

ORDER FOR SUPPLIES OR SERVICES						PAGE OF PAGES	
IMPORTANT: Mark all packages and papers with contract and/or order numbers.						1	34
1. DATE OF ORDER 08/15/2014		2. CONTRACT NO. (If any) NRC-HQ-50-14-E-0001		6. SHIP TO:			
3. ORDER NO. NRC-HQ-20-14-T-0013		4. REQUISITION/REFERENCE NO. NRR-14-0257		a. NAME OF CONSIGNEE  US NUCLEAR REGULATORY COMMISSION-			
5. ISSUING OFFICE (Address correspondence to) US NRC - HQ ACQUISITION MANAGEMENT DIVISION MAIL STOP 3WFN-05-C64MP ATTN HUGO ALCANTARA 301-287-0844 WASHINGTON DC 20555-0001				b. STREET ADDRESS MAIL PROCESSING CENTER 4930 BOILING BROOK PARKWAY			
				c. CITY ROCKVILLE		d. STATE MD	e. ZIP CODE 20852
7. TO:				f. SHIP VIA			
a. NAME OF CONTRACTOR S W R I				8. TYPE OF ORDER			
b. COMPANY NAME				<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		Except for billing instructions on the reverse, this delivery order is subject to instructions contained on this side only of this form and is issued subject to the terms and conditions of the above-numbered contract.	
9. ACCOUNTING AND APPROPRIATION DATA See Schedule				10. REQUISITIONING OFFICE OFF OF NUCLEAR REACTOR REGULATION			
11. BUSINESS CLASSIFICATION (Check appropriate box(es))						12. F.O.B. POINT	
<input type="checkbox"/> a. SMALL <input checked="" 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) 30 Days After Receipt of Order		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)
	The Contractor shall provide services in accordance with the Statement of Work entitled "Technical Assistance in Support of the Review of the NRC Office of Nuclear Regulatory Research Technical Reports Related to the Disposition of NFPA 805 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						\$109,922.00	
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
22. UNITED STATES OF AMERICA BY (Signature)						23. NAME (Typed) SHAERLENE M. MCCUBBIN TITLE: CONTRACTING/ORDERING OFFICER	

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OPTIONAL FORM 347 (Rev. 2/2012)  
Prescribed by GSA/FAR 48 CFR 13.213(f)

TEMPLATE - ADM001

SUNSI REVIEW COMPLETE

AUG 15 2014

ADM002

**ORDER FOR SUPPLIES OR SERVICES  
SCHEDULE - CONTINUATION**

PAGE NO

2

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

DATE OF ORDER

CONTRACT NO.

08/15/2014

NRC-HQ-50-14-E-0001

ORDER NO.

NRC-HQ-20-14-T-0013

ITEM NO. (a)	SUPPLIES/SERVICES (b)	QUANTITY ORDERED (c)	UNIT (d)	UNIT PRICE (e)	AMOUNT (f)	QUANTITY ACCEPTED (g)
00001	<p>Licensee Amendment Requests,"</p> <p>Period of Performance: 08/15/2014 to 05/14/2015</p> <p>NRC Contracting Officer's Representative: Bernard L. Grenier 301-425-2726</p> <p>Alt. NRC Contracting Officer's Representative: Naeem Iqbal 301-425-3431</p> <p>Accounting Info: 2014-X0200-FEEBASED-20-20D007-11-4-149-1034-252A</p> <p>Labor/Fee \$109,922.00 Incrementally Funded Amount: \$20,000.00</p> <p>The obligated amount of award: \$20,000.00. The total for this award is shown in box 17(i).</p>				109,922.00	

TOTAL CARRIED FORWARD TO 1ST PAGE (ITEM 17(H))

\$109,922.00

AUTHORIZED FOR LOCAL REPRODUCTION  
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OPTIONAL FORM 348 (Rev. 4/2008)

Prescribed by GSA FAR (48 CFR) 53.213(f)

