

**ORDER FOR SUPPLIES OR SERVICES**

PAGE OF PAGES

1 26

IMPORTANT: Mark all packages and papers with contract and/or order numbers.

1. DATE OF ORDER 09/06/2016		2. CONTRACT NO. (If any) NRC-HQ-50-14-E-0001		6. SHIP TO: a. NAME OF CONSIGNEE US NUCLEAR REGULATORY COMMISSION-	
3. ORDER NO. NRC-HQ-20-16-T-0007		4. REQUISITION/REFERENCE NO. NRR-16-0224		b. STREET ADDRESS MAIL PROCESSING CENTER 4930 BOILING BROOK PARKWAY	
5. ISSUING OFFICE (Address correspondence to) US NRC - HQ ACQUISITION MANAGEMENT DIVISION MAIL STOP TWFN-5E03 WASHINGTON DC 20555-0001				c. CITY ROCKVILLE	
				d. STATE MD	e. ZIP CODE 20852
7. TO: a. NAME OF CONTRACTOR S W R I				f. SHIP VIA	
b. COMPANY NAME				8. TYPE OF ORDER <input type="checkbox"/> a. PURCHASE <input checked="" type="checkbox"/> b. DELIVERY	
c. STREET ADDRESS 6220 CULEBRA RD				REFERENCE YOUR:  Please furnish the following on the terms and conditions specified on both sides of this order and on the attached sheet, if any, including delivery as indicated.	
d. CITY SAN ANTONIO		e. STATE TX	f. ZIP CODE 782385166		
9. ACCOUNTING AND APPROPRIATION DATA See Schedule				10. REQUISITIONING OFFICE OFFICE OF NUCLEAR MATERIAL	

11. BUSINESS CLASSIFICATION (Check appropriate box(es))					12. F.O.B. POINT
<input type="checkbox"/> a. SMALL	<input type="checkbox"/> b. OTHER THAN SMALL	<input type="checkbox"/> c. DISADVANTAGED	<input type="checkbox"/> d. WOMEN-OWNED	<input type="checkbox"/> e. HUBZone	
<input type="checkbox"/> f. SERVICE-DISABLED VETERAN-OWNED	<input type="checkbox"/> g. WOMEN-OWNED SMALL BUSINESS (WOSB) ELIGIBLE UNDER THE WOSB PROGRAM	<input type="checkbox"/> h. EDWOSB			

13. PLACE OF		14. GOVERNMENT B/L NO.	15. DELIVER TO F.O.B. POINT ON OR BEFORE (Date) 05/12/2017		16. DISCOUNT TERMS 30
a. INSPECTION Destination	b. ACCEPTANCE Destination				

**17. SCHEDULE (See reverse for Rejections)**

ITEM NO. (a)	SUPPLIES OR SERVICES (b)	QUANTITY ORDERED (c)	UNIT (d)	UNIT PRICE (e)	AMOUNT (f)	QUANTITY ACCEPTED (g)
	The contractor shall provide services in accordance to the Statement of Work (SOW) entitled "Modify Core Operating Limits Report (COLR) to Incorporate 10 CFR 50.46 Reports"  Continued ...					

18. SHIPPING POINT		19. GROSS SHIPPING WEIGHT		20. INVOICE NO.		17(h) TOTAL (Cont. pages)
21. MAIL INVOICE TO:						
a. NAME US NUCLEAR REGULATORY COMMISSION						\$0.00
b. STREET ADDRESS (or P.O. Box) ONE WHITE FLINT NORTH 11555 ROCKVILLE PIKE MAILSTOP 03-E17A						
c. CITY ROCKVILLE		d. STATE MD	e. ZIP CODE 20852-2738			\$100,970.00

22. UNITED STATES OF AMERICA BY (Signature) 		23. NAME (Typed) SHARLENE M. MCCUBBIN TITLE: CONTRACTING/ORDERING OFFICER	
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TEMPLATE - ADM001

SUNSI REVIEW COMPLETE

ADM002

SEP 29 2016

ORDER FOR SUPPLIES OR SERVICES

SCHEDULE - CONTINUATION

IMPORTANT: Mark all packages and papers with contract and/or order numbers.

DATE OF ORDER

CONTRACT NO.

ORDER NO.

09/06/2016

NRC-HQ-50-14-E-0001

NRC-HQ-20-16-T-0007

ITEM NO.	SUPPLIES/SERVICES	QUANTITY ORDERED	UNIT	UNIT PRICE	AMOUNT	QUANTITY ACCEPTED
(a)	(b)	(c)	(d)	(e)	(f)	(g)
	Total Ceiling Amount: \$100,970.00 Total Obligated Amount: \$80,000.00  Accounting Info: 2016-X0200-FEEBASED-20-20D008-11-4-149-1061-251A					
TOTAL CARRIED FORWARD TO 1ST PAGE (ITEM 17(H))					\$0.00	

NRC-HQ-50-14-E-0001  
NRC-HQ-20-16-T-0007

**CONTRACTOR ACCEPTANCE OF TASK ORDER NRC-HQ-20-16-T-0007**

Acceptance of Task Order No. NRC-HQ-20-16-T-0007 under contract no. NRC-HQ-50-14-E-0001 should be made by having an official, authorized to bind your organization, execute two copies of this document in the space provided and return one copy to the Contracting Officer. You should retain the other copy for your records.

Accepted Task Order No. NRC-HQ-20-16-T-0007:



Name R. B. Kalmbach

Executive Director, Contracts  
Title

August 31, 2016  
Date

**SECTION B - Supplies or Services/Prices**

**NRCB010 BRIEF PROJECT TITLE AND WORK DESCRIPTION**

- (a) Title: Modify Core Operating Limits Report (COLR) to Incorporate 10 CFR 50.46 Reports
- (b) Summary work description: The objective of this contract task order is to obtain expert technical assistance to modify the existing Core Operating Limits Report (COLR) database to incorporate the current 10 CFR 50.46 Reports and future 10 CFR 50.46c Reports. The database should have the capability for 10 CFR 50.46 reports to be uploaded for each plant, it should be searchable, and it should be able to generate various reports.

