statement of Work through the SARS.

1. This document shall address the CMCS functions and capabilities of the system, including business, organizational and user requirements, safety, security, human factors engineering, interface, operations, and maintenance requirements, along with design constraints and qualification requirements.
2. The Contractor shall follow guidelines provided by IEEE 12207 Standards for Information Technology, Software Life Cycle Processes Part 0 and Part 1 paragraphs 6.25 and 6.26 for format and content requirements in preparation of this document. An alternative format may be used if agreed upon between the Contractor and NOAA.

BLOCK 5-REVIEW REQ.:

Allow 30 days for NOAA review and comment.

BLOCK 6-SUBMITTAL SCHEDULE:

30 DPT System Design Review and R/ASR 14 DARC.

BLOCK 7-DISTRIBUTION	ADDRESSEE	QTY
	TBD	TBD

NOAA THOMAS JEFFERSON
MCCS CONTRACT DATA REQUIREMENTS

BLOCK 1-DATA ITEM NO.: 024

BLOCK 2-DATA ITEM TITLE: **Software Requirements Specification**

BLOCK 3-REFERENCE: **SOW 4.3**

BLOCK 4-DATA DESCRIPTION:

The Contractor shall prepare and submit a Software Requirements Specification (SRS) to describe the total requirement set imposed on the CMCS software product. In addition, this document will define the methods to be used to ensure that each requirement has been met.

1. Traceability shall be provided back to the SARS. Traceability shall be both downward and upward.
2. The SRS shall be developed in accordance with IEEE 830, 1998 Recommended Practice for Software Requirements Specification and the guidelines provided by IEEE 12207 Standards for Information Technology, Software Life Cycle Processes Part 0 and Part 1 paragraph 6.22 for format and content requirements in preparation of this document. An alternative format may be used if agreed upon between the Contractor and NOAA.
3. The CMCS Contractor may elect to provide a single SRS for the CMCS software or may elect to provide multiple SRSs based on the breakdown of the system into major Computer Software Configuration Items (CSCIs or CMCS functionality areas).

BLOCK 5-REVIEW REQ.:

Allow 30 days for NOAA review and comment.

BLOCK 6-SUBMITTAL SCHEDULE:

60 DP PDR and R/ASR 30 DARC

BLOCK 7-DISTRIBUTION	**ADDRESSEE**	**QTY**
	TBD	TBD

BLOCK 1-DATA ITEM NO.: 025

BLOCK 2-DATA ITEM TITLE: **Interface Requirements Specification (IRS)**

BLOCK 3-REFERENCE: **SOW 4.3**

BLOCK 4-DATA DESCRIPTION:

The NOAA Contractor shall prepare and submit an Interface Requirements Specification and Design Document (IRS/IDD) to define the total set of interface requirements imposed on the product HWCIs and SWCIs. In addition, this document will define the methods to be used to verify that each interface requirement has been satisfied. Traceability shall be provided back to the SARS. Traceability shall be both downward and upward.

The Contractor shall follow guidelines provided by IEEE 12207 Standards for Information Technology, Software Life Cycle Processes Part 0 and Part 1 paragraph 6.19 for format and content requirements in preparation of this document. A two- step approach to using the Interface Design Document of IEEE 12207.1 paragraph 6.19 to document the interface requirements and then the interface design can be used. Additional specific requirements are provided below. An alternative format may be used if agreed upon between the Contractor and NOAA.

The CMCS Contractor may elect to provide a single IRS for the software or may elect to provide multiple IRSs based on the breakdown of the system into major CSCIs.

The following topics shall be addressed in the Interface Requirements Specification and Interface Design Description using the format and organization shown below. The numbers designate the paragraph numbers to be used in the document.

1. Scope. This section shall be divided into the following paragraphs.

1.1 Identification. This paragraph shall contain a full identification of the system and the software to which this document applies, including, as applicable, identification number(s), title(s), abbreviation(s), version number(s), and release number(s).

1.2 System overview. This paragraph shall briefly state the purpose of the system and the software to which this document applies. It shall describe the general nature of the system and software; summarize the history of system development, operation, and maintenance; identify the project sponsor, acquirer, user, developer, and support agencies; identify current and planned operating sites; and list any other relevant document.

1.3 Document overview. This paragraph shall summarize the purpose and contents of this document and shall describe any security or privacy considerations associated with its use.

2. Referenced documents. This section shall list the number, title, revision, and date of all documents referenced in this document.

3. Requirements. This section shall be divided into the following paragraphs to specify the requirements imposed on one or more systems, subsystems, configuration items, manual operations, or other system components to achieve one or more interfaces among these entities. Each requirement shall be assigned a project-unique identifier to support testing and traceability and shall be stated in such a way that an objective test can be defined for it. Each requirement shall be annotated with associated qualification method(s) (see section 4) and traceability to system (or subsystem, if applicable) requirements (see section 5.a) if not provided in those sections. The degree of detail to be provided shall be guided by the following rule:

   Include those characteristics of the interfacing entities that are conditions for their acceptance; defer to design descriptions those characteristics that the acquirer is willing to leave up to the developer. If a given

requirement fits into more than one paragraph, it may be stated once and referenced from the other paragraphs. If an interfacing entity included in this specification will operate in states and/or modes having interface requirements different from other states and modes, each requirement or group of requirements for that entity shall be correlated to the states and modes. The correlation may be indicated by a table or other method in this paragraph, in an appendix referenced from this paragraph or by annotation of other requirements in the paragraphs where they appear.

3.1 Interface identification and diagrams. For each interface identified in 1.1, this paragraph shall include a project-unique identifier and shall designate the interfacing entities (systems, configuration items, users, etc.) by name, number, version, and documentation references, as applicable. The identification shall state which entities have fixed interface characteristics (and therefore impose interface requirements on interfacing entities) and which are being developed or modified (thus having interface requirements imposed on them). One or more interface diagrams shall be provided to depict the interfaces.

3.x (Project-unique identifier of interface). This paragraph (beginning with 3.2) shall identify an interface by project-unique identifier, shall briefly identify the interfacing entities, and shall be divided into subparagraphs as needed to state the requirements imposed on one or more of the interfacing entities to achieve the interface. If the interface characteristics of an entity are not covered by this IRS but need to be mentioned to specify the requirements for entities that are, those characteristics shall be stated as assumptions or as "When [the entity not covered] does this, the [entity being specified] shall….," rather than as requirements on the entities not covered by this IRS. This paragraph may reference other documents (such as data dictionaries, standards for communication protocols, and standards for user interfaces) in place of stating the information here. The requirements shall include the following, as applicable, presented in any order suited to the requirements, and there shall not be any differences in these characteristics from the point of view of the interfacing entities (such as different expectations about the size, frequency, or other characteristics of data elements):

a. Priority that the interfacing entity(ies) must assign the interface
b. Requirements on the type of interface (such as real-time data transfer, storage-and-retrieval of data, etc.) to be implemented
c. Required characteristics of individual data elements that the interfacing entity(ies) must provide, store, send, access, receive, etc., such as:
    1) Names/identifiers
        a) Project-unique identifier
        b) Non-technical (natural language) name
        c) DOD standard data element name
        d) Technical name (e.g., variable or field name in code or database)
        e) Abbreviation or synonymous names
    2) Data type (alphanumeric, integer, etc.)
    3) Size and format (such as length and punctuation of a character string)
    4) Units of measurement (such as meters, dollars, nanoseconds)
    5) Range or enumeration of possible values (such as 0-99)
    6) Accuracy (how correct) and precision (number of significant digits)
    7) Priority, timing, frequency, volume, sequencing, and other constraints, such as whether the data element may be updated and whether business rules apply
    8) Security and privacy constraints
    9) Sources (setting/sending entities) and recipients (using/receiving entities)
d. Required characteristics of data element assemblies (records, messages, files, arrays, displays, reports, etc.) that the interfacing entity(ies) must provide, store, send, access, receive, etc., such as:
    1) Names/identifiers
        a) Project-unique identifier
        b) Non-technical (natural language) name
        c) Technical name (e.g., record or data structure name in code or database)
        d) Abbreviations or synonymous names

2) Data elements in the assembly and their structure (number, order, grouping)
3) Medium (such as disk) and structure of data elements/assemblies on the medium
4) Visual and auditory characteristics of displays and other outputs (such as colors, layouts, fonts, icons and other display elements, beeps, lights)
5) Relationships among assemblies, such as sorting/access characteristics
6) Priority, timing, frequency, volume, sequencing, and other constraints, such as whether the assembly may be updated and whether business rules apply
7) Security and privacy constraints
8) Sources (setting/sending entities) and recipients (using/receiving entities)

e. Required characteristics of communication links/bands/frequencies/media and their characteristics
   1) Project-unique identifier(s)
   2) Communication links/bands/frequencies/media and their characteristics
   3) Message formatting
   4) Flow control (such as sequence numbering and buffer allocation
   5) Data transfer rate, whether periodic/aperiodic, and interval between transfers
   6) Routing, addressing, and naming conventions
   7) Transmission services, including priority and grade
   8) Safety/security/privacy considerations, such as encryption, user authentication, compartmentalization, and auditing

f. Required characteristics of protocols the interfacing entity(ies) must use for the interface, such as:
   1) Project-unique identifier(s)
   2) Priority/layer of the protocol
   3) Packeting, including fragmentation and reassembly, routing, and addressing
   4) Legality checks, error control, and recovery procedures
   5) Synchronization, including connection establishment, maintenance, termination
   6) Status, identification, and any other reporting features

g. Other required characteristics, such as physical compatibility of the interfacing entities (dimensions, tolerances, loads, plug compatibility, etc.), voltages, etc.

3.y Precedence and criticality of requirements. This paragraph shall be numbered as the last paragraph in Section 3 and shall specify, if applicable, the order of precedence, criticality, or assigned weights indicating the relative importance of the requirements in this specification. Examples include identifying those requirements deemed critical to safety, to security, or to privacy for purposes of singling them out for special treatment. If all requirements have equal weight, this paragraph shall so state.

4. Qualification provisions. This section shall define a set of qualification methods and shall specify, for each requirement in Section 3, the qualification method(s) to be used to ensure that the requirement has been met. A table may be used to present this information, or each requirement in Section 3 may be annotated with the method(s) to be used. Qualification methods may include:

a. Demonstration. The operation of interfacing entities that relies on observable functional operation not requiring the use of instrumentation, special test equipment, or subsequent analysis.
b. Test: The operation of interfacing entities using instrumentation or special test equipment to collect data for later analysis.
c. Analysis. The processing of accumulated data obtained from other qualification methods. Examples are reduction, interpretation, or extrapolation of test results.
d. Inspection. The visual examination of interfacing entities, documentation, etc.
e. Special qualification methods. Any special qualification methods for the interfacing entities, such as special tools, techniques, procedures, facilities, and acceptance limits.

5. Requirements traceability. For system-level interfacing entities, this paragraph does not apply. For each subsystem-or lower-level interfacing entity covered by this IRS, this paragraph shall contain:

a. Traceability from each requirement imposed on the entity in this specification to the system (or subsystem, if applicable) requirements it addresses. (Alternatively, this traceability may be provided by annotating each requirement in Section 3.)

Note: Each level of system refinement may result in requirements not directly traceable to higher-level requirements. For example, a system architectural design that creates multiple CSCIs may result in requirements about how the CSCIs will interface, even though these interfaces are not covered in system requirements. Such requirements may be traced to a general requirement such as "system implementation" or to the system design decisions that resulted in their generation.

b. Traceability from each system (or subsystem, if applicable) requirement that has been allocated to the interfacing entity and that affects an interface covered in this specification to the requirements in this specification that address it.