## CONTRACTOR ACCEPTANCE OF TASK ORDER NRC-HQ-20-14-T-0013

Acceptance of Task Order No: NRC-HQ-20-14-T-0013 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-20-14-T-0013:

  
\_\_\_\_\_  
Name R. B. Kalmbach

Executive Director, Contracts  
\_\_\_\_\_  
Title

08/12/2014  
\_\_\_\_\_  
Date

## SECTION B - Supplies or Services/Prices

### NRCB010 BRIEF PROJECT TITLE AND WORK DESCRIPTION

(a) The title of this project is "Technical Assistance in Support of the Review of the NRC Office of Nuclear Regulatory Research Technical Reports Related to the Disposition of NFPA 805 Licensee Amendment Requests"

(b) Summary work description: The objective of this task order is to obtain technical expertise from CNWRA/SwRI to assist the Office of Nuclear Regulatory Research is support of the reviews of technical reports related to the disposition of NFPA 805 Licensee Amendment Requests (LARS).

(End of Clause)

### PRICE/COST SCHEDULE

PERIOD OF PERFORMANCE - July 16, 2014 through May 15, 2016				
CLINNO	DESCRIPTION OF SUPPLIES/SERVICES	ESTIMATED COST	FIXED FEE	TOTAL CPEF
00001	Review of Technical Reports for License Amendment Request Related to Disposition of NFPA 805			
Total				\$109,222.00

### 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 **\$109,222.00** of which the sum of \$ represents the estimated reimbursable costs, and of which \$ 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 **\$20,000.00**, of which the sum of \$ represents the estimated reimbursable costs, and of which \$ represents the fixed-fee.

(d) This is an incrementally-funded contract and FAR 52.232-22 - "Limitation of Funds" applies.

(e) In accordance with FAR 52.216-8 - Fixed Fee, it is the policy of the NRC to withhold payment of fee after payment of 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 15 percent of the total fee or , whichever is less. Accordingly, the maximum amount of fixed-fee that may be held in reserve is .

(End of Clause)

## SECTION C - Description/Specifications

### Statement of Work

Title: Technical Assistance in Support of the Review of the NRC Office of Nuclear Regulatory Research Technical Reports Related to the Disposition of NFPA 805 Licensee Amendment Requests

Contract No.: NRC-HQ-50-14-E-0001

Task Order: NRC-HQ-20-14-T-0013

Cost Center: 1034

Budget & Reporting No.: 11-4-149-1034

NRC Requisition Office: Nuclear Reactor Regulation

NRC COR: Bernard L. Grenier, [Bernard.Grenier@nrc.gov](mailto:Bernard.Grenier@nrc.gov), (301) 415-2726

Alternate NRC COR: Naeem.Iqbal@nrc.gov, (301) 415-3346

Fee Recoverable: No

Contractor: CNWRA

Type of Contract/Order: Cost Plus – Fixed Fee

Period of Performance: 9 months from date of award

#### 1. BACKGROUND

With the adoption of the risk-informed, performance-based fire protection rule 10CFR50.48(c), decisions and their technical bases are relying to a much greater extent on fire Probabilistic Risk Assessments (PRAs). In particular, those plants that already have transitioned or indicated their intent to transition to this alternative rule are performing fire PRAs to establish the plant fire risk, and may perform plant change assessments to address issues with meeting NRC regulations or those requirements under National Fire Protection Association (NFPA) 805 standard.

The NRC is currently reviewing 20 licensing amendments requests (LARs) to transition to NFPA 805. Many of the LARs have open items relying on the closure of "Frequently Asked Questions" (FAQs) items. The subject of the NRC Office of Nuclear Regulatory Research (RES) reports aim to develop a technical basis to close these open items.