**PRICE/COST SCHEDULE**

CLIN NO.	DESCRIPTION OF SUPPLIES/SERVICES	ESTIMATED COST	FIXED FEE	TOTAL CPFF
00001	Modify Core Operating Limits Report (COLR) to Incorporate 10 CFR 50.46 Reports	[REDACTED]	[REDACTED]	\$100,970.00
Total		[REDACTED]	[REDACTED]	\$100,970.00

**NRCB040A CONSIDERATION AND OBLIGATION—COST-PLUS-FIXED-FEE ALTERNATE I**

(a) The total estimated cost to the Government for full performance of this contract is **\$100,970.00** of which the sum of [REDACTED] represents the estimated reimbursable costs, and of which [REDACTED] represents the fixed-fee.

(b) There shall be no adjustment in the amount of the Contractor's fixed fee.

(c) The amount currently obligated by the Government with respect to this contract is [REDACTED], of which the sum of [REDACTED] represents the estimated reimbursable costs, and of which [REDACTED] represents the fixed-fee.

(d) In accordance with FAR 52.216-8 - Fixed Fee, it is the policy of the NRC to withhold payment of fee after payment of [REDACTED] percent of the fee has been paid in order to protect the Government's interest. The amount of fixed-fee withheld from the contractor will not exceed [REDACTED] percent of the total fee or \$ [REDACTED] whichever is less. Accordingly, the maximum amount of fixed-fee that may be held in reserve is [REDACTED].

**SECTION C - Description/Specifications  
Statement of Work**

**C.1 PROJECT TITLE**

Modify Core Operating Limits Report (COLR) to Incorporate 10 CFR 50.46 Reports

**C.2 BACKGROUND**

Current 10 CFR 50.46 Rule

10 CFR 50.46, "Acceptance criteria for emergency core cooling systems for light-water nuclear power reactors," requires that each boiling or pressurized light-water nuclear power reactor fueled with uranium oxide pellets within cylindrical zircoloy or ZIRLO™ cladding must be provided with an ECCS that must be designed so that its calculated cooling performance following a postulated loss-of-coolant accident conforms to the criteria set forth in 10 CFR 50.46(b) and ECCS cooling performance must be calculated in accordance with an acceptable evaluation model and must be calculated for postulated loss-of-coolant accidents of different sizes, locations, and other properties sufficient to provide assurance that the most severe postulated loss-of-coolant accidents are calculated.

10 CFR 50.46(a)(3)(ii) governs the reporting requirements. It requires that for each change to or error in an acceptable evaluation model or in the application of such a model that affects the temperature calculation, the applicant or holder of a construction permit, operating license, combined license, or manufacturing license shall report the nature of the change or error and its estimated effect on the limiting ECCS analysis to the Commission at least annually and if the change or error is significant, the applicant or licensee shall provide a report within 30 days.

For significant errors and/or changes, 10 CFR 50.46 reports are required to be submitted to the NRC in 30 days. Each year, annual reports are submitted to the NRC that summarize all the errors and/or changes (significant and non-significant) accrued in the previous calendar. Some years there are no errors and/or changes identified for an evaluation model or in the application thereof, while other years there can be many errors and/or changes applied to an evaluation model or in the application thereof. These errors and/or changes can result in penalties or benefits to a licensee's analysis of record. The number of errors and/or changes applied to the accepted evaluation models or in the application thereof has become quite large which makes it challenging to ensure that each licensee is applying the applicable errors and model changes to their analyses of record (AOR).

Additionally, many licensees have committed to reanalyze their design basis LOCAs with approved ECCS evaluation models that have implemented model changes to account for fuel pellet thermal conductivity degradation. Thus, the staff expects that many new LOCA analyses will be submitted and it will be necessary to track the analysis results and any model assessments.

Lastly, if the proposed 10 CFR 50.46c Rule gets final approval, the staff expects several additional new LOCA analyses to be submitted and many LOCA analyses to be updated

to demonstrate compliance with the new rule.

Proposed 10 CFR 50.46c Rule

The proposed 10 CFR 50.46c rule establishes a general, performance-based rule governing ECCS performance for light-water regardless of fuel design or cladding material. This represents a significant change from the existing ECCS regulations which apply to "uranium oxide pellets within cylindrical zircolay or ZIRLO™ cladding." Because ECCS requirements must be expressed independent of fuel type, and because ECCS performance ultimately must be based upon maintaining the fuel in the reactor in a safe (analyzed) condition, the proposed 10 CFR 50.46c rule separates the ECCS system performance requirements from the fuel system design.

In the proposed 10 CFR 50.46c rule, the specified performance objectives of the systems, structures, and components of the ECCS are to provide residual heat removal during and following a postulated LOCA. As with the existing regulation, the ECCS performance is demonstrated by acceptable ECCS evaluation models in the proposed rule. Specific performance requirements and analytical limits have been established for fuel designs consisting of uranium oxide or mixed uranium-plutonium oxide pellet with zirconium cladding alloys that account for relatively recent research findings. For other fuel designs, new performance objectives and analytical limits may be necessary. Such objectives and limits would need to take into consideration all the degradation mechanisms and any unique performance features of the particular fuel system.

The proposed rule follows the general regulatory approach of the existing regulation, yet it establishes non-prescriptive, performance-based regulatory language for demonstrating acceptable ECCS performance and determining fuel performance characteristics.

The 10 CFR 50.46c rule requires the similar reporting requirements as the current 10 CFR 50.46 rule, but clarifies the reporting and corrective action requirements in order to resolve recurring issues involving the interpretation of the current regulations' requirements. The 10 CFR 50.46c rule distinguishes three possible combinations of reporting criteria based on the following: (1) predicted response, (2) level of significance, and (3) whether the error, change or operation would results in any exceeded acceptance criteria. For each scenario, the proposed rule provides the required actions, reports, and time frame for providing the necessary reports. The new rule maintains the same requirement for annual reporting and requires reporting significant errors in a similar manner.

At a high level the 10 CFR 50.46c reporting rule differs from the existing rule in the following ways. Since the rule allows for specific performance requirements and analytical limits for specific fuel designs, the performance criteria may be different for different fuel types. Thus, it is necessary for the licensee to submit their fuel specific analytical limits, and in particular, analytical limits to preserve cladding post-quench ductility. Additionally, the new reporting rule requires that in the ECCS model error and/or change assessments for equivalent clad reacted (ECR) impacts must be reported in addition to PCT impacts.