6. Notes. This section shall contain any general information that aids in understanding this document (e.g., background information, glossary, rationale). This section shall include an alphabetical listing of all acronyms, abbreviations, and their meanings as used in this document and a list of any terms and definitions needed to understand this document.

A. Appendixes. Appendixes may be used to provide information published separately for convenience in document maintenance (e.g., charts, classified data). As applicable, each appendix shall be referenced in the main body of the document where the data would normally have been provided. Appendixes may be bound as separate documents for ease in handling. Appendixes shall be lettered alphabetically (A, B, etc.).

BLOCK 5-REVIEW REQ.:

Allow 30 days for NOAA review and comment.

BLOCK 6-SUBMITTAL SCHEDULE:

60 DPT PDR and R/ASR 30 DARC

BLOCK 7-DISTRIBUTION	**ADDRESSEE**	**QTY**
	TBD	TBD

BLOCK 1-DATA ITEM NO.: 026

NOAA THOMAS JEFFERSON
MCCS CONTRACT DATA REQUIREMENTS

BLOCK 2-DATA ITEM TITLE: **Software Design Description Document (SDD)**

BLOCK 3-REFERENCE: **SOW 4.3**

BLOCK 4-DATA DESCRIPTION:

The Contractor shall prepare and submit a Software Design Description (SDD) to describe the design of the CMCS CSCI(s). The SDD shall describe CSCI wide design decisions, CSCI architectural design and other detailed design in sufficient detail to facilitate follow on maintenance of the software.

A separate issue of this document shall address the Simulation Modeling System.

1. The Contractor shall follow guidelines provided by IEEE 12207 Standards for Information Technology, Software Life Cycle Processes Part 0 and Part 1 paragraph 6.16 for format and content requirements in preparation of this document. An alternative format may be used if agreed upon between the Contractor and NOAA.
2. The CMCS Contractor may elect to provide a single SDD for the CMCS or may elect to provide multiple SDDs based on the breakdown of the system into major CSCIs or CMCS functionality areas.
3. The SDD shall provide traceability links back from the SDD to the SRS.

BLOCK 5-REVIEW REQ.:

Allow 30 days for NOAA review and comment.

BLOCK 6-SUBMITTAL SCHEDULE:

60 DPT CDR and R/ASR 30 DARC.

Final CMCS SDD shall be provided at final software delivery and updated as required based on design changes after CDR.

BLOCK 7-DISTRIBUTION	**ADDRESSEE**	**QTY**
	TBD	TBD

BLOCK 1-DATA ITEM NO.: 027

BLOCK 2-DATA ITEM TITLE: **Database Design Description Document**

BLOCK 3-REFERENCE: **SOW 4.3**

BLOCK 4-DATA DESCRIPTION:

The Contractor shall prepare and submit a Database Design Description (DBDD) to describe the design of the CMCS CSCI(s). The DBDD shall describe CSCI wide design decisions, CSCI architectural design and other detailed design in sufficient detail to facilitate follow on maintenance of the software.

A separate issue of this document shall address the Simulation Modeling System.

1. The Contractor shall follow guidelines provided by IEEE 12207 Standards for Information Technology, Software Life Cycle Processes Part 0 and Part 1 paragraph 6.4 for format and content requirements in preparation of this document. An alternative format may beused if agreed upon between the Contractor and NOAA.
2. The CMCS Contractor may elect to provide a single DBDD for the CMCS or may elect to provide multiple DBDDs based on the breakdown of the system into major CSCIs or CMCS functionality areas.
3. The DBDD shall provide traceability links back to the SRS.

BLOCK 5-REVIEW REQ.:

Allow 30 days for NOAA review and comment.

BLOCK 6-SUBMITTAL SCHEDULE:

60 DPT CDR and R/ASR 30 DARC. Final CMCS DBDD shall be provided at final software delivery and updated as required based on design changes after CDR.

BLOCK 7-DISTRIBUTION	**ADDRESSEE**	**QTY**
	TBD	TBD

BLOCK 1-DATA ITEM NO.: 028

BLOCK 2-DATA ITEM TITLE: **Human Machine Interface (HMI) Design Guide**

BLOCK 3-REFERENCE: **SOW 4.3**

BLOCK 4-DATA DESCRIPTION:

The Contractor shall prepare and submit a Human Machine Interface (HMI) Design Guide and Report to describe the design methodology and guidelines for developing the CMCS CSCI graphic display screens. In addition, the report shall provide the complete set of graphic display screens, pre-designed trend displays, and data log reporting subsystem, including log sheets.

1. The Contractor shall follow guidelines provided by IEEE 12207 Standards for Information Technology, Software Life Cycle Processes Part 0 and Part 1 paragraph 5.5 for format and content requirements in preparation of this document. An alternative format may beused if agreed upon between the Contractor and NOAA.
2. Mimic Screens to be used in the CMCS shall be provided that portray dynamic control and display of system parameters and status of machinery, electric plant, circuit breakers, valves, tank levels, and controls on schematic representations of machinery systems.
3. The Design Guidelines shall at a minimum address the following aspects of HMI design:
4. General Screen Layout
    a. Types of Windows (Overview Screens, Main Screens, Alarm Screens, and Popup windows, etc.),
    b. Screen components (title bars, alarm windows, time/date stamp, screen navigation controls, etc.),
    c. Screen controls (Control acknowledgement, Override, Out of Commission, etc.)
5. Screen Navigation
    a. Approach – Tabs, Tree, etc.
    b. Input devices
    c. Function Keys
    d. Control transfer procedures
    e. Restricted Access Controls
6. Monitoring Devices for:
    a. Analog value data such as numeric values, bar graphs, meters, counters
    b. Discrete status data such On/Off, Local/Remote, etc.
7. Color Usage, Labels, and Fonts
    a. Alarms Alarm, Warning, and Cue Colors
    b. Labeling guidelines
    c. Fonts, Sizes, and attributes
8. Alarm Handling (Acknowledgement, Active Alarms, Acknowledged Alarms, etc.)
9. Symbol Icon Library for devices such as pumps, valves, piping, major equipment (Gas Turbines, Gear, Diesel Generator Sets, etc.), stand-alone controllers, etc.
10. Abbreviations and units of measure
11. Each submittal shall include a set of electronic files containing HMI mimics

BLOCK 5-REVIEW REQ.:

Allow 30 days for NOAA review and comment.

BLOCK 6-SUBMITTAL SCHEDULE:

60 DPT First HMI Review – Guidelines for Display Screen Preparation, Screen Package Outline, and Hierarchy 60 DPT Second HMI Review – Complete Set of Display Screens

R/ASR 30 DARC.

Final CMCS HMI Report shall be provided at CDR and updated as required based on design changes after CDR.

BLOCK 7-DISTRIBUTION	**ADDRESSEE**	**QTY**
	TBD	TBD

NOAA THOMAS JEFFERSON
MCCS CONTRACT DATA REQUIREMENTS

BLOCK 1-DATA ITEM NO.: 029

BLOCK 2-DATA ITEM TITLE: **Interface Design Description**

BLOCK 3-REFERENCE: **SOW 4.3**

BLOCK 4-DATA DESCRIPTION:

The Contractor shall prepare and submit an Interface Design Description (IDD) to describe the design of the interfaces required by the IRS for the CSCI(s). It will describe CSCI wide interface design decisions, interface architectural design and other detailed design in sufficient detail to facilitate a clear understanding and working knowledge of the interfaces used by the CSCI(s).

1. The Contractor shall follow guidelines provided by IEEE 12207 Standards for Information Technology, Software Life Cycle Processes Part 0 and Part 1 paragraph 6.19 for format and content requirements in preparation of this document.
2. A two-step approach to using the Interface Design Document of IEEE 12207.1 paragraph 6.19 to document the interface requirements and then the interface design can be used. An alternative format may be used if agreed between the Contractor and NOAA.
3. The CMCS Contractor may elect to provide a single IDD for the software or may elect to provide multiple IDDs based on the breakdown of the system into major CSCIs or CMCS functionality areas.
4. The additional specific guidance on format and content in the Interface Requirements Specification in Data Item No. 025 is applicable for the Interface Design Description. Traceability shall be provided back to the IRS.

BLOCK 5-REVIEW REQ.:

Allow 30 days for NOAA review and comment.

BLOCK 6-SUBMITTAL SCHEDULE:

60 DPT CDR and R/ASR 30 DARC. Final CMCS IDD shall be provided at final software delivery and updated as required based on design changes after CDR.

BLOCK 7-DISTRIBUTION	**ADDRESSEE**	**QTY**
	TBD	TBD

BLOCK 1-DATA ITEM NO.: 030

BLOCK 2-DATA ITEM TITLE: **Software Product Specification**

BLOCK 3-REFERENCE: **SOW 4.3**

BLOCK 4-DATA DESCRIPTION:

The Contractor shall prepare and submit a Software Product Specification (SPS) that contains or references the executable software, source files, and software support information, including "as built" design information. Also included in this document are compilation, build, and modification procedures for the software CSCI(s).

The Contractor shall follow guidelines provided by IEEE 12207 Standards for Information Technology, Software Life Cycle Processes Part 0 and Part 1 for requirements in preparation of this document. An alternative format may be used if agreed upon between the Contractor and NOAA.

The specification shall contain the following:

a. Title page or identifier. The document shall include a title page containing, as applicable: document number; volume number; version/revision indicator; security markings or other restrictions on the handling of the document; date; document title; name, abbreviation and any other identifier for the system, subsystem or item to which the document applies; contract number; CDRL item number; organization for which the document has been prepared; name and address of the preparing organization; and distribution statement; and signature blocks for the developer representative authorized to release the document, the acquirer representative authorized to approve the document, and the dates of release/approval. For data in a database or other alternative form, this information shall be included on external and internal labels or by equivalent identification methods.

b. Table of contents. The document shall contain a table of contents providing the number, title and page number of each titled paragraph, figure, table and appendix. For data in a database or other alternative form, this information shall consist of an internal or external table of contents containing pointers to, or instructions for accessing, each paragraph, figure, table and appendix or their equivalents.

c. Page numbering/labeling. Each page shall contain a unique page number and display the document number, including version, volume and date, as applicable. For data in a database or other alternative form, files, screens or other entities shall be assigned names or numbers in such a way that desired data can be indexed and accessed.

d. Response to tailoring instructions. If a paragraph is tailored out of the document, the resulting document shall contain the corresponding paragraph number and title, followed by "This paragraph has been tailored out." For data in a database or other alternative form, this representation need occur only in the table of contents or equivalent.

e. Multiple paragraphs and subparagraphs. Any section, paragraph or subparagraph in this document may be written as multiple paragraphs or subparagraphs to enhance readability.

f. Standard data descriptions. If a data description required by this document has been published in a standard data element dictionary specified in the contract, reference to an entry in that dictionary is preferred over including the description itself.

g. Substitution of existing documents. Commercial or other existing documents may be substituted for all or part of the document if they contain the required data.

The numbers shown designate the paragraph numbers to be used in the document.

1. Scope. This section shall be divided into the following paragraphs.

1.1 Identification. This paragraph shall contain a full identification of the system and the software to which this document applies, including, as applicable, identification number(s), title(s), abbreviation(s), version number(s) and release number(s).

1.2 System overview. This paragraph shall briefly state the purpose of the system and the software to which this document applies. It shall describe the general nature of the system and software; summarize the history of system development, operation and maintenance; identify the project sponsor, acquirer, user, developer, and support agencies; identify current and planned operating sites; and list other relevant documents.