#### 1. BACKGROUND (CONTINUED)

The guidance for fire PRA provided in NUREG/CR-6850 (EPRI 1011989), "EPRI/NRC-RES Fire PRA Methodology for Nuclear Power Facilities," jointly developed by the Electric Power Research Institute (EPRI) and the Office of Nuclear Regulatory Research (RES) is based on a limited amount of experimental data, supplemented by expert judgment. In an effort to update this guidance, the Office of Nuclear Reactor Regulation (NRR) requested that the RES conduct a phenomenological confirmatory research program based on fire physics in order to quantify rate of energy release and spread of fires within electrical enclosures and to evaluate the

performance of Very Early Warning Fire Detection Systems (VEWFDS) that could be installed in nuclear power plants by confirming the effectiveness, reliability, and limitations of VEWFDs. RES has developed NUREG reports to refine methods and analyses to support fire PRA methodology, i.e., NUREG/CR-6850 (EPRI 1011989). The following three reports are to be reviewed and comments developed under this task order:

**Report No. 1: NUREG-1824, Supplement 1, Verification and Validation of Selected Fire Models for Nuclear Power Plant Applications**

NUREG-1824 was initiated in support of implementation of 10 CFR 50.48(c) (NFPA 805 Rule). NFPA 805, Sections 2.4.1.2.2 and 2.4.1.2.3 state that the fire models shall only be applied within their limitations and shall be verified and validated. Validation of fire models gives the model credibility for its application to practical engineering problems. A validation process should determine the degree of calculative accuracy of fire parameters for hazard analysis purposes. NUREG-1824 highlights the strengths and weakness of the underlying physical models and identifies the justification and range of validity of the underlying assumptions to improve the overall quality of fire risk assessments. NRR believes that the use of NUREG-1824 is important in a risk-informed regulatory environment since fire modeling results will always have a level of uncertainty associated with them which, if interpreted correctly, can help in the regulatory decision-making process. NUREG-1824 is a means to determine the model output uncertainty due to modeling approximations and assumptions.

The original NUREG-1824 report was published as seven individual volumes in 2007 to quantify the predictive capabilities of five different fire models by comparison with selected and available experimental data that is representative of nuclear power plant fire scenarios. In draft NUREG-1824, Supplement 1, RES has combined the original seven volumes into a single volume along with appendices. Supplement 1 focuses mainly on model validation; that is, the quantification of model uncertainty. Model verification, that is, tests of mathematical robustness and accuracy, is not addressed directly in NUREG-1824, Supplement 1; rather, references are provided to the model documentation and published reports.

The appendices contain the data summaries that support the conclusions in the main report. The information contained in the original NUREG-1824 remains valid for the versions of the models for which the V&V documented in that report was conducted. As with the original report in NUREG-1824, Supplement 1, the results are reported in the form of ranges of accuracies for the fire model predictions in accordance with the ASTM E-1355 guidelines.

Other notable differences in Supplement 1 include:

- measurements from 16 different series of experiments, compared to 5 which were included in the original study. The number of individual experiments has expanded to 340 compared to the 26 in the original study.

**1. BACKGROUND (CONTINUED)**

- uses the latest versions of the modeling software available at the time of the report. As newer versions of these models are released in the future, the information in this report can be used as guidance in conducting V&V of these new versions. In addition, some of the model authors may choose to publish

revised V&V information on their own as they develop new versions of their modeling software.

- a combination of the assessment of the empirical correlations Fire Dynamics Tools (FDTs) and the Fire Induced Vulnerability Evaluation, Revision 1 (FIVE, Rev 1). In the original NUREG-1824, these tools were evaluated separately and there were several inconsistencies in the application of the various calculation methods.
- additional model output quantities to the evaluation, including sprinkler and smoke detector activation time and electrical cable failure time.
- a more quantifiable assessment of model accuracy. The original study used a simple qualitative scheme to assess the models that proved to be difficult to implement in practice. The new method allows modelers to assign meaningful uncertainty bounds to model outputs.
- designation to complement to NUREG-1934, "Nuclear Power Plant Fire Modeling Analysis Guidelines," or "NPP Fire MAG." The original NUREG-1824 did not include clear guidance on the use of the results of the study.