This new 10 CFR 50.46c rule has been submitted to the Commission for voting and final

approval. If it gets approved, the licensees will be required to submit new LOCA analyses demonstrating that the analyses meet the new requirements. Thus, it will be necessary to track the licensee provided analytical limits, new analysis results, and any model assessments.

### C.3 OBJECTIVE

The objective of this project is to modify the existing Core Operating Limits Report (COLR) database to incorporate the current 10 CFR 50.46 Reports and future 10 CFR 50.46c Reports. The database should have the capability for 10 CFR 50.46 reports to be uploaded for each plant, it should be searchable, and it should be able to generate various reports.

### C.4 SCOPE OF WORK

The Contractor will collect 10 CFR 50.46 reports submitted by all licensees from all of calendar year 2015 and through June 1, 2016. The 10 CFR 50.46 reports are accessible via the NRC Agency Access and Management System (ADAMS). The Contractor will extract data from the 10 CFR 50.46 reports and applicable licensing basis documentation in order to modify the existing COLR database to incorporate the current 10 CFR 50.46 Reports. Note that no Contractor review is necessary for the 10 CFR 50.46 reports.

The Contractor will modify the existing COLR database to incorporate the current 10 CFR 50.46 Reports (and future 10 CFR 50.46 reporting). The database must meet the following requirements:

#### Database Contents

The database should contain the following, at a minimum, for the current 10 CFR 50.46 Rule:

- Plant Name
- Date of AOR
- ECCS Evaluation Model
- Analysis of Record (AOR) results for peak cladding temperature (PCT), equivalent clad reacted (ECR) / Maximum Local Oxidation (MLO), and core wide oxidation (CWO)
- List of model changes and errors and their associated PCT impact (with associated ML Number)
- Sum of the PCT impacts for the model changes and errors
- Sum of the PCT impacts and AOR PCT
- Sum of the absolute value of each PCT model change and error
- An indication if the fuel rod burst for the AOR PCT Case

The database should contain all of the above for the future 10 CFR 50.46c Rule and additionally:

- Date of Rebaseline AOR (if applicable)
- Fuel Type(s)

- Fuel Performance Analytical Limit for post-quench ductility (ECR) and, if applicable, PCT
- List of model changes and errors and their associated ECR impact (with associated ML Number)
- Sum of the ECR impacts for the model changes and errors
- Sum of the ECR impacts and AOR ECR
- Sum of the absolute value of each ECR model change and error
- The burnup associated with the limiting case
- An indication if the fuel rod burst for the AOR ECR Case

For both the current and future reports, the sum of the AOR and PCT/ECR impacts should be reported as both their resulting values and as margin to the limit (i.e. for the current rule, if the value of the AOR + PCT impacts was 2100°F, the margin would be 100°F).

#### Database Capabilities

The database should be searchable using the various parameters in the database. The database should be able to generate individual plant reports and reports based on the searched parameters. The generated reports should be in PDF and Microsoft Excel file types. The data produced in Microsoft Excel report(s) should require minimal NRC staff manipulations in order for the staff to easily filter and sort the data. The database should have the capability to be easily updated and changed with new 10 CFR 50.46 reports in order to incorporate the new reports.

### **C.5 SPECIFIC TASKS**

**Task 1** – Attend a kickoff meeting. Prior to attending the meeting, become familiar with the regulatory framework, the references provided, and the typical format and content of the 10 CFR 50.46 reports. Participate in the meeting to further understand the staff goals for this contract. Following the kickoff meeting submit a trip report via email that summarizes any decisions reached and any understandings of technical direction given by the NRC staff.

**Task 2** – Suggest a format for the database. The database must meet the requirements described in Section 4 and must be able to be integrated into the database the NRC staff currently uses for COLRs (COLR Databased was developed using Microsoft Access). Using sample data, demonstrate the use and performance of the database to the technical point of contact. Coordinate with the technical point of contact to establish an acceptable design for the database.

**Task 3** – Identify and upload the 10 CFR 50.46 reports required in Section 4 to the database and harvest the necessary data from the reports and applicable licensing basis documentation. Coordinate with the technical point of contact to ensure that all the 10 CFR 50.46 reports were identified and that the correct data is being incorporated into the database.

**Task 4** – Develop guidance outlining the use of the database.

### **C.6 APPLICABLE DOCUMENTS AND STANDARDS**



- 1) 10 CFR 50.46, "Acceptance criteria for emergency core cooling systems for light-water nuclear power reactors"
- 2) NRC Regulatory Information Summary 2016-04, "Clarification of 10 CFR 50.46 Reporting Requirements and Recent Issues Identified with Guidance Not Approved for Use"
- 3) SECY-16-0033, "Performance-Based Emergency Core Cooling System Requirements and Related Fuel Cladding Acceptance Criteria"

**C.7 DELIVERABLES AND DELIVERY SCHEDULE**

<b>Deliverable Number</b>	<b>Deliverable Acceptance Criteria</b>	<b>Deliverable Due Date</b>
1	Kick-off Meeting Report. This report summarizes any decisions reached and any understandings or technical direction given by the NRC staff.	One week after the kick-off meeting
2	A copy of the initial database and a summary report detailing the chosen design and key capabilities. The design of the database must meet the criteria described in Section 4 of the SOW and must address any NRC comments.	One month after submitting Deliverable 1
3	A copy of the final database addressing the NRC comments from Deliverable 2.	Three months after receiving NRC comments on Deliverable 2
4	A report identifying the number of 10 CFR 50.46 reports uploaded to the database, which 10 CFR 50.46 reports were uploaded to the database, any issues, and any missing documentation and a report once the database is fully populated.	Every 2 months after submitting Deliverable 2 until the database is fully populated
5	A Draft Guidance Document outlining the use of the database.	Six months after submitting Deliverable 1
6	A Final Guidance Document outlining the use of the database.	One month after receiving NRC comments on Deliverable 5

**NOTE: The NRC COR will send an e-mail to CNWRA notifying them that all deliverables including the final deliverable is complete and there are no additional comments; if the COR does not provide written confirmation each deliverable will assume to be accepted 30 days after receipt by NRC.**

**C.8 GOVERNMENT-FURNISHED PROPERTY**

N/A

**C.9 PLACE OF PERFORMANCE**

Work will be performed at the contractor's site.