1.3 Document overview. This paragraph shall summarize the purpose and contents of this document and shall describe any security or privacy considerations associated with its use.

2. Referenced documents. This section shall list the number, title, revision and date of all documents referenced in this document

3. Requirements. This section shall be divided into the following paragraphs to achieve delivery of the software and to establish the requirements that another body of software must meet to be considered a valid copy of the CSCI.

3.1 Executable software. This section shall provide, by reference to enclosed or otherwise provided electronic media, the executable software for the CSCI, including any batch files, command files, data files or other software files needed to install and operate the software on its target computer(s). In order for a body of software to be considered a valid copy of the CSCIs executable software, it must be shown to match these files exactly.

3.2 Source files. This section shall provide, by reference to enclosed or otherwise provided electronic media, the source files for the CSCI, including any batch files, command files, data files or other files needed to regenerate the executable software for the CSCI. In order for a body of software to be considered a valid copy of the CSCIs source files, it must be shown to match these files exactly.

3.3 Configuration files. Configuration data files can contain the following:

a. I/O signal data such as start-up values, coefficients, update rates, tunable parameters, gains, engineering units, engineering min/max, node names, IP configurations, timers, startup process, etc.
b. Internal Variable data such as initial start values, refresh rates, IP configurations, start-up processes
c. Data bases that contain records for alarm handling, alarm processing, qualifiers, and logging
d. Data recording, charting, and graphing definitions
e. Operating system directories and paths used in runtime for creation/editions/deletions of files
f. Identifiers of units and hardware contained within as well as initialization sequences and procedures
g. Define routines/subroutine requirements and slaves/master configurations within the architecture
h. Define hierarchies for redundant operators

3.4 Packaging requirements. This paragraph shall state the requirements, if any, for packaging and marking copies of the CSCI.

4. Qualification provisions. This paragraph shall state the method(s) to be used to demonstrate that a given body of software is a valid copy of the CSCI. For example, the method for executable files might be to establish that each executable file referenced in 3.1 has an identically-named counterpart in the software in question and that each such counterpart can be shown via bit-for-bit comparison, check sum or other method, to be identical to the corresponding executable file. The method for source files might be comparable, using the source files referenced in 3.2.

5. Software support information. This section shall be divided into the following paragraphs to provide information needed to support the CSCI.

5.1 "As-built" software design. This paragraph shall contain or reference an appendix or other deliverable document that contains, information describing the design of the "as built" CSCI. The information shall be the same as that required in a Software Design Description (SDD), Interface Design Description (IDD), and Database Design Description (DBDD), as applicable. If these documents or their equivalents are to be delivered for the "as built" CSCI, this paragraph shall reference them. If not, the information shall be provided in this document. Information provided in the headers, comments and code of the source code listings may be referenced and need not be repeated in this section. If the SDD, IDD or DBDD is included in an appendix, the paragraph numbers and page numbers need not be changed.

4.2. Compilation/build procedures. This paragraph shall describe or reference an appendix that describes the compilation/build process to be used to create the executable files from the source files and to prepare the executable files to be loaded into firmware or other distribution media. It shall specify the compiler(s)/assembler(s) to be used, including version numbers; other hardware and software needed, including version numbers; any settings, options, or conventions to be used; and procedures for compiling/assembling, linking and building the CSCI and the software system/subsystem containing the CSCI, including variations for different sites, configurations, versions, etc. Build procedures above the CSCI level may be presented in one SPS and referenced from the others.

5.3 Modification procedures. This paragraph shall describe procedures that must be followed to modify the CSCI. It shall include or reference information on the following, as applicable:

a. Support facilities, equipment and software and procedures for their use
b. Database/data files used by the CSCI and procedures for using and modifying them
c. Design, coding and other conventions to be followed
d. Compilation/build procedures if different from those above
e. Integration and testing procedures to be followed

5.4 Computer hardware resource utilization. This paragraph shall describe the "as built" CSCIs measured utilization of computer hardware resources (such as processor capacity, memory capacity, input/output device capacity, auxiliary storage capacity and communications/network equipment capacity. It shall cover all computer hardware resources included in utilization requirements for the CSCI, in system-level resource allocations affecting the CSCI, or in the software development plan. If all utilization data for a given computer hardware resource is presented in a single location, such as in one SPS, this paragraph may reference that source. Included for each computer hardware resource shall be:

a. The CSCI requirements or system-level resource allocations being satisfied. (Alternatively, the traceability to CSCI requirements may be provided in 6.c.)
b. The assumptions and conditions on which the utilization data are based (for example, typical usage, worst- case usage, assumption of certain events)
c. Any special considerations affecting the utilization (such as use of virtual memory, overlays or multiprocessors or the impacts of operating system overhead, library software or other implementation overhead)
d. The units of measure used (such as percentage of processor capacity, cycles per second, bytes of memory, kilobytes per second)
e. The level(s) at which the estimates or measures have been made (such as software unit, CSCI or executable program)

6. Requirements traceability. This section shall provide:

a. Traceability from each CSCI source file to the software unit(s) that it implements
b. Traceability from each software unit to the source files the implement it
c. Traceability from each computer hardware resource utilization measurement given in 5.4 to the CSCI requirements it addresses. (Alternatively, this traceability may be provided in 5.4)

d. Traceability from each CSCI requirement regarding computer hardware resource utilization to the utilization measurements given in 5.4

Notes. This section shall contain any general information that aids in understanding this document (e.g., background information, glossary, rationale). This section shall include an alphabetical listing of all acronyms, abbreviations and their meanings as used in this document and a list of any terms and definitions needed to understand this document.

A. Appendices. Appendices may be used to provide information published separately for convenience in document maintenance (e.g., charts, classified data). As applicable, each appendix shall be referenced in the main body of the document where the data would normally have been provided. Appendixes shall be lettered alphabetically (A, B, etc.).

BLOCK 5-REVIEW REQ.:

Allow 30 days for NOAA review and comment.

BLOCK 6-SUBMITTAL SCHEDULE:

The CMCS Software Product Specification shall be provided at final software delivery, in accordance with Data Item No. 007, and R/ASR 30 DARC

BLOCK 7-DISTRIBUTION	**ADDRESSEE**	**QTY**
	TBD	TBD

BLOCK 1-DATA ITEM NO.: 031

BLOCK 2-DATA ITEM TITLE: **Software Version Description**

BLOCK 3-REFERENCE: **SOW 4.3**

BLOCK 4-DATA DESCRIPTION:

The Contractor shall prepare and submit a Software Version Description (SVD) that identifies and describes a software version consisting of one or more Computer Software Configuration Items (CSCIs). It is used to release, track, and control software versions.

The Contractor shall follow guidelines provided by IEEE 12207 Standards for Information Technology, Software Life Cycle Processes Part 0 and Part 1 paragraph 6.24 for requirements in preparation of this document. An alternative format may be used if agreed upon between the Contractor and NOAA.

The numbers shown designate the paragraph numbers to be used in the document.

1. Scope. This section shall be divided into the following paragraphs.

1.1 Identification. This paragraph shall contain a full identification of the system and the software to which this Document applies, including, as applicable, identification number(s), title(s), abbreviation(s), version number(s), and release number(s). It shall also identify the intended recipients of the SVD to the extent that this identification affects the contents of the software released (for example, source code may be not released to all recipients.)

1.2 System overview. This paragraph shall briefly state the purpose of the system and the software to which this document applies. It shall describe the general nature of the system and software, summarize the history of system development, operation, and maintenance, identify the project sponsor, acquirer, user, developer, and support agencies, identify the project sponsor, acquirer, user, developer, and support agencies, identify current and planned operating sites; and list other relevant documents.

1.3 Document overview. This paragraph shall summarize the purpose and contents of this document and shall describe any security or privacy considerations associated with its use.

2. Referenced documents. This section shall list the number, title, revision, and date of all documents referenced in this document.

3. Version description. This section shall be divided into the following paragraphs.

3.1 Inventory of materials released. This paragraph shall list by identifying numbers, titles, abbreviations, dates, version numbers, and release numbers, as applicable, all physical media (for example, listings, tapes, disks) and associated documentation that make up the software version being released. It shall include applicable security and privacy considerations for these items, safeguards for handling them, such as concerns for static and magnetic fields, and instructions and restrictions regarding duplication and license provisions.

3.2 Inventory of software contents. This paragraph shall list be identifying numbers, titles, abbreviations, dates, version numbers, and release numbers, as applicable, all computer files that make up the software version being released. Any applicable security and privacy considerations shall be included.

3.3 Changes installed. This paragraph shall contain a list of all changes incorporated into the software version since the previous version. If change classes have been used, such as the Class I/Class II changes in MIL-STD-973, the

changes shall be separated into these classes. This paragraph shall identify as applicable, the problem reports, change proposals, and change notices associated with each change and the effects, if any, of each change on system operation and on interfaces with other hardware and software. This paragraph does to apply to the initial software version.

3.4 Adaptation data. This paragraph shall identify or reference all unique-to-site data contained in the software version. For software versions after the first, this paragraph shall describe changes made to the adaptation data.

3.5 Related documents. This paragraph shall list by identifying numbers, titles, abbreviations, dates, version numbers, and release numbers, as applicable, all documents pertinent to the software version being released but not included in the release.

3.6 Installation instructions. This paragraph shall provide or reference the following information, as applicable:

a. Instructions for installing the software version
b. Identification of other changes that have to be installed for this version to be used, including site-unique adaptation data not included in the software version.
c. Security, privacy, r safety precautions relevant to the installation
d. Procedures for determining whether the version has been installed properly
e. A point of contact to be consulted if there are problems or questions with the installation

3.7 Possible problems and known errors. This paragraph shall identify any possible problems or known errors where the software version at the time of release, any steps being taken to resolve the problems or errors, and instructions (either directly or by reference) for recognizing, avoiding, correcting, or otherwise handling each one. The information presented shall be appropriate to the intended recipient of the SVD (for example, a user agency may need advice on avoiding errors, a support agency for correcting them).

4. Notes. This section shall obtain any general information that aids in understanding this document (e.g., background information, glossary, rationale). This section shall include an alphabetical listing of all acronyms, abbreviations, and their meanings as used in this document and a list of any terms and definitions needed to understand this document.

Appendices. Appendices may be used to provide information published separately for convenience in document maintenance (e.g., charts classified data). As applicable, each appendix shall be referenced in the main body of the document where the data would normally have been provided. Appendixes may be bound as separate documents for ease in handling. Appendixes shall be lettered alphabetically (A, B, etc.).

BLOCK 5-REVIEW REQ.:

Allow 14 days for NOAA review and comment.

BLOCK 6-SUBMITTAL SCHEDULE:

An CMCS Version Description Document shall be delivered by the CMCS Contractor with each deliverable version of the CMCS software package. A VDD shall be provided prior to Software Testing and shall be an entrance criterion for the Test Readiness Review.

BLOCK 7-DISTRIBUTION	**ADDRESSEE**	**QTY**
	TBD	TBD

BLOCK 1-DATA ITEM NO.: 032

BLOCK 2-DATA ITEM TITLE: **Software User's Manual**

BLOCK 3-REFERENCE: **SOW 4.3**

BLOCK 4-DATA DESCRIPTION:

The Contractor shall prepare and submit a Software User Manual (SUM) that tells a hands-on software user or operator how to install and use a Computer Software Configuration Item (CSCI), a group of related CSCI's, or a software system or subsystem. It may also cover other aspects of software operation, such as instructions for operating particular positions, functions or tasks.

The Contractor shall follow guidelines provided by IEEE 12207 Standards for Information Technology, Software Life Cycle Processes Part 0 and Part 1 in preparation of this document. An alternative format may be used if agreed upon between the Contractor and NOAA.