Note that draft NUREG-1824, Supplement 1, does not supersede the original seven-volume report. The original version remains applicable for the model versions that were included in that report. This supplement updates the V&V for the most current versions of the respective models, provides additional test data (thus expanding the V&V ranges) and addresses additional sub-models such as THIEF (electrical cable failure time calculation) and sprinkler and smoke detector activation time calculation.

## **Report No. 2: Review of the Very Early Warning Fire Detection Systems Test Report**

Several operating nuclear power plants have installed Very Early Warning Fire Detection Systems (VEWFDSs) both in-cabinet and area wide as part of the transition to NFPA 805. The Shearon Harris Nuclear Plant was the first to receive a license amendment to transition to NFPA 805. The plant installed VEWFDSs in high-risk electrical cabinets and in many ways has served as a pilot plant not only for the NFPA 805 transition, but also for the installation of VEWFDSs. The objective of this confirmatory testing program was to evaluate the performance of VEWFDS that could be installed in nuclear power plants by confirming the effectiveness, reliability and limitations of VEWFDS, including a comparison to traditional fire detection systems and human reliability aspects for nuclear power plant applications.

NRR requested that RES provide technical information for NRR use that updates the quantification of the characterization of VEWFDSs for use in fire PRA. Information has been developed, via literature review, to develop fire tests which will then be used to evaluate and quantify the characteristics and benefits of such systems.

## **1. BACKGROUND (CONTINUED)**

NRR requested that the information address the following aspects of VEWFDS including: in-cabinet applications, area-wide and Main Control Room applications; a comparison of conventional fire-detection system responses versus VEWFDS response to representative products of combustion expected in nuclear power plants and an evaluation of the effectiveness of thermography to locate fire sources. Based on results of the review and testing, it is hoped that the study will provide bounding probability numbers to assess the risk benefits of the installation of a VEWFDS in various applications beyond what was projected in FAQ 08-0046.

### **Report No. 3: Review of the Heat Release Rates of Electrical Enclosure Fires (HELEN-FIRE) Test Report**

This report documents an experimental program to quantify the heat release rate and burning behavior of fires in electrical enclosures commonly found in nuclear power plants.

RES conducted full-scale fire testing of nuclear power plant electrical cabinets and obtained, and test electrical cabinets representative of those currently installed nuclear power plant. NRR requested that RES provide technical information for NRR use that quantifies electrical cabinet heat release rates and provides information to support electrical cabinet fire growth rates and ventilation characteristics. The report presents information to support fire PRA and thus the peak heat release rates should be represented by probability distributions.

The purpose of this confirmatory testing is to refine technical information related to Appendix E of NUREG/CR-6850, Volume 2, which includes probabilistic distributions for the peak heat release rates from electrical cabinet fires to be expected for various combustible loadings and configurations. This technical information will be used by the NRR staff for the review of NFPA 805 license amendments so as to better understand and characterize the expected peak heat release rates and their associated probability distributions for cabinet fires under field conditions typically present in nuclear power plants. In particular, in these confirmatory testing the experiments are designed to explore a wide range of cable types, enclosure geometries, ventilation configurations and ignition sources with the aim of producing more realistic distributions of peak heat release rates than that of previous studies.

This study will also determine if the current system of "binning" the enclosure configurations is appropriate. For example, quantifying the combustible mass in terms of cable "bundles" has proven difficult in practice. The terms "qualified" and "unqualified" may be difficult to apply to an entire enclosure with dozens of different materials. The ventilation of an enclosure is characterized only in terms of an open or closed door.

## **2. SCOPE OF WORK**

The CNWRA will review and develop comments on the above draft reports for NRC staff consideration; feedback on the comments will be provided by the NRC. This task order also includes assistance in reviewing RES comment dispositions and assisting in the resolution of open items. The CNWRA will provide technical letter reports containing the comments.