**C.10 TRAVEL/MEETINGS**

The following travel maybe required under this task order:

One 1 day trip to NRC Headquarters in Rockville, MD, for two people.  
All travel requires prior written approval from the COR.

**C.11 SECURITY**

Information required for performance of this work is anticipated to be UNCLASSIFIED. Proprietary Information or other Sensitive Unclassified Non-Safeguards Information (SUNSI) may be required to complete the work. Access to non-public information in ADAMS is required.

**C.12 LICENSE FEE RECOVERY**

The work performed under this task order is not license fee recoverable.

## **SECTION D - Packaging and Marking**

### **NRC020 BRANDING**

The Contractor is required to use the statement below in any publications, presentations, articles, products, or materials funded under this contract/order, to the extent practical, in order to provide NRC with recognition for its involvement in and contribution to the project. If the work performed is funded entirely with NRC funds, then the contractor must acknowledge that information in its documentation/presentation.

Work Supported by the U.S. Nuclear Regulatory Commission (NRC), Office of Nuclear Reactor Regulation, under Contract/order number NRC-HQ-50-14-E-0001/ NRC-HQ-20-16-T-0007.

(End of Clause)

### **NRC010 PACKAGING AND MARKING**

(a) The Contractor shall package material for shipment to the NRC in such a manner that will ensure acceptance by common carrier and safe delivery at destination. Containers and closures shall comply with the Surface Transportation Board, Uniform Freight Classification Rules, or regulations of other carriers as applicable to the mode of transportation.

(b) On the front of the package, the Contractor shall clearly identify the contract number under which the product is being provided.

(c) Additional packaging and/or marking requirements are as follows: None.

(End of Clause)

**SECTION E - Inspection and Acceptance**

**CONTRACTING OFFICER'S REPRESENTATIVE (COR) AUTHORITY**

(a) The contracting officer's authorized representative hereinafter referred to as the COR for this contract is:

**Contracting Officer's Representative**

Name: Evan Davidson, NRR/DE  
Mail Stop: MS O10F04  
Phone: 301-415-1342  
E-mail: [Evan.Davidson@nrc.gov](mailto:Evan.Davidson@nrc.gov)

The alternate contracting officer's representative is:

Name: Joshua Borromeo, NRR/DSS/SRXB  
Mail Stop: MS O10A01  
Phone: 301-415-1217  
E-mail: [Joshua.Borromeo@nrc.gov](mailto:Joshua.Borromeo@nrc.gov)

(b) Performance of the work under this contract is subject to the technical direction of the NRC project officer. The term technical direction is defined to include the following:

(1) Technical direction to the contractor which shifts work emphasis between areas of work or tasks, authorizes travel which was unanticipated in the Schedule (i.e., travel not contemplated in the Statement of Work or changes to specific travel identified in the Statement of Work), fills in details, or otherwise serves to accomplish the contractual statement of work.

(2) Provide advice and guidance to the contractor in the preparation of drawings, specifications, or technical portions of the work description.

(3) Review and, where required by the contract, approve technical reports, drawings, specifications, and technical information to be delivered by the contractor to the Government under the contract.

(c) Technical direction must be within the general statement of work stated in the contract. The project officer does not have the authority to and may not issue any technical direction which:

(1) Constitutes an assignment of work outside the general scope of the contract.

(2) Constitutes a change as defined in the "Changes" clause of this contract.

(3) In any way causes an increase or decrease in the total estimated contract cost, the fixed fee, if any, or the time required for contract performance.

(4) Changes any of the expressed terms, conditions, or specifications of the contract.

(5) Terminates the contract, settles any claim or dispute arising under the contract, or issues any unilateral directive whatever.

(d) All technical directions must be issued in writing by the project officer or must be confirmed by the project officer in writing within ten (10) working days after verbal issuance. A copy of the written direction must be furnished to the contracting officer. A copy of NRC Form 445, Request for Approval of Official Foreign Travel, which has received final approval from the NRC must be furnished to the contracting officer.

(e) The contractor shall proceed promptly with the performance of technical directions duly issued by the project officer in the manner prescribed by this clause and within the project officer's authority under the provisions of this clause.

(f) If, in the opinion of the contractor, any instruction or direction issued by the project officer is within one of the categories defined in paragraph (c) of this section, the contractor may not proceed but shall notify the contracting officer in writing within five (5) working days after the receipt of any instruction or direction and shall request that contracting officer to modify the contract accordingly. Upon receiving the notification from the contractor, the contracting officer shall issue an appropriate contract modification or advise the contractor in writing that, in the contracting officer's opinion, the technical direction is within the scope of this article and does not constitute a change under the "Changes" clause.

(g) Any unauthorized commitment or direction issued by the project officer may result in an unnecessary delay in the contractor's performance and may even result in the contractor expending funds for unallowable costs under the contract.

(h) A failure of the parties to agree upon the nature of the instruction or direction or upon the contract action to be taken with respect to the instruction or direction is subject to 52.233-1 - Disputes.

(i) In addition to providing technical direction as defined in paragraph (b) of the section, the project officer shall:

(1) Monitor the contractor's technical progress, including surveillance and assessment of performance, and recommend to the contracting officer changes in requirements.

(2) Assist the contractor in the resolution of technical problems encountered during performance.

(3) Review all costs requested for reimbursement by the contractor and submit to the contracting officer recommendations for approval, disapproval, or suspension of payment for supplies and services required under this contract.

(End of Clause)

NRC-HQ-50-14-E-0001  
NRC-HQ-20-16-T-0007

**SECTION F - Deliveries or Performance**

**NRCF032 TASK/DELIVERY ORDER PERIOD OF PERFORMANCE (SEP 2013)**

This order shall commence on date of award and will expire on May 12, 2017.