This information included in this document shall be incorporated into a separate volume of the CMCS Technical Manual. The manual shall be prepared in accordance with the following format and content. An alternative format may be used if agreed between the Contractor and NOAA.

1. Scope

1.1 Identification. This paragraph shall contain a full identification of the system and the software to which this document applies, including, as applicable, identification number(s), title(s), abbreviation(s), version number(s), and release number(s).

1.2 System overview. This paragraph shall briefly state the purpose of the system and the software to which this document applies. It shall describe the general nature of the system and software; summarize the history of system development, operation, and maintenance, identify the project sponsor, acquirer, user, developer, and support agencies; identify current and planned operating sites; and list other relevant documents.

1.3 Document overview. This paragraph shall summarize the purpose and contents of this document and shall describe any security or privacy considerations associated with its use.

2. Referenced documents. This section shall list the number, title, revision, and date of all documents referenced in this document.

3. Software summary. This section shall be divided into the following paragraphs

3.1 Software application. This paragraph shall provide a brief description of the intended uses of the software. Capabilities, operating improvements, and benefits expected from its use shall be described.

3.2 Software inventory. This paragraph shall identify all software files, including databases and data files that must be installed for the software to operate. The identification shall include security and privacy considerations for each file and identification of the software necessary to continue or resume operation in case of an emergency.

3.3 Software environment. This paragraph shall identify the hardware, software, manual operations, and other resources needed for a user to install and run the software. Included, as applicable, shall be identification of:

a. Computer equipment that must be present, including amount of memory needed, amount of auxiliary

storage needed, and peripheral equipment such as printers and other input/output devices
b. Communications equipment that must be present
c. Other software that must be present, such as operating systems, databases, data files, utilities, and other supporting systems
d. Forms, procedures, or other manual operations that must be present
e. Other facilities, equipment, or resources that must be present

3.4 Software organization and overview of operation. This paragraph shall provide a brief description of the organization and operation of the software from the user's point of view. The description shall include, as applicable:

a. Logical components of the software, from the user's point of view, and an overview of the purpose/operation of each component
b. Performance characteristics that can be expected by the user, such as:

1) Types, volumes, rate of inputs accepted
2) Types, volumes, accuracy, rate of outputs that the software can produce
3) Typical response time and factors that affect it
4) Typical processing time and factors that affect it
5) Limitations, such as number of events that can be tracked
6) Error rate that can be expected
7) Reliability that can be expected

c. Relationship of the functions performed by the software with interfacing systems, organizations, or positions
d. Supervisory controls that can be implemented (such as passwords) to manage the software

3.5 Contingencies and alternate states and modes of operation. This paragraph shall explain differences in what the user will be able to do with the software at times of emergency and in various states and modes of operation, if applicable.

3.6 Security and privacy. This paragraph shall contain an overview of the security and privacy considerations associated with the software. A warning shall be included regarding making unauthorized copies of software or documents, if applicable.

3.7 Assistance and problem reporting. This paragraph shall identify points of contact and procedures to be followed to obtain assistance and report problems encountered in using the software.

4. Access to the software. This section shall contain step-by-step procedures oriented to the first time/occasional user. Enough detail shall be presented so that the user can reliably access the software before learning the details of its functional capabilities. Safety precautions, marked by WARNING or CAUTION, shall be included where applicable.

4.1 First-time user of the software. This paragraph shall be divided into the following subparagraphs.

4.2 Equipment familiarization. This paragraph shall describe the following as appropriate:

a. Procedures for turning on power and making adjustments
b. Dimensions and capabilities of the visual display screen
c. Appearance of the cursor, how to identify an active cursor if more than one cursor can appear, how to position a cursor, and how to use a cursor
d. Keyboard layout and role of different types of keys and pointing devices
e. Procedures for turning power off if special sequencing of operations is needed

4.3 Access control. This paragraph shall present an overview of the access and security features of the software that are visible to the user. The following items shall be included, as applicable

a. How and from whom to obtain a password
b. How to add, delete, or change passwords under user control
c. Security and privacy considerations pertaining to the storage and marking of output reports and other media that the user will generate

4.4 Installation and setup. This paragraph shall describe any procedures that the user must perform to be identified or authorized to access or install software on the equipment, to perform the installation, to configure the software, to delete or overwrite former files or data, and to enter parameters for software operation.

4.5 Initiating a session. This paragraph shall provide step-by-step procedures for beginning work, including any options available. A checklist for problem determination shall be included in case difficulties are encountered.

4.6 Stopping and suspending work. This paragraph shall describe how the user can cease or interrupt use of the software and how to determine whether normal termination or cessation has occurred.

5. Processing reference guide. This section shall provide the user with procedures for using the software. If procedures are complicated or extensive, additional Sections 6, 7 may be added in the same paragraph structure as this section and with titles meaningful to the sections selected. The organization of the document will depend on the characteristics of the software being documented. For example, one approach is to base the sections on the organizations in which users work, their assigned positions, their work sites, or the tasks they must perform. For other software, it may be more appropriate to have Section 5 be a guide to menus, Section 6 be a guide to the command language used, and Section 7 be a guide to functions. Detailed procedures are intended to be presented in subparagraphs of paragraph 5.3. Depending on the design of the software, the subparagraphs might be organized on a function-by-function, menu-by-menu, transaction-by-transaction, or other basis. Safety precautions, marked by WARNING or CAUTION, shall be included where applicable.

5.1 Capabilities. This paragraph shall briefly describe the interrelationships of the transactions, menus, functions, or other processes in order to provide an overview of the use of the software.

5.2 Conventions. This paragraph shall describe any conventions used by the software, such as the use of colors in displays, the use of audible alarms, the use of abbreviated vocabulary, and the use of rules for assigning names or codes.

5.3 Processing procedures. This paragraph shall explain the organization of subsequent paragraphs, e.g., by function, by menu, by screen. Any necessary order in which procedures must be accomplished shall be described.

5.3.x (Aspect of software use). The title of this paragraph shall identify the function, menu, transaction, or other process being described. This paragraph shall describe and give options and examples, as applicable, of menus, graphical icons, data entry forms, user inputs, inputs from other software or hardware that may affect the software's interface with the user, outputs, diagnostic or error messages or alarms, and help facilities that can provide on-line descriptive or tutorial information. The format for presenting this information can be adapted to the particular characteristics of the software, but a consistent style of presentation shall be used, i.e., the descriptions on menus shall be consistent and the descriptions of transactions shall be consistent among themselves.

5.4 Related processing. This paragraph shall identify and describe any related batch, offline, or background processing performed by the software that is not invoked directly by the user and is not described in paragraph 5.3. Any user responsibilities to support this process shall be specified.

5.5 Data backup. This paragraph shall describe procedures for creating and retaining backup data that can be used to replace primary copies of data in event of errors, defects, malfunctions, or accidents.

5.6 Recovery from errors, malfunctions, and emergencies. This paragraph shall present detailed procedures for restart or recovery from errors or malfunctions occurring during processing and for ensuring continuity of operations in the event of emergencies.

5.7 Messages. This paragraph shall list, or refer to an appendix that lists, all messages, diagnostic messages, and information messages that can occur while accomplishing any of the user's functions. The meaning of each message and the action that should be taken after each such message shall be identified and described.

5.8 Quick-reference guide. If appropriate to the software, this package shall provide or reference a quick-reference card or page for using the software. This quick-reference guide shall summarize, as applicable, frequently used function keys, control sequences, formats, commands, or other aspects of software use.

Notes. This section shall contain any general information that aids in understanding this document (e.g., background information, glossary, rationale). This section shall include an alphabetical listing of all acronyms, abbreviations, and their meanings as used in this document and a list of any terms and definitions needed to understand this document. If Section 5 has been expanded into section(s) 6 and 7, this section shall be numbered as the next section following section n.

A. Appendices. Appendices may be used to provide information published separately for convenience in document maintenance (e.g., charts classified data). As applicable, each appendix shall be referenced in the main body of the document where the data would normally have been provided. Appendixes may be bound as separate documents for ease in handling. Appendixes shall be lettered alphabetically (A, B, etc.).

BLOCK 5-REVIEW REQ.:

Allow 30 days for NOAA review and comment.

BLOCK 6-SUBMITTAL SCHEDULE:

An CMCS SUM shall be delivered 60 DPT shipboard Dock Trials for review and comment.
Subsequent versions of the SUM shall be delivered 30 days after receipt of comments
as required

BLOCK 7-DISTRIBUTION	**ADDRESSEE**	**QTY**
	TBD	TBD

NOAA THOMAS JEFFERSON
MCCS CONTRACT DATA REQUIREMENTS

BLOCK 1-DATA ITEM NO.: 033

BLOCK 2-DATA ITEM TITLE: Firmware Support Manual

BLOCK 3-REFERENCE: SOW 4.3

BLOCK 4-DATA DESCRIPTION:

The Contractor shall prepare and submit a Firmware Support Manual (FSM) that provides the information needed to program and reprogram the firmware devices of a system. It applies to read only memories (ROMs), Programmable ROMs (PROMs), Erasable PROMs (EPROMs), and other firmware devices.

The FSM shall describe the firmware devices and the equipment, software, and procedures needed to erase firmware devices, loading firmware, verifying the load process, and marking the loaded firmware devices.

The Firmware Support Manual shall be prepared in accordance with the following format and content. An alternative format may be used if agreed between the Contractor and NOAA.

This information included in this document shall be incorporated into a separate volume of the CMCS Technical Manual.

1. Scope. This section shall be divided into the following paragraphs.

1.1 Identification. This paragraph shall contain a full identification of the system, software, and firmware devices to which this document applies, including, as applicable, identification number(s), title(s), abbreviation(s), version number(s), and release number(s) of the system and software and manufacturer's name and model number for each firmware device.

1.2 System overview. This paragraph shall briefly state the purpose of the system and the software to which this document applies. It shall describe the general nature of the system and software; summarize the history of system development, operation, and maintenance; identify the project sponsor, acquirer, user, developer, and support agencies; identify current and planned operating sites; and list other relevant documents.

1.3 Document overview. This paragraph shall summarize the purpose and contents of this document and shall describe any security or privacy considerations associated with its use.

2. Referenced documents. This section shall list the number, title, revision, and date of all documents referenced in this document.

3. Firmware programming instructions. This section shall be divided into the following paragraphs.

3.x Description of pre-programmed device. This paragraph shall:

a. Identify by manufacturer's name and model number the firmware device to be programmed

b. Provide a complete physical description of the firmware device, including the following, as applicable:

1) Memory size, type, speed, and configuration (such as 64Kx1, 8Kx8)
2) Operating characteristics (such as access time, power requirements, logic levels)
3) Pin functional descriptions
4) Logical interfaces (such as addressing scheme, chip selection)
5) Internal and external identification scheme used
6) Timing diagrams

c. Describe the operational and environmental limits to which the firmware device may be subjected and still maintain satisfactory operation

3.x.2 Software to be programmed into the firmware device. This paragraph shall identify by project-unique identifier(s) the software to be programmed into the firmware device.

3.x.3 Programming equipment. This paragraph shall describe the equipment to be used for programming and reprogramming the firmware device. It shall include computer equipment, general purpose equipment, and special equipment to be used for device erasure, loading, verification, and marking, as applicable. Each piece of equipment shall be identified by manufacturer name, model number, and any other information that is necessary to uniquely identify that piece of equipment. A description of each piece of equipment shall be provided, including its purpose, usage, and major capabilities.