## Objective

The objective of this task order is to obtain technical assistance from the Southwest Research Institute's (SwRI's) Center for Nuclear Waste Regulatory Analyses (CNWRA) to assist the staff in assessing the rationality, accuracy, soundness, completeness, and comprehensiveness of the results of the research which is described in the three RES draft reports.

## 3. SPECIFIC TASKS (WORK REQUIREMENTS AND SCHEDULE)

### Tasks

### Completion Schedule

1.

### Review of

#### NUREG-1824, Supplement 1

- a. Review NUREG-1824, Supplement 1 and consider the following attributes in the report:

Two weeks after work authorization.

- The extent to which the overall methodology of the V&V effort is organized on the basis of the methods prescribed in the American Society for Testing and Materials (ASTM) E1355 document, "Standard Guide for Evaluating the Predictive Capability of Deterministic Fire Models."
- The specific applicability of the study, considering dimensionless groups, fuel types, etc., and how this study applies to nuclear power plant fire scenarios, in particular the estimates of the ranges of normalized parameters to be expected in nuclear plant applications.
- How this study validates and verifies a range of fire models, which have vastly different capabilities and computational methods, based upon the same test data and method.
- The extent to which this study establishes a methodology for determining simulation uncertainty (quantitative estimates of the uncertainties associated with each model's predictions), accuracy and bias in model results.

Prepare a technical letter report.

- b. Review RES responses to the comments (disposition of comments) and identify those issues that have been resolved and those for which further discussion may be needed along with the basis for resolution. Prepare a technical letter report.

Two weeks after receipt of NRC comments.

## SPECIFIC TASKS (WORK REQUIREMENTS AND SCHEDULE) (CONTINUED)

<u>Tasks</u>	<u>Completion Schedule</u>
2. <u>Very Early Warning Fire Detection Systems</u>	<u>Review of Report on</u>
a. Review referenced report and consider the following attributes in the report: <ul style="list-style-type: none"><li>• Effectiveness of area wide versus in cabinet VEWFDS applications, including an evaluation of system applicability for various nuclear power plant applications.</li><li>• VEWFDS fire signature response.</li><li>• Comparison between common detection systems currently used in nuclear power plants and VEWFDS.</li><li>• Systems response to common products of combustion applicable to nuclear power plant fires.</li><li>• Evaluation of in-cabinet VEWFDS layout and design versus system response.</li><li>• VEWFDS availability and reliability.</li><li>• The reliability of human response and effectiveness of</li><li>• equipment used to locate pre-fire sources.</li></ul> Prepare a technical letter report.	Two weeks after receipt of the report.
b. Review RES responses to the comments (disposition of comments) and identify those issues that have been resolved and those for which further discussion may be needed along with the basis for resolution. Prepare a technical letter report.	Two weeks after receipt of NRC comments.

3. Heat Release Rates of Electrical Enclosure Fires

Review of Report on

- a. Review referenced report and consider the following attributes in the report:
- How representative the electrical enclosures and the resulting fires are of what might be expected at a typical nuclear power plant, including differences in the physical layout of combustibles within the enclosure.

Two weeks after receipt of the report.

SPECIFIC TASKS (WORK REQUIREMENTS AND SCHEDULE) (CONTINUED)

Tasks

Completion Schedule

- Extent to which physical layout affects the resulting fire and distribution of peak heat release rates.
- Potential for development of commonalities among models or approaches for characterizing peak heat release rates, including their distributions, as a function of combustible loading and physical layout.
- Applicability of results and models to fire risk analysis for nuclear power plants.
- What, if any, "collateral" information might be gleaned on fire growth rates, etc., as a result of the tests.

Prepare a technical letter report.

- b. Review RES responses to the comments (disposition of comments) and identify those issues that have been resolved and those for which further discussion may be needed along with the basis for resolution. Prepare a technical letter report.
4. Prepare for and travel to NRC HQ to meet with the staff and/or the ACRS to discuss the results and findings of the report.
- a. Travel for first meeting and prepare a trip report.
- b. Travel for second meeting and prepare a trip report.