(End of Clause)

**NRCF010 PLACE OF DELIVERY-REPORTS**

The items to be furnished hereunder shall be delivered, with all charges paid by the Contractor, to:

- a. Contracting Officer's Representative (COR) (1 Electronic Copy)  
Address: Refer to Section E, subsection CONTRACTING OFFICER'S REPRESENTATIVE (COR) AUTHORITY
- b. Name: Contract Specialist (CS), (1 Electronic Copy)

(End of Clause)

**SECTION G - Contract Administration Data**

**NRCG030 ELECTRONIC PAYMENT (SEP 2014)**

The Debt Collection Improvement Act of 1996 requires that all payments except IRS tax refunds be made by Electronic Funds Transfer. Payment shall be made in accordance with FAR 52.232-33, entitled "Payment by Electronic Funds-Central Contractor Registration".

To receive payment, the contractor shall prepare invoices in accordance with NRC's Billing Instructions. Claims shall be submitted on the payee's letterhead, invoice, or on the Government's Standard Form 1034, "Public Voucher for Purchases and Services Other than Personal," and Standard Form 1035, "Public Voucher for Purchases Other than Personal - Continuation Sheet." The preferred method of submitting invoices is electronically to: [NRCPayments@nrc.gov](mailto:NRCPayments@nrc.gov).

(End of Clause)

## SECTION H - Special Contract Requirements

### 2052.215-70 KEY PERSONNEL (JAN 1993)

(a) The following individuals are considered to be essential to the successful performance of the work hereunder:

<u>Name</u>	<u>Title</u>
Daniel Speaker	Principal Investigator, Senior Research Engineer

The contractor agrees that personnel may not be removed from the contract work or replaced without compliance with paragraphs (b) and (c) of this section.

(b) If one or more of the key personnel, for whatever reason, becomes, or is expected to become, unavailable for work under this contract for a continuous period exceeding 30 work days, or is expected to devote substantially less effort to the work than indicated in the proposal or initially anticipated, the contractor shall immediately notify the contracting officer and shall, subject to the concurrence of the contracting officer, promptly replace the personnel with personnel of at least substantially equal ability and qualifications.

(c) Each request for approval of substitutions must be in writing and contain a detailed explanation of the circumstances necessitating the proposed substitutions. The request must also contain a complete resume for the proposed substitute and other information requested or needed by the contracting officer to evaluate the proposed substitution. The contracting officer and the project officer shall evaluate the contractor's request and the contracting officer shall promptly notify the contractor of his or her decision in writing.

(d) If the contracting officer determines that suitable and timely replacement of key personnel who have been reassigned, terminated, or have otherwise become unavailable for the contract work is not reasonably forthcoming, or that the resultant reduction of productive effort would be so substantial as to impair the successful completion of the contract or the service order, the contract may be terminated by the contracting officer for default or for the convenience of the Government, as appropriate. If the contracting officer finds the contractor at fault for the condition, the contract price or fixed fee may be equitably adjusted downward to compensate the Government for any resultant delay, loss, or damage.

(End of Clause)

### NRCH480 USE OF AUTOMATED CLEARING HOUSE (ACH) ELECTRONIC PAYMENT/REMITTANCE ADDRESS

The Debt Collection Improvement Act of 1996 requires that all Federal payments except IRS tax refunds be made by Electronic Funds Transfer. It is the policy of the Nuclear Regulatory Commission to pay government vendors by the Automated Clearing House (ACH) electronic funds transfer payment system. Item 15C of the Standard Form 33 may be disregarded.

(End of Clause)

**NRCH470 GREEN PURCHASING (SEP 2013)**

(a) In furtherance of the sustainable acquisition goals included in Executive Order 13514, "Federal Leadership in Environmental, Energy, and Economic Performance," products and services acquired under this contract/order shall be energy-efficient (Energy Star or Federal Energy Management Program (FEMP) designated), water-efficient, biobased, environmentally preferable (e.g., Electronic Product Environmental Assessment Tool (EPEAT) certified), non-ozone depleting, recycled content, and non-toxic or less toxic alternatives, to the maximum extent practicable in meeting NRC contractual requirements.

(b) See NRC's Green Purchasing Plan (GPP) at:  
<http://pbadupws.nrc.gov/docs/ML1219/ML12191A130.pdf> and the General Service

Administration's (GSA) Green Procurement Compilation at:  
<http://www.gsa.gov/portal/content/198257>.

(c) The contractor shall flow down this clause into all subcontracts and other agreements that relate to performance of this contract/order.

(End of Clause)

**NRCH410 WHISTLEBLOWER PROTECTION FOR NRC CONTRACTOR AND SUBCONTRACTOR EMPLOYEES**

(a) The U.S. Nuclear Regulatory Commission (NRC) contractor and its subcontractor are subject to the Whistleblower Employee Protection public law provisions as codified at 42 U.S.C. 5851. NRC contractor(s) and subcontractor(s) shall comply with the requirements of this Whistleblower Employee Protection law, and the implementing regulations of the NRC and the Department of Labor (DOL). See, for example, DOL Procedures on Handling Complaints at 29 C.F.R. Part 24 concerning the employer obligations, prohibited acts, DOL procedures and the requirement for prominent posting of notice of Employee Rights at Appendix A to Part 24 entitled: "Your Rights Under the Energy Reorganization Act".

(b) Under this Whistleblower Employee Protection law, as implemented by regulations, NRC contractor and subcontractor employees are protected from discharge, reprisal, threats, intimidation, coercion, blacklisting or other employment discrimination practices with respect to compensation, terms, conditions or privileges of their employment because the contractor or subcontractor employee(s) has provided notice to the employer, refused to engage in unlawful practices, assisted in proceedings or testified on activities concerning alleged violations of the Atomic Energy Act of 1954 (as amended) and the Energy Reorganization Act of 1974 (as amended).

(c) The contractor shall insert this or the substance of this clause in any subcontracts involving work performed under this contract.

(End of Clause)



**NRCH400 SECURITY REQUIREMENTS RELATING TO THE PRODUCTION OF REPORT(S)  
OR THE PUBLICATION OF RESULTS UNDER CONTRACTS, AGREEMENTS, AND  
GRANTS**

Review and Approval of Reports

(a) Reporting Requirements. The contractor/grantee shall comply with the terms and conditions of the contract/grant regarding the contents of the draft and final report, summaries, data, and related documents, to include correcting, deleting, editing, revising, modifying, formatting, and supplementing any of the information contained therein, at no additional cost to the NRC. Performance under the contract/grant will not be deemed accepted or completed until it complies with the NRC's directions. The reports, summaries, data, and related documents will be considered draft until approved by the NRC. The contractor/grantee agrees that the direction, determinations, and decisions on approval or disapproval of reports, summaries, data, and related documents created under this contract/grant remain solely within the discretion of the NRC.