3.x.4 Programming software. This paragraph shall describe the software to be used for programming and reprogramming the firmware device. It shall include software to be used for device erasure, loading, verification, and marking, as applicable. Each software item shall be identified by vendor's name, software name, number, version/release, and any other information necessary to uniquely identify the software item. A description of each software item shall be provided, including its purpose, usage, and major capabilities.

3.x.5 Programming procedures. This paragraph shall describe the procedures to be used for programming and reprogramming the firmware device. It shall include procedures to be used for device erasure, loading, verification, and marking, as applicable. All equipment and software necessary for each procedure shall be identified, together with any security and privacy measures to be applied.

3.x.6 Installation and repair procedures. This paragraph shall contain the installation, replacement, and repair procedures for the firmware device. This paragraph shall also include remove-and-replace procedures, device addressing scheme and implementation, description of the host board layout, and any procedures for ensuring continuity of operations in the event of emergencies. Safety precautions, marked by WARNING or CAUTION, shall be included where applicable.

3.x.7 Vendor information. This section shall include or reference any relevant information supplied by the vendor(s) of the firmware device, programming equipment, or programming software.

4. Notes. This section shall contain any general information that aids in understanding this document (e.g., background information, glossary, rationale). This section shall include an alphabetical listing of all acronyms, abbreviations, and their meanings as used in this document and a list of any terms and definitions needed to understand this document.

A. Appendices. Appendices may be used to provide information published separately for convenience in document maintenance (e.g., charts classified data). As applicable, each appendix shall be referenced in the main body of the document where the data would normally have been provided. Appendixes may be bound as separate documents for ease in handling. Appendixes shall be lettered alphabetically (A, B, etc.).

BLOCK 5-REVIEW REQ.:

Allow 30 days for NOAA review and comment.

BLOCK 6-SUBMITTAL SCHEDULE:

The FSM shall be submitted 90 days before Factory Acceptance Testing. R/ASR, 30 DARC.

BLOCK 7-DISTRIBUTION ADDRESSEE QTY

TBD	TBD

July 6, 2009

BLOCK 1-DATA ITEM NO.: 034

BLOCK 2-DATA ITEM TITLE: **Software Transition Plan**

BLOCK 3-REFERENCE: **SOW 4.3**

BLOCK 4-DATA DESCRIPTION:

The Contractor shall prepare and submit a Software Transition Plan that identifies the hardware, software, and other resources needed for life cycle support of deliverable software and describes the developer's plans for transitioning deliverable items to the support agency.

This plan shall include details on all software and hardware required to modify, configure and update the CMCS software/programs, including application software, databases, configuration files, PLC programs, firmware and HMI. The Contractor shall identify all required support software and hardware and provide instructions on how to use each item.

The Software Transition Manual shall be prepared in accordance with the following format and content. An alternative format may be used if agreed upon between the Contractor and NOAA.

1. Scope. This section shall be divided into the following paragraphs.

1.1 Identification. This paragraph shall contain a full identification of the system and the software to which this document applies, including, as applicable, identification number(s), title(s), abbreviation(s), version number(s), and release number(s).

1.2 System overview. This paragraph shall briefly state the purpose of the system and the software to which this document applies. It shall describe the general nature of the system and software, summarize the history of system development, operation, and maintenance; identify the project sponsor, acquirer, user, developer, and support agencies; identify current and planned operating sites; and list other relevant documents.

1.3 Document overview. This paragraph shall summarize the purpose and contents of this document and shall describe any security or privacy considerations associated with its use.

1.4 Relationship to other plans. This paragraph shall describe the relationship, if any, of the Software Transition Plan to other management plans.

2. Referenced documents. This section shall list the number, title, revision, and date of all documents referenced in this document.

3. Software support resources. This section shall be divided into paragraphs to identify and describe the resources needed to support the deliverable software. These resources shall include items needed to control, copy, and distribute the software and its documentation, and to specify, design, implement, document, test, evaluate, control, copy, and distribute modifications to the software.

3.1 Facilities. This paragraph shall describe the facilities needed to support the deliverable software. These facilities may include special buildings, rooms, mock-ups, building features such as raised flooring or cabling, building features to support security and privacy requirements (TEMPEST shielding, vaults, etc.), building features to support safety requirements (smoke alarms, safety glass, etc.), special power requirements, and so on. The purpose of each item shall be described. Diagrams may be included as applicable.

3.2 Hardware. This paragraph shall identify and describe the hardware and associated documentation needed to support the deliverable software. This hardware may include computers, peripheral equipment, hardware simulators, stimulators, emulators, diagnostic equipment, and non-computer equipment. The description shall include:

a. Specific models, versions, and configurations
b. Rationale for the selected hardware
c. Reference to user/operator manuals or instructions for each item, as applicable
d. Identification of each hardware item and document as acquirer-furnished, an item that will be delivered to the support agency, an item the support agency is known to have, an item the support agency must acquire or other description of status
e. If items must be acquired, information about a current source of supply, including whether the item is currently available and whether it is expected to be available at the time of delivery
f. Information about manufacturer support, licensing, and data rights, including whether the item is currently supported by the manufacturer, whether it is expected to be support at the time of delivery, whether licenses will be assigned to the support agency, and the terms of such licenses
g. Security and privacy considerations, limitations, or other items of interest

3.3 Software. This paragraph shall identify and describe the software and associated documentation needed to support the deliverable software. This software may include computer-aided software engineering (CASE) tools, data in these tools, compilers, tests tools, test data, simulations, emulation's, utilities, configuration management tools, databases and data files, and other software. The description shall include:

a. Specific names, identification numbers, version numbers, release numbers, and configurations, as applicable.
b. Rationale for the selected software
c. Reference to user/operator manuals or instructions for each item, as applicable
d. Identification of each software item and document as acquirer-furnished, an item that will be delivered to the support agency, an item the support agency is known to have, an item the support agency must acquire, or other description of status.
e. If items must be acquired, information about a current source of supply, including whether the item is currently available and whether it is expected to be available at the time of delivery.
f. Information about vendor support, licensing, and data rights, including whether the item is currently supported by the vendor, whether it is expected to be supported at the time of delivery, whether license will be assigned to the support agency, and the terms of such licenses.
g. Security and privacy considerations, limitations, or other items of interest

3.4 Other documentation. This paragraph shall identify any other documentation needed to support the deliverable software. The list will include, for example, plans, reports, studies, specifications, design descriptions, test cases/procedures, test reports, user/operator manuals, and support manuals for the deliverable software. This paragraph shall provide:

a. Names, identification numbers, version numbers, and release numbers, as applicable
b. Rationale for including each document in the list
c. Identification of each document as acquirer-furnished, an item that will be delivered to the support agency, an item the support agency is known to have, an item the support agency must acquire, or other description of status
d. If a document must be acquired, information about where to acquire it
e. Information about licensing and data rights
d. Security and privacy considerations, limitations, or other items of interest

3.5 Personnel. This paragraph shall describe the personnel needed to support the deliverable software, including anticipated number of personnel, types and levels of skills and expertise, and security clearance. This paragraph shall cite, as applicable, actual staffing on the development project as a basis for the staffing needs cited.

3.6 Other resources. This paragraph shall identify any other resources needed to support the deliverable software. Included may be consumables such as magnetic tapes and diskettes, together with an estimate of the type and number that should be acquired.

3.7 Interrelationship of components. This paragraph shall identify the interrelationships of the components identified in the preceding paragraphs. A figure may be used to show the interrelationships.

4. Recommended procedures. This section shall be divided into paragraphs as needed to describe any procedures, including advice and lessons learned, that the developer may wish to recommend to the support agency for supporting the deliverable software and associated support environment.

5. Training. This section shall be divided into paragraphs as appropriate to describe the developer's plans for training support personnel to support of the deliverable software. This section shall include:

a. The schedule, duration, and location for the training
b. The delineation between classroom training and "hands-on" training
c. Provision (either directly or by reference) for:

1) Familiarization with the operational software and target computer(s)
2) Familiarization with the support software and host system

6. Anticipated areas of change. This section shall describe anticipated areas of change to the deliverable software.

7. Transition planning. This section shall be divided into paragraphs as needed to describe the developer's plans for transitioning the deliverable software to the support agency. This section shall address the following.

a. All activities to be performed to transition the deliverable software to the support agency. These activities may include planning/coordination meetings, preparation of items to be delivered to the support agency, packaging, shipment, installation, and checkout of the software support environment, packaging, shipment, installation, and checkout of the operational software, and training of support personnel.
b. Roles and responsibilities for each activity
c. The resources needed to carry out the transition activities and the source from which each resource will be provided.
d. Schedules and milestones for conducting the transition activities. These schedules and milestones shall e compatible with the contract master schedule.
e. Procedures for installation and checkout of deliverable items in the support environment

8. Notes. This section shall contain any general information that aids in understanding this document (e.g., background information, glossary, rationale). This section shall include an alphabetical listing of all acronyms, abbreviations, and their meanings as used in this document and a list of any terms and definitions needed to understand this document.

A. Appendices. Appendices may be used to provide information published separately for convenience in document maintenance (e.g. charts classified data). As applicable, each appendix shall be referenced in the main body of the document where the data would normally have been provided. Appendixes may be bound as separate documents for ease in handling. Appendixes shall be lettered alphabetically (A, B, etc.).

BLOCK 5-REVIEW REQ.:

Allow 14 days for NOAA review and comment.

BLOCK 6-SUBMITTAL SCHEDULE:

The Software Transition Plan shall be submitted NLT 60 days after system delivery to NOAA. R/ASR, 30 DARC

BLOCK 7-DISTRIBUTION	ADDRESSEE	QTY
	TBD	TBD

BLOCK 1-DATA ITEM NO.: 035

BLOCK 2-DATA ITEM TITLE: **Recommended Spares Listing, Statistics and Locations**

BLOCK 3-REFERENCE: **SOW 4.8**

BLOCK 4-DESCRIPTION:

1. The Contractor shall prepare a recommended list and shall provide a tabulated list of spares for 30-day, one year, and five-year time periods.

2. The list shall contain a minimum of one (1) of each type of electronic module or printed circuit board.

3. The list shall give a full description of each part with component manufacturer's part number, ordering data, including source for the part, and (NSN) National Stock Number if available. Parts shall be priced individually.

4. A recommendation shall be included on where the spares should be located.

Contactor format is acceptable.

BLOCK 5-REVIEW REQ.:

NOAA approval required for content. Allow 14 days for NOAA review and approval.

BLOCK 6-SUBMITTAL SCHEDULE:

NLT 90 DAC and R/ASR 14 DARC, or the need for change is identified

BLOCK 7-DISTRIBUTION	**ADDRESSEE**	**QTY**
	TBD	TBD

BLOCK 1-DATA ITEM NO.: 037

BLOCK 2-DATA ITEM TITLE: EQUIPMENT LOGISTICS SUPPORT INFORMATION (LSI) PACKAGES

BLOCK 3-REFERENCE: SOW 4.8

BLOCK 5-DESCRIPTION:

The Contractor shall prepare and submit Equipment Logistics Support Information (LSI) Packages that consist of the Original Equipment Manufacturers (OEM) commercially available data (supplemented if required) for all equipment, components, assemblies, and subassemblies that are either repairable or maintenance worthy, and shall include Commercial Manuals. When the primary manufacturer incorporates components, assemblies, or subassemblies from another manufacturer into his equipment, the primary manufacturer will downflow the LSI Package requirements set forth herein and forward the OEM's commercially available data (supplemented if required) for those components, assemblies, or subassemblies with his own data.