Two weeks after receipt of NRC comments.

One week after the trip.

One week after the trip.

4. APPLICABLE DOCUMENTS AND STANDARDS

The documents are the three reports referenced herein.

5. DELIVERABLES AND DELIVERY SCHEDULE

Technical Reporting Requirements

1. At the completion of each Subtask 1.a, 2.a and 3.a, submit a technical letter report which contains the results and findings from the review associated with the attributes listed under each Subtask and the basis for those findings. Describe any other highlights and observations along with the basis for those observations.
2. At the completion of each Subtask 1.b, 2.b. and 3.b, submit a technical letter report which contains an evaluation of the RES comments and the recommendation as to whether the issue has been properly addressed or resolved, or not. Provide a list of those issues for which further discussion is needed and the basis for the issue.

5. DELIVERABLES AND DELIVERY SCHEDULE  
(CONTINUED)

3. At the completion of the trip under Task 4, submit a trip report which summarizes the highlights of the meeting, issues discussed and the disposition of those issues and any other observations concerning the issues discussed in the reports or open items which still need to be addressed.

Monthly Letter Status Reporting (MLSR) Requirements

Copies of the MLSRs are to be sent to the COR the Alternate COR with copies provided to the Contracting Officer and to [Alex.Klein@nrc.gov](mailto:Alex.Klein@nrc.gov).

MLSRs will be prepared in accordance with the base EWC contract; however, see first item under the Assumptions and Understands Section, below.

6. REQUIRED LABOR CATEGORIES

One Principal Investigator (PI)/Senior Engineer who possesses experience and working knowledge in the areas of (1) nuclear power plant fire protection; (2) fire testing; and (3) the application of fire PRA methodologies and reactor PRA results.

One staff-level Fire Protection Engineer Nuclear Engineer who possesses in-depth knowledge of U.S. nuclear power plant systems and operations.

LEVEL OF EFFORT

- a. The estimated level of effort in professional staff hours apportioned among the Tasks by labor category each report review is as follows:

<u>Tasks/Subtasks</u>	<u>Labor Category</u>	<u>Level of Effort</u>
-----------------------	-----------------------	------------------------

1.a, 2.a., 3.a.	PI/Senior Engineer	90
	Staff Fire Protection Engineer	150
1.b., 2.b., 3.b	PI/Senior Engineer	30
	Staff Fire Protection Engineer	60
4.	PI/Senior Engineer	16
	Total	346
	Project Management	15
	Program Support	15
	Total by Labor Category:	
	PI/Senior Engineer	136
	Staff Fire Protection Engineer	<u>210</u>
	Total	346

#### 6. REQUIRED LABOR CATEGORIES (CONTINUED)

- b. The following represents the estimated level of effort by labor category by fiscal year of the contract:

<u>Labor Category</u>	<u>FY-2014</u>	<u>FY-2015</u>	<u>Total</u>
PI/Senior Engineer	40	96	136
Staff Engineer	70	140	210
Project Management	3	12	15
Program Support	2	13	15
Total	115	261	376

#### 7. GOVERNMENT-FURNISHED PROPERTY/MATERIALS

The report for Task 1 will be provided by the COR upon authorization of work by the Contracting Officer.

The reports for Task 2 and Task 3 are expected in the fall 2014 and will be provided to the Principle Investigator upon release by the Office of RES.

#### 8. PERIOD OF PERFORMANCE

The period of performance will be nine months from award of the task order.

#### 9. PLACE OF PERFORMANCE

This work will be performed at the CNWRA site.

#### 10. SPECIAL CONSIDERATIONS

## TRAVEL

One one-person, two-day trip to the NRC Headquarters in Rockville, Maryland.

## SECURITY

This work will be unclassified and contain no proprietary information.

## ASSUMPTIONS AND UNDERSTANDINGS

The level of efforts assumption for Tasks 1, 2 and 3 is assumed to be the same. Should the level of effort increase for any of the three Tasks, the variation will be handled either by a Letter of Technical Direction or task order modification. Costs for review of each of the reports are to be reported separately in the MLSR.