(b) Publication of Results. Prior to any dissemination, display, publication, or release of articles, reports, summaries, data, or related documents developed under the contract/grant, the contractor/grantee shall submit them to the NRC for review and approval. The contractor/grantee shall not release, disseminate, display or publish articles, reports, summaries, data, and related documents, or the contents therein, that have not been reviewed and approved by the NRC for release, display, dissemination or publication. The contractor/grantee agrees to conspicuously place any disclaimers, markings or notices, directed by the NRC, on any articles, reports, summaries, data, and related documents that the contractor/grantee intends to release, display, disseminate or publish to other persons, the public, or any other entities. The contractor/grantee agrees, and grants, a royalty-free, nonexclusive, irrevocable worldwide license to the government, to use, reproduce, modify, distribute, prepare derivative works, release, display or disclose the articles, reports, summaries, data, and related documents developed under the contract/grant, for any governmental purpose and to have or authorize others to do so.

(c) Identification/Marking of Sensitive Unclassified Non-Safeguards Information (SUNSI) and Safeguards Information (SGI). The decision, determination, or direction by the NRC that information possessed, formulated or produced by the contractor/grantee constitutes SUNSI or SGI is solely within the authority and discretion of the NRC. In performing the contract/grant, the contractor/grantee shall clearly mark SUNSI and SGI, to include for example, OUO-Allegation Information or OUO-Security Related Information on any reports, documents, designs, data, materials, and written information, as directed by the NRC. In addition to marking the information as directed by the NRC, the contractor shall use the applicable NRC cover sheet (e.g., NRC Form 461 Safeguards Information) in maintaining these records and documents. The contractor/grantee shall ensure that SUNSI and SGI is handled, maintained and protected from unauthorized disclosure, consistent with NRC policies and directions. The contractor/grantee shall comply with the requirements to mark, maintain, and protect all information, including documents, summaries, reports, data, designs, and materials in accordance with the provisions of Section 147 of the Atomic Energy Act of 1954 as amended, its implementing regulations (10 CFR 73.21), Sensitive Unclassified Non-Safeguards and Safeguards Information policies, and NRC Management Directives and Handbooks 12.5, 12.6 and 12.7.

NRC-HQ-50-14-E-0001  
NRC-HQ-20-16-T-0007

(d) Remedies. In addition to any civil, criminal, and contractual remedies available under the applicable laws and regulations, failure to comply with the above provisions, and/or NRC directions, may result in suspension, withholding, or offsetting of any payments invoiced or claimed by the contractor/grantee.

(e) Flowdown. If the contractor/grantee intends to enter into any subcontracts or other agreements to perform this contract/grant, the contractor/grantee shall include all of the above provisions in any subcontracts or agreements.

(End of Clause)

**SECTION I - List of Documents, Exhibits and Other Attachments**

**BILLING INSTRUCTIONS FOR  
COST-REIMBURSEMENT TYPE CONTRACTS (JUL 2015)**

**General:** During performance and through final payment of this contract, the contractor is responsible for the accuracy and completeness of data within the System for Award Management (SAM) database and for any liability resulting from the Government's reliance on inaccurate or incomplete SAM data.

The contractor shall prepare invoices/vouchers for reimbursement of costs in the manner and format described herein. FAILURE TO SUBMIT INVOICES/VOUCHERS IN ACCORDANCE WITH THESE INSTRUCTIONS MAY RESULT IN REJECTION OF THE INVOICE/VOUCHER AS IMPROPER.

**Standard Forms:** Reimbursement requests shall be submitted on the payee's letterhead, invoice/voucher, or on the Government's Standard Form 1034, "Public Voucher for Purchases and Services Other than Personal," and Standard Form 1035, "Public Voucher for Purchases Other than Personal--Continuation Sheet."

**Electronic Invoice/Voucher Submissions:** The preferred method of submitting invoices/vouchers is electronically to the U.S. Nuclear Regulatory Commission, via email to: [NRCPayments@nrc.gov](mailto:NRCPayments@nrc.gov).

**Hard-Copy Invoice/Voucher Submissions:** If you submit a hard-copy of the invoice/voucher, a signed original and supporting documentation shall be submitted to the following address:

NRC Payments  
U.S. Nuclear Regulatory Commission  
One White Flint North  
11555 Rockville Pike  
Mailstop O3-E17A  
Rockville, MD 20852-2738

**Purchase of Capital Property:** *(\$50,000 or more with life of one year or longer)*

Contractors must report to the Contracting Officer, electronically, any capital property acquired with contract funds having an initial cost of \$50,000 or more, in accordance with procedures set forth in NRC Management Directive (MD).

**Agency Payment Office:** Payment will continue to be made by the office designated in the contract in Block 12 of the Standard Form 26, or Block 25 of the Standard Form 33, whichever is applicable.

**Frequency:** The contractor shall submit requests for reimbursement once each month, unless otherwise authorized by the Contracting Officer.

**Format:** Invoices/Vouchers shall be submitted in the format depicted on the attached sample form entitled "Invoice/Voucher for Purchases and Services Other Than Personal". Alternate

NRC-HQ-50-14-E-0001  
NRC-HQ-20-16-T-0007

formats are permissible only if they address all requirements of the Billing Instructions. The instructions for preparation and itemization of the invoice/voucher are included with the sample form.

**Task Order Contracts:** The contractor must submit a separate invoice/voucher for each individual task order with detailed cost information. This includes all applicable cost elements and other items discussed in paragraphs (a) through (s) of the attached instructions. In addition, the invoice/voucher must specify the contract number, and the NRC-assigned task/delivery order number.

**Billing of Costs after Expiration of Contract:** If costs are incurred during the contract period and invoiced after the contract has expired, you must cite the period during which these costs were incurred. To be considered a proper expiration invoice/voucher, the contractor shall clearly mark it "EXPIRATION INVOICE" or "EXPIRATION VOUCHER".

Final invoices/vouchers shall be marked "FINAL INVOICE" or "FINAL VOUCHER".