1. LSI Packages shall include OEM parts list information for all equipment, components, assemblies, and subassemblies provided.
2. Parts lists shall include the following information:

    a. Model or Part Number
    b. Part Description
    c. End Item Application
    d. Manufacturer
    e. CAGE Code
    f. Quantity per component
    g. Drawing number
    h. Location (space on the ship where the unit is installed)
    i. Unit of Issue
    j. Recommended allowance
    k. Unit price
    l. Total price

3. Recommended repair parts allowance shall be sufficient range and depth to provide one-year preventive maintenance and 10 years of corrective maintenance.
4. The Contractor shall submit LSI Packages in complete package form for all equipage and each end item and its components (all data pertaining to an end item shall be submitted as a package and not incrementally).
5. Installed equipment and/or components considered not repairable will be identified by the Contractor and listed in separate LSI Packages in accordance with the Expanded Ship Work Breakdown Structure (ESWBS) identified in NAVSEA S9040-AA-IDX-010/SWBS 5D and NAVSEA S9040-AA-IDX-020/SWBS 5D
6. In the event of foreign manufactured equipment, Equipment LSI packages shall identify U.S./stateside suppliers for material support and shall be provided in the English language.

BLOCK 5-REVIEW REQ.:

NOAA approval required for completeness. NOAA will identify any supplemental information required. Allow 60 days for NOAA review and comment.

BLOCK 6-SUBMITTAL SCHEDULE:

First submittal NLT 60 days after release of equipment for manufacture or release of equipment purchase order when purchased off-the-shelf. Revisions to Equipment LSI packages shall include all NOAA requests for supplemental information. Resubmittal due NLT 15 days after design changes and/or when Original Equipment Manufacturer (OEM) equipment changes are identified. Incremental submissions of revised packages are acceptable.

BLOCK 7-DISTRIBUTION	**ADDRESSEE**	**QTY**
	TBD	TBD

BLOCK 1-DATA ITEM NO.: 039

BLOCK 2-DATA ITEM TITLE: **CREW TRAINING PLAN**

BLOCK 3-REFERENCE: **SOW 4.7**

BLOCK 4-DESCRIPTION:

The Contractor shall prepare and submit a Crew Plan to identify the process to provide training for ship's force personnel to orient the crew with the new CMCS equipment, basic operation, and specific operation, troubleshooting, and maintenance requirements.

1. The plan shall provide the details as to how the training shall be implemented and managed. The plan shall include the proposed schedule, curriculum, instructor qualifications, resource requirements, follow-on recommendations, key personnel and coordination requirements.
2. An instruction syllabus that provides detailed course technical data and information to be used by the instructor in presenting each lesson for the required topics shall also be included in the plan.

BLOCK 5-REVIEW REQ.:

NOAA approval required for content and adequacy of scheduling. Allow 30 days for NOAA review and comment.

BLOCK 6-SUBMITTAL SCHEDULE:

Crew Training Plan with proposed schedule NLT 60 DPT Test Readiness Review. R/ASR 30 DARC. Updated crew training schedule 6 months prior to crew training; R/ASR 30 DARC.

BLOCK 7-DISTRIBUTION	**ADDRESSEE**	**QTY**
	TBD	TBD

BLOCK 1-DATA ITEM NO.: 040

BLOCK 2-DATA ITEM TITLE: **STUDENT AND INSTRUCTOR GUIDES**

BLOCK 3-REFERENCE: **SOW 4.7**

BLOCK 4-DESCRIPTION:

The Contractor shall prepare and submit Student and Instructor Guides to be used for the crew familiarization that consist of applicable sections of approved technical manuals, ship/equipment drawings, narrative descriptions, diagrams, sketches, charts, graphs, pictures, and other material to support the information presented in the course.

1. The guides shall include, as a minimum, ship orientation, start-up, operation, shutdown procedures, and basic maintenance and troubleshooting for all equipment and systems.
2. Final submittal shall include corrected student guides shall include an electronic copy of the material in editable format.
3. These guides shall be marked “For Familiarization Purposes Only.”
4. The Instructor Guides shall be prepared in standard training format (Navy or Vocational are acceptable). The Instructor Guide shall include all overhead or visual aids that are to be utilized.

BLOCK 5-REVIEW REQ.:

Allow 30 days for NOAA review and comment.

BLOCK 6-SUBMITTAL SCHEDULE:

Initial submittal due 180 DPT conduct of crew familiarization; R/ASR 30 DARC; Final NLT 30 DPT conduct of crew familiarization, R/ASR 30 DARC.

BLOCK 7-DISTRIBUTION	**ADDRESSEE**	**QTY**
	TBD	TBD

NOAA THOMAS JEFFERSON
MCCS CONTRACT DATA REQUIREMENTS

BLOCK 1-DATA ITEM NO.: 042

BLOCK 2-DATA ITEM TITLE: **TECHNICAL PUBLICATIONS/EQUIPMENT TECHNICAL MANUALS AND SUPPLEMENTAL DATA**

BLOCK 3-REFERENCE: **SOW 4.3**

BLOCK 4-DATA DESCRIPTION:

The Contractor shall prepare and submit CMCS technical manual information.

1. Technical publications/equipment technical manuals shall be in sufficient depth for operation and maintenance of equipment by the intended operator/user without the services of a manufacturer's representative.

1. Manuals shall include all information necessary to perform maintenance and shall include the following OEM information for all equipment, components, assemblies, and subassemblies provided.

2. Referenced documents that are pertinent to information that is required to maintain, develop, and/or support the equipment shall be included as part of as part of this CDRL 042.

3. Commercial manuals may be included as part of the technical manual set when the contents of the commercial manual meet the requirements of an equipment manual. These commercial manuals shall meet the requirements of MIL-DTL- 24784/4B. Acceptance of a manual will not be based on content alone, but on the convenience of using the manuals. For example, legibility and size must be taken into consideration. (Manuals with pages smaller than 4 by 8 inches or greater than 17 by 11 inches, or with smaller than 8-point type for text, or 6-point type for parts list, are not practical and will be reviewed on a case by case basis). Printed copies must be clear and legible and must be permanently bound to preserve the manual in a shipboard environment. Manuals that are 2 inches or greater in depth shall be tabbed to facilitate the locating of specific sections.

4. Format for the technical manual shall include:

5. Technical data does not need to be provided in the order listed below

6. Cover and title pages of technical manual shall contain the following information:

    i. Manufacturer’s Name and Address
    ii. Equipment Name and Application
    iii. Hull Number and Ship Class
    iv. National Oceanic and Atmospheric Administration
    v. Technical Manual Identification Number and National Stock Number
    vi. Date of Applicability

7. Safety Precautions (Cautions, Warnings, and Notes)

8. General Theory of Operation

    i. Complete functional description of CMCS equipment based on a block diagram,
    ii. Complete description of the arrangement of equipment with diagrams showing arrangement of all equipment in the applicable units and identification of each piece of equipment by name and find number.
    iii. Tabulation of machinery units by nomenclature, including design functions and rating.
    iv. Complete explanation of mechanical features using block diagrams or cutaway drawings
    v. Equipment/component characteristic data, such as rating, including model numbers, and serial number
    vi. Major assemblies broken into individual circuits, accompanied by complete circuit analysis keyed to a simplified schematic
    vii. Brief descriptions of complex and unusual circuits

9. Preparation for use, operating environment, installation, and initial adjustment instructions

10. Operational Instructions including where applicable with operating procedures for various modes, such as**:** at-anchor, warm-up, underway (transit), underway (various mission operating conditions), and procedures for all changes between the different modes. Equipment required to operate at the various modes shall be identified.

11. Maintenance Instructions (Preventive and Corrective)

12. Cleaning and Lubrication Instructions

13. Performance Verification and Test Features

14. Frequency of Adjustment/Test Equipment

15. Troubleshooting Instructions – Troubleshooting instructions shall include one-line function diagrams that extend beyond CMCS interface point all the way to sensor, transducer, or actuator.

16. The CMCS set of technical manuals shall detail how the COTS components integrate together and how to troubleshoot problems and determine which component is faulty to the Line Replaceable Unit. The manual set shall include a system level technical manual that provides a road map including single function diagram for troubleshooting hardware and software logic with cross references to equipment level documentation. It shall provide a complete path through the various COTS manuals, CMCS equipment level manuals, and drawings all the way through to the final shipboard equipment and machinery plant sensor/control element. The technical manual set shall include not only the CMCS remote control system.

17. Diagrams, Illustrations, Wiring Diagrams, and Schematics

18. Parts List Data - The parts list will identify all parts necessary to provide for 100% bill of material. The following requirements apply to the parts list:

    i. Original Equipment Manufacturer (OEM) part number, OEM Commercial (CAGE) code, if available, or OEM Description, address and telephone number
    ii. All parts shall be keyed (using index numbers) to exploded view illustrations showing their relationship.
    iii. Parts in the listings shall be grouped by assemblies, subassemblies, and modules. Parts shall be identified in the assembly in which they are components.

7. Supplemental data shall be added and properly identified to overcome any technical manual deficiencies.

8. The writing style shall ensure that manuals are understood and used by operation, installation and maintenance personnel. Mathematical explanations will not be presented unless no other method is suitable. Manufacturer's literature generally intended for sales promotion will not be accepted as meeting requirements for manuals. Manufacturer's technical data bulletins or cut sheets will be provided. When the primary equipment manufacturer incorporates components from another manufacturer into his equipment, the primary manufacturer will furnish complete documentation on purchased components. Layout shall conserve space without lessening usability or clarity of material. Blank pages and spaces shall be avoided whenever possible. Leading spacing shall be used for best legibility and conservation of space. Double spacing of text is not acceptable. Slight variations are permitted to avoid layout practices that would result in the following:

    a. The first line of the paragraph being at the bottom of the page.
    b. The last line of a paragraph being at the top of a new page.
    c. A side head falling on the last line of a page.
    d. Warnings, cautions, and notes being divided so that the first lines appear on one page and the remaining lines on another.

9. In addition to the content requirements of Section 3.3.2 of MIL-DTL-24784/4B, parts list and installation instructions shall also be provided. In addition to the operating instructions content requirements of Section 3.3.2.5 of MIL-DTL- 24784/4B, interface instructions shall also be provided.

10. Commercial manuals must include safety precautions, operating instructions, maintenance requirements and procedures, parts lists, recommended spare parts list, illustrated parts breakdowns, test equipment and special tools lists, wiring diagrams and schematics, and a table of contents.

11. The Contractor may make minor changes via inserts, cut sheets, supplements and appendices to a commercial manual before submission to NOAA for approval as an Equipment Manual.

12. In cases where commercial technical manuals apply to more than one equipment configuration, the manual shall clearly identify specific configuration that is applicable to the CMCS, by remove information is that not applicable.

13. All interim and final copies of these manuals shall be provided in electronic MS Word format, and authored in standard American English.

14. Final delivery of all shipboard technical manuals to reside on the ship shall be provided in a PDF scanned version using Searchable Adobe Acrobat 8.0™, or later, incorporating a full search capability with book marking. Paper copies of technical manuals shall only be required for the final set to reside in the shipboard and NOAA technical libraries.

15. The Contractor shall also provide mark-up change pages for any other 3rd party affected technical manuals as part of this effort.

16. The CMCS set of technical manuals shall provide complete instructions for the operation and maintenance of all new CMCS equipment provided under this contract.

BLOCK 5-REVIEW REQ.:

Allow 60 days for NOAA review and comment.