It is understood that the level of effort for Tasks 1, 2 and 3 contains sufficient effort to conduct telephone conference calls with the NRC staff. Such phone calls, for example, might be arranged by the NRC COR with the NRC RES staff to discuss the comments and to reach an understanding. Comments on RES draft reports might be provided to the contractor such that they may have to be resubmitted by the contractor.

## 10. SPECIAL CONSIDERATIONS (CONTINUED)

### ASSUMPTIONS AND UNDERSTANDINGS

The level of effort assumption for the trip is based on four hours for preparation and travel to the site, eight hours for the meeting and return travel and four hours for preparation of the trip report.

The level of effort assumption for each fiscal year is based on the availability of the reports: one in FY-2014 and two in FY-2015.

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

### **NRCD020 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-20-14-T-0006.

(End of Clause)

### **NRCD010 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**

### **2052.215-71 PROJECT OFFICER AUTHORITY (OCT 1999)**

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

Name: Bernard L. Grenier  
Address: Mail Stop: OWFN 13-E10  
Washington, DC 20555  
Telephone Number: 301-415-2726

(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)

## **SECTION F - Deliveries or Performance**

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

This order shall commence on August 15, 2014 and will expire on May 14, 2015.

(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. Name: Bernard L. Grenier (1 Electronic Copy)
- b. Contracting Officer's Representative (COR)
- c. Address: Bernard.Grenier@nrc.gov (1 hard copy)
  
- d. Name: Hugo Alcantara (1 Electronic Copy)
- e. Contract Specialist (CS)
- f. Address: Hugo.Alcantara@nrc.gov (1 hard 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>
Lane Howard	Program Manager
Dr. Marc Janssens	Principal Investigator

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)

### 2052.215-78 TRAVEL APPROVALS AND REIMBURSEMENT (OCT 1999) - ALTERNATE I (OCT 1999)

(a) Total expenditure for travel may not exceed \$1,204.00 without the prior approval of the contracting officer.

(b) All foreign travel must be approved in advance by the NRC on NRC Form 445, Request for Approval of Official Foreign Travel, and must be in compliance with FAR 52.247-63 Preference for U.S. Flag Air Carriers. The contractor shall submit NRC Form 445 to the NRC no later than 30 days prior to the commencement of travel.

(c) The contractor will be reimbursed only for travel costs incurred that are directly related to this contract and are allowable subject to the limitations prescribed in FAR 31.205-46.

(d) It is the responsibility of the contractor to notify the contracting officer in accordance with the FAR Limitations of Cost clause of this contract when, at any time, the contractor learns that travel expenses will cause the contractor to exceed the travel ceiling amount identified in paragraph (a) of this clause.

(e) Reasonable travel costs for research and related activities performed at State and nonprofit institutions, in accordance with Section 12 of Pub. L. 100-679, must be charged in accordance with the contractor's institutional policy to the degree that the limitations of Office of Management and Budget (OMB) guidance are not exceeded. Applicable guidance documents include OMB Circular A-87, Cost Principles for State and Local Governments; OMB Circular A-122, Cost Principles for Nonprofit Organizations; and OMB Circular A-21, Cost Principles for Educational Institutions.

(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.

(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 - Contract Clauses**

### **52.217-8 OPTION TO EXTEND SERVICES (NOV 1999)**

The Government may require continued performance of any services within the limits and at the rates specified in the contract. These rates may be adjusted only as a result of revisions to prevailing labor rates provided by the Secretary of Labor. The option provision may be exercised more than once, but the total extension of performance hereunder shall not exceed 6 months. The Contracting Officer may exercise the option by written notice to the Contractor within 15 days.

(End of clause)



## SECTION J - List of Documents, Exhibits and Other Attachments

### BILLING INSTRUCTIONS FOR COST-REIMBURSEMENT TYPE CONTRACTS (MAY 2013)

**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) 13.1, IV, C – "Reporting Requirements" (revised 2/16/2011).

**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 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 (July 2011).