**Currency:** Invoices/Vouchers must be expressed in U.S. Dollars.

**Supersession:** These instructions supersede previous Billing Instructions for Cost-Reimbursement Type Contracts.

**INVOICE/VOUCHER FOR PURCHASES AND SERVICES OTHER THAN PERSONAL  
(SAMPLE FORMAT - COVER SHEET)**

**1. Official Agency Billing Office**

NRC Payments  
U.S. Nuclear Regulatory Commission  
One White Flint North  
11555 Rockville Pike  
Mailstop O3-E17A  
Rockville, MD 20852-2738

**2. Invoice/Voucher Information**

a. Payee's DUNS Number or DUNS+4. The Payee shall include the Payee's Data Universal Number (DUNS) or DUNS+4 number that identifies the Payee's name and address. The DUNS+4 number is the DUNS number plus a 4-character suffix that may be assigned at the discretion of the Payee to identify alternative Electronic Funds Transfer (EFT) accounts for the same parent concern.

b. Taxpayer Identification Number. The Payee shall include the Payee's taxpayer identification number (TIN) used by the Internal Revenue Service (IRS) in the administration of tax laws. (See IRS Web site: [http://www.irs.gov/Individuals/International-Taxpayers/Taxpayer-Identification-Numbers-\(TIN\)](http://www.irs.gov/Individuals/International-Taxpayers/Taxpayer-Identification-Numbers-(TIN))).

c. Payee's Name and Address. Show the name of the Payee as it appears in the contract and its correct address. Where the Payee is authorized to assign the proceeds of this contract in accordance with the clause at Federal Acquisition Regulation (FAR) 52.232-23 Assignment of Claims, the Payee shall require as a condition of any such assignment, that the assignee shall register separately in the System for Award Management (SAM) database at <http://sam.gov> and shall be paid by EFT in accordance with the terms of this contract. See FAR 52.232-33 Payment by Electronic Funds Transfer-System for Award Management.

d. Contract Number. Insert the NRC contract number (including Enterprise-wide Contract (EWC)), GSA Federal Supply Schedule (FSS), Governmentwide Agency Contract (GWAC) number, or Multiple Agency Contract (MAC) number, as applicable.

e. Task Order Number. Insert the task/delivery order number (If Applicable). **Do not include more than one task order per invoice or the invoice may be rejected as improper.**

f. Invoice/Voucher. The appropriate sequential number of the invoice/voucher, beginning with 001 should be designated. Contractors may also include an individual internal accounting number, if desired, in addition to the 3-digit sequential number.

g. Date of Invoice/Voucher. Insert the date the invoice/voucher is prepared.

h. Billing Period. Insert the beginning and ending dates (day, month, year) of the period during which costs were incurred and for which reimbursement is requested.

- i. Description of Deliverables. Provide a brief description of supplies or services, quantity, unit cost, and total cost.
- j. Work Completed. Provide a general summary description of the services performed or products submitted for the invoice period and specify the section or Contract Line Item Number (CLIN) or SubCLIN in the contract pertaining to the required deliverable(s).
- k. Shipping. Insert weight and zone of shipment, if shipped by parcel post.
- l. Charges for freight or express shipments. Attach prepaid bill if shipped by freight or express.
- m. Instructions. Include instructions to consignee to notify the Contracting Officer of receipt of shipment.
- n. For Indefinite Delivery contracts, the final invoice/voucher shall be marked "FINAL INVOICE" or "FINAL VOUCHER".
- o. Final invoices must include the name of the NRC Contracting Officer's Representative (COR) and Contracting Officer.
- p. Direct Costs. Insert the amount billed for the following cost elements, adjustments, suspensions, and total amounts, for both the current billing period and for the cumulative period (from contract inception to end date of this billing period).

(1) Direct Labor. This consists of salaries and wages paid (or accrued) for direct performance of the contract itemized as follows:

<u>Labor Category</u>	<u>Hours Billed</u>	<u>Rate</u>	<u>Total</u>	<u>Cumulative Hours Billed</u>
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(2) Fringe Benefits. This represents fringe benefits applicable to direct labor and billed as a direct cost. Where a rate is used indicate the rate. Fringe benefits included in direct labor or in other indirect cost pools should not be identified here.

(3) Contractor-acquired property (\$50,000 or more). List each item costing \$50,000 or more and having a life expectancy of more than one year. List only those items of equipment for which reimbursement is requested. For each such item, list the following (as applicable): (a) an item description, (b) manufacturer, (c) model number, (d) serial number, (e) acquisition cost, (f) date of purchase, and (g) a copy of the purchasing document.

(4) Contractor-acquired property (under \$50,000), Materials, and Supplies. These are equipment other than that described in (3) above, plus consumable materials and supplies. List by category. List items valued at \$1,000 or more separately. Provide the item number for each piece of equipment valued at \$1,000 or more.

(5) Premium Pay. This enumeration in excess of the basic hourly rate. (Requires written approval of the Contracting Officer.)

(6) **Consultant Fee.** The supporting information must include the name, hourly or daily rate of the consultant, and reference the NRC approval (if not specifically approved in the original contract).

(7) **Travel.** Total costs associated with each trip must be shown in the following format:

<u>Start Date</u>		<u>Destination</u>		<u>Costs</u>
From	To	From	To	\$

*(Must include separate detailed costs for airfare, per diem, and other transportation expenses. All costs must be adequately supported by copies of receipts or other documentation.)*

(8) **Subcontracts.** Include separate detailed breakdown of all costs paid to approved subcontractors during the billing period.

(9) **Other Costs.** List all other direct costs by cost element and dollar amount separately.

q. **Indirect Costs (Overhead and General and Administrative Expense).** Cite the formula (rate and base) in effect in accordance with the terms of the contract, during the time the costs were incurred and for which reimbursement is requested.

r. **Fixed-Fee.** If the contract provides for a fixed-fee, it must be reimbursed as indicated in the contract. Cite the formula or method of computation. Include this information as it applies to individual task orders as well.

(1) The NRC will withhold payment of 15% of the negotiated contract fixed-fee amount, not to exceed \$100,000.

(2) If the fee withholding amount has reached \$100,000, the contractor may resume billing the NRC for the balance of its fee under subsequent invoices for work completed.