BLOCK 6-SUBMITTAL SCHEDULE:

Technical Manual Book Plan: 60 days prior to CDR

Preliminary Technical Manual Set: NLT 60 DPT Factory Acceptance Testing
Note: An approved preliminary technical manual set shall be required by completion of sea trials Approved Final Technical Manuals 90 day after completion of sea trails.
R/ASR 21 DARC

BLOCK 7-DISTRIBUTION	**ADDRESSEE**	**QTY**
	TBD	TBD

BLOCK 1-DATA ITEM NO.: 044

BLOCK 2-DATA ITEM TITLE: **Packaging and Preservation Plan**

BLOCK 3-REFERENCE: **SOW 4.10**

BLOCK 4-DATA DESCRIPTION:

The Contractor shall prepare and submit a in accordance with MIL-STD-2073-1.

1. Preservation and packaging data shall be completed using DD Form 2326.
2. Format shall be in accordance with Appendix E of MIL-STD-2073-1.
3. Coding shall be in accordance with Appendix J of MIL-STD-2073-1.

BLOCK 5-REVIEW REQ.:

Allow 14 days for NOAA review and comment.

BLOCK 6-SUBMITTAL SCHEDULE:

NLT 30 DPT final delivery.
Revisions NLT 7 DARC, and 14 days after need for change has been identified.

BLOCK 7-DISTRIBUTION	**ADDRESSEE**	**QTY**
	TBD	TBD

NOAA THOMAS JEFFERSON
MCCS CONTRACT DATA REQUIREMENTS

BLOCK 1-DATA ITEM NO.: 045

BLOCK 2-DATA ITEM TITLE: **Notification of Testing**

BLOCK 3-REFERENCE: **SOW 4.9**

BLOCK 4-DATA DESCRIPTION:

The Contractor shall prepare and submit formal test notification in advance of formal Factory and Shipboard Testing events.

BLOCK 5-REVIEW REQ.:

Allow 14 days for NOAA review and comment.

BLOCK 6-SUBMITTAL SCHEDULE:

NLT 30 DPT each scheduled formal test event. Revisions NLT 3 days after need for change has been identified.

BLOCK 7-DISTRIBUTION	**ADDRESSEE**	**QTY**
	TBD	TBD

NOAA THOMAS JEFFERSON
MCCS CONTRACT DATA REQUIREMENTS

BLOCK 1-DATA ITEM NO.: 046

BLOCK 2-DATA ITEM TITLE: **Factory Test Plan**

BLOCK 3-REFERENCE: **SOW 4.9**

BLOCK 4-DATA DESCRIPTION:

The Contractor shall prepare and submit a Test Plan for all pre-shipboard installation testing categories including formal software testing, hardware/software integration testing, first article and factory acceptance testing. The plan shall also include the traceability matrix and show how system requirements are being addressed by the plan.

1. The Test Plan shall address existing Regulatory Body type-approved equipment where applicable.
2. The format and contents of the report shall be accordance with the following. An alternative format may be used if agreed between the Contractor and NOAA.

Title page. The title page shall include the following:

a. Title of the test to be conducted.
b. Identification of system being tested.
c. Contractor's name.
d. Contractor number.
e. Security classification.
f. Distribution statement.

Introduction. Consists of an overview of the objectives of the test plan, including flow diagrams, milestones, personnel participation, locations, schedules, and security measures to be observed.

Flow diagrams. The flow diagrams will reflect a functional description of the test program using a block diagram portrayal of the functions that must be met to satisfy the total test program. Functions shall be numbered 1.0, 2.0, 3.0, etc.

Milestones. Identify the start and expected completion dates of each test to be performed. Participation. Identifies the NOAA and Contractor participation roles and responsibilities. Location. Identifies the facilities where the testing will be performed.

Schedule. States when testing will be performed.

Master Test List. Lists all tests to be accomplished in the order they are to be performed. A separate listing for each location shall be provided.

Each listing shall include the following:

Test description. Name and brief description of test to be performed.

Applicable Specification (s). The specifications shall be identified as follows:

a. Title and identification number.
b. Paragraph number associated with the tests.
c. Title of test.
d. Functional category of test.

Parameters. The number of cycles the test will be performed and selected parameters to be observed.

Special Tests. Provides a list of special or unusual tests and examination necessary to verify satisfactory equipment performance to specifications.

Test Classification Category. State the functional area of each test performed.

Testing categories where applicable shall include loading and initialization of software, normal operations and demonstration of all functional requirements, including monitoring, graphic display screens, supervisory and automatic control actions, reduced capability, self-test/internal health, alarming, data logging, and history data. In addition, testing shall include demonstration of the CMCS response to unexpected, abnormal, or faulty conditions.

Test Objectives. Describes the objectives of each test performed, including the criteria, baseline, duration, and number of times each test should be performed.

a. Success/failure criteria.
b. Baseline.
c. Duration.
d. Quantity of test.

Test Equipment. List and briefly describe all equipment to be used in the test and its purpose.

Support Equipment. List and briefly describe all support equipment that will be used to perform the tests and its

purpose. Special Test Equipment. List and briefly describe all test equipment for use on the program and its

purpose.

Approach. Describe the approach used to perform each test.

Instrumentation. Indicate the type and recording devices that will be used and the number and types of parameters to be recorded.

Data Reduction and Analysis. Describe data to be recorded and the data reduction and analysis techniques that will be used to interpret the data.

Test Facilities. Identify applicable facility and includes a reference to the appropriate facility requirements documents.

Validation Procedure. An overview of the procedures that the Contractor will use to validate the test results.

BLOCK 5-REVIEW REQ.:

NOAA approval of technical content required. Allow 14 days for NOAA review and comment.

BLOCK 6-SUBMITTAL SCHEDULE:

NLT 45 DPT the Test Readiness Review

R/ASR 14 DARC or the need for change is identified.

BLOCK 7-DISTRIBUTION	**ADDRESSEE**	**QTY**
	TBD	TBD

NOAA THOMAS JEFFERSON
MCCS CONTRACT DATA REQUIREMENTS

BLOCK 1-DATA ITEM NO.: 047

BLOCK 2-DATA ITEM TITLE: Factory Test Procedures

BLOCK 3-REFERENCE: SOW 4.9

BLOCK 4-DATA DESCRIPTION:

The Contractor shall prepare and submit Test Procedures for formal hardware, software and factory testing. The Factory Test Procedures shall include applicable ABS environmental certification testing procedures.

1. Test Procedures shall identify existing Regulatory Body type-approved equipment.

2. The format and contents of the test procedures shall be accordance with the following. An alternative format may be used ifagreed upon between the Contractor and NOAA.

3. The Contractor shall prepare and submit a test procedure for each test to be conducted on the equipment and subsystems. Each test procedure shall provide detailed step by step procedures for testing or demonstrating the equipment or subsystem. Testing shall include not only verification of normal system response to stimulation or commands, but shall also demonstrate the CMCS response to unexpected, abnormal, or faulty conditions. Each requirement in the Software Requirement Specification and Hardware Requirements Specification shall be tested during Factory Acceptance Testing. Each applicable requirement will be listed with its applicable test steps. Space shall be provided on the data sheets for recording test results and completion certification.

4. The procedures shall be prepared containing the following:
    a. Title
    b. Identification Number of Test Procedure
    c. Identification of Item(s) being tested (Drawing number and revision)
    d. Test Objectives
    e. Description of Test
    f. Accept/Reject Criteria for Preparation of the GO-NO-GO Check List.
    g. Test Configuration (Including a sketch of test setup(s)).
    h. Software, Hardware and Firmware versions of the Units Under Test
    i. Date, Time, and Duration of Test
    j. Test Prerequisites
    k. Detailed Test Procedures - arranged in step by step fashion including expected results. Space shall be provided for recording test results and comments
    l. Approvals, Authorities, and Responsibilities.
    m. Instrumentation Required
    n. Data to be Recorded
    o. Test Equipment Required
    p. Logistics Equipment Required
    q. Facilities, Test Laboratory Name, and Address
    r. Personnel
    s. Preparation and Teardown Elapsed Time
    t. Special Resource Requirements
    u. Provisions for recording name of test witness in test report when witnessed.

5. For subsequent items of the same design, the original test procedure may be used. If changes occur, the revised test procedure shall be submitted to NOAA for approval.

BLOCK 5-REVIEW REQ.:

NOAA approval of technical content required. Allow 30 days for NOAA review and comment.

BLOCK 6-SUBMITTAL SCHEDULE:

NLT 45 DPT the start of the test; R/ASR 14 DARC or the need for change is identified.

BLOCK 7-DISTRIBUTION	**ADDRESSEE**	**QTY**
	TBD	TBD

NOAA THOMAS JEFFERSON
MCCS CONTRACT DATA REQUIREMENTS

BLOCK 1-DATA ITEM NO.: 048

BLOCK 2-DATA ITEM TITLE: Factory Test Reports

BLOCK 3-REFERENCE: SOW 4.9

BLOCK 4-DATA DESCRIPTION:

The Contractor shall prepare and submit a Test Report after completion of Hardware, Software and Factory Testing events. The Test Report shall include a copy of the Regulatory Body acceptance/approval where applicable along with NOAA approval. Each Test Report shall report all applicable test results.

The test report shall contain all of the necessary information from the test plan and test procedures to permit it to stand on its own as an all-inclusive test evaluation document (including the specific serial number of each Unit Under Test).

The format and contents of the report shall be accordance with the following. An alternative format may be used if agreed upon between the Contractor and NOAA.

Description - Provide a short description of the test that was conducted. Reference the related test plan and related test procedures.

Purpose - Provide a brief explanation of why this test is performed. Describe how this test applies to the S 222 CMCS integration and test approach. Include unit, component, element, segment, system, and type of test; i.e., developmental test, operational test, live fire test, technology proof of concept, engineering test, risk mitigation, factory acceptance, or production test.

Test Objectives - Provide specific objectives of the test. Describe what this test is designed to establish, verify, demonstrate, characterize, measure, and mitigate.

Test Results - Provide a summary discussion of the test results.

Detailed Discussion of Test Results vs. Test Objectives - Provide a detailed discussion of the results of the test in relation to the test objectives.

Requirements vs. Pass/Fail/Hold Criteria – Provide a detailed discussion of requirements from the test plan/test procedure in relation to pass/fail/hold criteria.

Test Anomalies – Describe anomalies that occurred during the test event to enable recreation of the test if required. Include changes from the schedule of significant events.

Conclusions and Recommendations – Discuss conclusions, recommendations, and lessons learned.

Participants

NOAA Representatives – Provide a list of NOAA representatives attending test.

Contractor Representatives – Provide a list of Contractor Representatives attending test.

References - Identify all reference material necessary to support preparation and conduct of the test. Include complete reference information including title, date, and any other applicable identification and control information. Also, include applicable Contractor, Contractor, and NOAA documentation. Examples include test and evaluation management plan, developmental/operational test plans, Navy and DOD instructions, specifications, test requirement documents, design documents, and system operating limitation documents.
Test Plan

Test Procedures

Appendix A Test Data - This should include extensive details, raw data, annotated and signed pre-test check lists, test checklists, post-test checklists, QA/QC documentation for test article fabrication, materials documentation, etc.

Appendix B Other Information - This might include raw data, photos, tables, etc.

BLOCK 5-REVIEW REQ.:

Allow 30 days for NOAA review and comment.

BLOCK 6-SUBMITTAL SCHEDULE:

NLT 30 DATC.

R/ASR 14 DARC.