**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/Businesses/Small-Businesses-&Self-Employed/Employer-ID-Numbers-\(EINs\)](http://www.irs.gov/Businesses/Small-Businesses-&Self-Employed/Employer-ID-Numbers-(EINs)))).

c. Payee's Name and Address. Show the name of the Payee as it appears in the contract and its correct address. If the Payee assigns the proceeds of this contract as provided for in the assignment of claims terms of this contract, 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 Federal Acquisition Regulation (FAR) 52.232-33(g) Payment by Electronic Funds Transfer - Central Contractor Registration (October 2003).

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. 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</u> <u>Category</u>	<u>Hours</u> <u>Billed</u>	<u>Rate</u>	<u>Cumulative</u> <u>Total</u>	<u>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.

p. 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.

q. 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).

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

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

t. 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)	<b><u>Direct Costs</u></b>		
(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)	<b><u>Indirect Costs</u></b> (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)	<b><u>Fixed-Fee:</u></b>		
(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) \$ _____		
<u>Note:</u> The fee balance withheld by NRC may <u>not</u> exceed \$100,000.			
Total Fixed-Fee:		\$ _____	\$ _____
(d)	<b>Total Amount Billed</b>	\$ _____	\$ _____

(e)	<b>Adjustments (+/-)</b>	\$ _____	\$ _____
(f)	<b>Grand Total</b>	\$ _____	\$ _____

(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	\$ 500	320
			<u>\$2,400</u>	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	\$ 500	\$100
	<u>\$2,400</u>	<u>\$480</u>

##### 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	= <u>\$20,000</u>
	<u>\$30,000</u>

(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 (+/-)	- <u>\$8,218</u>
Grand Total	<u>\$166,802</u>



### 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>
<b>(a)</b>	<b><u>Direct Costs</u></b>		
(1)	Direct burdened labor	\$ _____	\$ _____
(2)	Government property (\$50,000 or more)	\$ _____	\$ _____
(3)	Government property, Materials, and Supplies (under \$50,000 per item)	\$ _____	\$ _____
(4)	Materials Handling Fee	\$ _____	\$ _____
(5)	Consultants Fee	\$ _____	\$ _____
(6)	Travel	\$ _____	\$ _____
(7)	Subcontracts	\$ _____	\$ _____
	Total Direct Costs:	\$ _____	\$ _____
<b>(b)</b>	<b>Total Amount Billed</b>	\$ _____	\$ _____
<b>(c)</b>	<b>Adjustments (+/-)</b>	\$ _____	\$ _____
<b>(d)</b>	<b>Grand Total</b>	\$ _____	\$ _____

(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 Burdened Labor - \$4,800

<u>Labor Category</u>	<u>Hours Billed</u>	<u>Burdened Rate</u>	<u>Total</u>	<u>Cumulative Hours Billed</u>
Senior Engineer I	100	\$28.00	\$2,800	975
Engineer	50	\$20.00	\$1,000	465
Computer Analyst	100	\$10.00	\$1,000	320
			\$4,800	1,760 hrs.

*Burdened labor rates must come directly from the contract.*

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

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

3) 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>

4) Materials Handling Fee - \$40

(2% of \$2,000 in item #3)

5) Consultants' Fee - \$100

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

6) Travel - \$2,640

(iii) 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

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

7) Subcontracting - \$30,000

Company A	= \$10,000
Company B	= <u>\$20,000</u>
	\$30,000

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

Total Amount Billed	\$99,580
Adjustments (+/-)	<u>- 0</u>
Grand Total	\$99,580

**4. Definitions**

Material handling costs. When included as part of material costs, material handling costs shall include only costs clearly excluded from the labor-hour rate. Material handling costs may include all appropriate indirect costs allocated to direct materials in accordance with the contractor's usual accounting procedures.