(3) Any fee amounts withheld by the NRC will be paid to the contractor during contract closeout in increments, following the submission/settlement of indirect rate proposals in accordance with FAR 52.216-8, "Fixed Fee" (JUN 2011).

s. **Total Amount Billed.** Insert columns for total amounts for the current and cumulative periods.

t. **Adjustments.** Insert columns for any adjustments, including outstanding suspensions for deficient or defective products or nonconforming services, for the current and cumulative periods.

u. **Grand Totals.**

**3. Sample Invoice/Voucher Information**

Sample Invoice/Voucher Information (Supporting Documentation must be attached)

This invoice/voucher represents reimbursable costs for the billing period from \_\_\_\_\_ through \_\_\_\_\_.

		<u>Amount Billed</u>	
		<u>Current Period</u>	<u>Cumulative</u>
(a)	<u>Direct Costs</u>		
(1)	Direct labor	\$ _____	\$ _____
(2)	Fringe benefits (% of direct labor)	\$ _____	\$ _____
(3)	Government property (\$50,000 or more)	\$ _____	\$ _____
(4)	Government property, Materials, and Supplies (under \$50,000 per item)	\$ _____	\$ _____
(5)	Premium pay (NRC approved overtime)	\$ _____	\$ _____
(6)	Consultants Fee	\$ _____	\$ _____
(7)	Travel	\$ _____	\$ _____
(8)	Subcontracts	\$ _____	\$ _____
(9)	Other costs	\$ _____	\$ _____
Total Direct Costs:		\$ _____	\$ _____

(b) **Indirect Costs** (provide the rate information applicable to your firm)

(10)	Overhead ___ % of _____ (Indicate Base)	\$ _____	\$ _____
(11)	General and Administrative (G&A) ___ % of _____ (Indicate Base)	\$ _____	\$ _____
Total Indirect Costs:		\$ _____	\$ _____

(c) **Fixed-Fee:**

- (12) Fixed-Fee Calculations:
- i. Total negotiated contract fixed-fee percent \_\_\_ and amount \$ \_\_\_\_\_
  - ii. 85% allowable fee amount \$ \_\_\_\_\_
  - iii. Cumulative fee billed on prior invoices \$ \_\_\_\_\_
  - iv. Fee due this invoice (not to exceed 85% of fee earned based upon negotiated contract fee percentage) \$ \_\_\_\_\_

Note: The fee balance withheld by NRC may not exceed \$100,000.

Total Fixed-Fee:		\$ _____	\$ _____
(d)	<b>Total Amount Billed</b>	\$ _____	\$ _____
(e)	<b>Adjustments (+/-)</b>	\$ _____	\$ _____



(f) **Grand Total** \$ \_\_\_\_\_ \$ \_\_\_\_\_

(The invoice/voucher format provided above must include information similar to that included below in the following to ensure accuracy and completeness.)

**SAMPLE SUPPORTING INFORMATION**

The budget information provided below is for format purposes only and is illustrative.

Cost Elements:

1) Direct Labor - \$2,400

<u>Labor Category</u>	<u>Hours Billed</u>	<u>Rate</u>	<u>Total</u>	<u>Cumulative Hours Billed</u>
Senior Engineer I	100	\$14.00	\$1,400	975
Engineer	50	\$10.00	\$ 500	465
Computer Analyst	100	\$ 5.00	<u>\$ 500</u>	<u>320</u>
			\$2,400	1,760 hrs.

2) Fringe Benefits - \$480

Fringe @ 20% of Direct Salaries

<u>Labor Category</u>	<u>Salaries</u>	<u>Fringe Amount</u>
Senior Engineer I	\$1,400	\$280
Engineer	\$ 500	\$100
Computer Analyst	<u>\$ 500</u>	<u>\$100</u>
	\$2,400	\$480

3) Government-furnished and contractor-acquired property (\$50,000 or more) - \$60,000

Prototype Spectrometer - item number 1000-01 = \$60,000

4) Government-furnished and contractor-acquired property (under \$50,000), Materials, and Supplies - \$2,000

10 Radon tubes @ \$110.00	= \$1,100
6 Pairs Electrostatic gloves @ \$150.00	= \$ 900
	<u>\$2,000</u>

5) Premium Pay - \$150

Walter Murphy - 10 hours @ \$10.00 Per Hour (Reg. Pay) = \$100 x 1.5 OT rate = \$150  
 (EX: Premium pay for this individual was approved and authorized under this contract by the NRC Contracting Officer by letter dated 6/1/2011.)

6) Consultants' Fee - \$100

Dr. Carney - 1 hour fully-burdened @ \$100 = \$100

7) Travel - \$2,640

(i) Airfare: (2 Roundtrip trips for 1 person @ \$300 per r/t ticket)

<u>Start Date</u>	<u>End Date</u>	<u>Days</u>	<u>From</u>	<u>To</u>	<u>Cost</u>
4/1/2011	4/7/2011	7	Philadelphia, PA	Wash, D.C.	\$300
7/1/2011	7/8/2011	8	Philadelphia, PA	Wash, D.C.	\$300

(ii) Per Diem: \$136/day x 15 days = \$2,040

8) Subcontracting - \$30,000

Company A = \$10,000  
Company B = \$20,000  
\$30,000

(EX: Subcontracts for Companies A & B were consented to by the Contracting Officer by letter dated 6/15/2011.)

9) Other Costs - \$5,100

Honorarium for speaker at American Nuclear Society conference = \$5,000  
*Nuclear Planet Journal* subscription fee = \$100

10) Overhead Expense - \$41,148

Overhead @ 40% of Total Direct Costs

11) General and Administrative (G&A) Expense - \$22,784

G&A @ 20% of Total Costs, excluding subcontracts and consultants

12) Fixed-Fee - \$8,218

Fixed-Fee applied to Total Costs @ 5%

Fixed-Fee Calculations:

- i. Total contract fixed-fee \$100,000
- ii. 85% allowable fee \$85,000
- iii. Cumulative fee billed on prior invoices \$85,000
- iv. Fee due this invoice (*not to exceed 85% of fee earned based upon negotiated contract fee percentage*) \$8,218

Total Amount Billed \$175,020  
Adjustments (+/-) - \$8,218  
Grand Total \$166,802