BLOCK 7-DISTRIBUTION	**ADDRESSEE**	**QTY**
	TBD	TBD

BLOCK 1-DATA ITEM NO.: 049

BLOCK 2-DATA ITEM TITLE: Post Installation Shipboard Test Plan

BLOCK 3-REFERENCE: Technical Specification Section 4.3.1

BLOCK 3-REFERENCE: SOW 4.6

BLOCK 4-DATA DESCRIPTION:

The Contractor shall prepare and submit a Post Installation Shipboard Test Plan for the CMCS that provides information necessary for NOAA to assess the Contractor's approach and management of the verification requirements. The plan shall provide a progressive test scheme covering all phases of shipboard testing (post installation, dockside and at sea) and address installation and checkout, local testing, remote testing, integration testing, and performance testing covering all normal and emergency operations. The plan shall also include address regression testing for software/hardware changes made to the system after factory testing. The plan shall also include the traceability matrix and show how system requirements are being addressed by the plan.

1. The Post Installation Shipboard Test Plan for CMCS shall identify the organization, management and approach to ensuring that all required verification activities are satisfactorily performed.
2. The plan shall address all program verification requirements.
3. The plan shall identify verification procedure development and submittal, Regulatory Body involvement, witnessing and problem and status reporting.
4. The plan shall identify all related Data Items and describe how they relate to the Contractor’s Shipboard CMCS Acceptance Test Program.
5. The Post Installation Shipboard Test Plan for CMCS shall contain sections for the following. An alternative format may be used if agreed upon between the Contractor and NOAA.
    a. Introduction and Summary. Describe the Post Installation Shipboard Test Plan for CMCS and summarize its contents including a Test Form Index.
    b. Approach. Briefly describe the Contractor's approach, to fulfilling the Verification Program requirements. Describe the major objectives of the program. Describe how the Contractor will ensure that the S 222 CMCS Specification performance requirements are verified.
    c. Organization. Describe the Contractor’s verification organization including titles, responsibilities, and functions of assigned personnel, relationship to the design and production organization, and interface with NOAA. Charts and tables should be used where possible in order to reduce narrative length.
    d. Milestones. Describe the relationship between the Contractor’s testing schedules and the overall Shipboard Verification Program.
    e. Documentation development and control. Describe the verification documentation and the development process with emphasis on review, change control, and response to NOAA comments.
    f. Conduct. Briefly describe the conduct of the verification process including personnel responsibilities, notification process, and rescheduling procedures. The section shall also include general guidelines for personnel, witnessing, special facilities (availability and scheduling), data retention and storage, and procedures for obtaining needed support or services. A progressive test scheme shall be used that covers all phases of testing (both dockside and at sea) such as installation and checkout, local testing, remote testing, and integration testing, and performance testing.
    g. Test equipment. Describe facilities and processes for control and handling test equipment. Include methods of obtaining calibrations and ensuring that only calibrated test equipment will be used in the testing program. Special requirements for handling NOAA owned test equipment shall also be addressed.
    h. Support Requirements. Describe all verification support that is to be provided by NOAA. Describe in sufficient

detail to allow support to be arranged. Include time frames, locations, and special parameters. Describe the Contractor's reporting system including process, responsibilities, time frames, and interface with documentation change control.

BLOCK 5-REVIEW REQ.:

NOAA approval required. Allow 21 days for NOAA review and comment.

BLOCK 6-SUBMITTAL SCHEDULE:

NLT 30 DPT the Test Readiness Review; R/ASR 14 DARC or the need for change is identified.

BLOCK 7-DISTRIBUTION	**ADDRESSEE**	**QTY**
	TBD	TBD

NOAA THOMAS JEFFERSON
MCCS CONTRACT DATA REQUIREMENTS

BLOCK 1-DATA ITEM NO.: 050

BLOCK 2-DATA ITEM TITLE: **Post Installation Shipboard Test Procedures**

BLOCK 3-REFERENCE: **SOW 4.6**

BLOCK 4-DATA DESCRIPTION:

The Contractor shall prepare and submit Post Installation Shipboard Test Procedures for CMCS to document the procedures for verifying compliance with the Contract requirements, and shall include analysis, demonstrations, inspections, and tests/ trial events.

1. Applicability shall be identified on the title page of each procedure submittal.

2. Procedures shall be prepared for each verification test event and include the following. An alternative format may be used if agreed between the Contractor and the NOAA.

3. Cover Sheet. A cover sheet shall be prepared for each verification event and shall include the following:

    a. Test event number.
    b. Test event title.
    c. Test event procedure revision designation (when applicable on later schedule releases).
    d. Scheduled start date.
    e. Schedule completion date.
    f. Actual start date.
    g. Actual completion date.
    h. Describe the method used to highlight changes from the previous issue.
    i. Ship name and hull designation.
    j. The existing procedure number and the ship name and hull for which the procedure was previously used, if applicable.
    k. Blocks for procedure preparation, review and approval.

4. Revision Record. The Revision Record shall describe revisions to the test procedure and shall include continuation sheets, if required.

5. List of Effective Pages. The List of Effective Pages shall be an inclusive list of each page of the procedure, identification of whether the applicable page is an original page or a revised page, and the applicable revision designation.

6. Content. Content shall include the following:

    a. Each page shall include the verification event title, number, and revision. Each page shall be numbered.
    b. Prerequisites. List the prerequisite functions. Identify immediate verification prerequisites by title and number, if applicable. Parts or portions of verification events required as prerequisites shall also be identified.
    c. Test Event, Test, and Data Recording Sheets.
    d. Discussion and Analysis. Include an area for discussion and analysis of problem areas.
    e. Test event content in compliance with the requirements of SNAME Technical and Research Bulletins No. 3-39 and 3-47

7. Sign-Off. Contractor and NOAA or designee witness Signoffs shall be included and shall indicate the total number of pages in the procedure, such as Page 1 of _ (as applicable.). A NOAA or designee witness signature shall beincluded.

8. Comment sheets may be added, as necessary.

9. The original master of each Test Procedure by which a verification event was conducted and on which the results were recorded shall be designated the Master Hard Copy Test Report for submittal IAW Test Reports, Data Item No. 051.

BLOCK 5-REVIEW REQ.:

Documents that require Regulatory Body approval shall be submitted concurrently with submittal to the Regulatory Bodies. Allow 30 days for NOAA review and comment.

BLOCK 6-SUBMITTAL SCHEDULE:

NLT 60 DPT applicable scheduled test event; R/ASR 10 DARC or the need for change is identified. Revised procedure changes shall be submitted NLT 24 hours after the need for change is identified. NOAA shall be notified of each SAT event procedure change including those arising from problems that occur during the SAT event.

BLOCK 7-DISTRIBUTION	**ADDRESSEE**	**QTY**
	TBD	TBD

BLOCK 1-DATA ITEM NO.: 051

BLOCK 2-DATA ITEM TITLE: **Post Installation Shipboard Test Reports**

BLOCK 3-REFERENCE: **SOW 5.1**

BLOCK 4-DATA DESCRIPTION:

The Contractor shall prepare and submit Post Installation Ship Test Reports to document the results and findings of test events and shall provide an analysis of the results. Test Reports shall consist of the following:

1. The completed Test Procedures, Data Item No. 050.

    a. All procedure pages requiring signature or information filled in (including comment and test equipment sheets).
    b. Analysis of the results.
    c. The Contractor, either on the comment sheets or in the analysis of the results shall respond to comments on comment sheets. Changes to the procedure shall be explained and justified by mark up.
    d. Data recordings shall be copies of raw data from such sources as test procedure sheets, computer printout sheets, strip chart analog recordings, oscillograph photographs, plotting board charts, general coverage photographs, etc., as required by the procedure.
    e. Letters, inspection reports, certificates or certifications.
    f. Documentation of Regulatory Body approval as applicable

2. Each Test Report shall have the same number as the associated procedure.

3. Sign-Off. A Sign-Off shall be included and shall indicate the total number of pages in the procedures, such as Page 1 of ( ). NOAA concurrence shall be obtained on each procedure change including those arising from problems during the SAT events.

4. The Master Hard Copy Test Reports shall be compiled into booklet format.

BLOCK 5-REVIEW REQ.:

Allow 14 days for NOAA review and comment.

BLOCK 6-SUBMITTAL SCHEDULE:

NLT 14 days after completion of Test Event; 14 days after subsequent Test Event completion. The Master Hard Copy Test Reports shall be submitted NLT 10 DPT SD.

BLOCK 7-DISTRIBUTION	**ADDRESSEE**	**QTY**
	TBD	TBD

NOAA THOMAS JEFFERSON
MCCS CONTRACT DATA REQUIREMENTS

BLOCK 1-DATA ITEM NO.: 052

BLOCK 2-DATA ITEM TITLE: **CMCS Design Verification Test Procedure (DVPT)**

BLOCK 3-REFERENCE: **SOW 4.6**

BLOCK 4-DATA DESCRIPTION:

The Contractor shall prepare a CMCS Design Verification Procedure in accordance with ABS and USCG requirements. The document shall be based on the FMEA Report so that the failure modes identified in the FMEA can be validated.

The DVTP shall be provided in MS Word. Review versions may be submitted in PDF compatible format.

BLOCK 5-REVIEW REQ.:

Allow 7 days for NOAA review and comment.

BLOCK 6-SUBMITTAL SCHEDULE:

Submit NLT 7 days after start of the shipboard installation period.
R/ASR 7 DARC.

BLOCK 7-DISTRIBUTION	**ADDRESSEE**	**QTY**
	TBD	TBD

NOAA THOMAS JEFFERSON
MCCS CONTRACT DATA REQUIREMENTS

BLOCK 1-DATA ITEM NO.: 053

BLOCK 2-DATA ITEM TITLE: **CMCS Periodic Safety Test Procedure**

BLOCK 3-REFERENCE: **SOW 4.6**

BLOCK 4-DATA DESCRIPTION:

1. The Contractor shall prepare an updated CMCS Periodic Safety Test Plan based upon the GFI copy as updated to satisfy ABS and USCG required updates.
2. The plan shall be prepared in MS Word. Review versions may be submitted in PDF compatible format.

BLOCK 5-REVIEW REQ.:

Allow 7 days for NOAA review and comment.

BLOCK 6-SUBMITTAL SCHEDULE:

Submit NLT 7 days after start of the shipboard installation period.
R/ASR 7 DARC.

BLOCK 7-DISTRIBUTION	**ADDRESSEE**	**QTY**
	TBD	TBD

NOAA THOMAS JEFFERSON
MCCS CONTRACT DATA REQUIREMENTS

BLOCK 1-DATA ITEM NO.: 054

BLOCK 2-DATA ITEM TITLE: **CONDITION FOUND REPORT**

BLOCK 3-REFERENCE: **SOW 4.6**

BLOCK 4-DATA DESCRIPTION:

The Contractor shall prepare and submit Condition Found Reports to document the working condition for each affected system, noting any discrepancies in equipment or system operation or function.

See attached blank Condition Found Report for format and content.

BLOCK 5-REVIEW REQ.:

Allow 7 days for NOAA review and comment.

BLOCK 6-SUBMITTAL SCHEDULE:

Submit NLT 7 days after start of the shipboard installation period.
R/ASR 7 DARC.

BLOCK 7-DISTRIBUTION	**ADDRESSEE**	**QTY**
	TBD	TBD

NOAA THOMAS JEFFERSON
MCCS CONTRACT DATA REQUIREMENTS

CONDITION FOUND REPORT

CFR Number_____
Date Submitted _____

Ship Name/Hull No.	Job No.	Item No.	Spec. Number:	Para. Number:
Date of Inspection:	Component / Location on Board	Category		

CFR Title: Drawing Submittal

Statement of Condition Found:

.

Recommended Action:

Prepared By:		Submitted By:		Response Requested By:
Name	Phone Ext	Name	Date	Name

Ship Superintendent:	
Name	Date

NOAA

Authorized: **Date:**