

ORDER FOR SUPPLIES OR SERVICES

PAGE OF PAGES

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

1. DATE OF ORDER 05/12/2016		2. CONTRACT NO. (If any) NRC-HQ-60-15-A-0001		6. SHIP TO:	
3. ORDER NO. NRC-HQ-60-16-O-0001		4. REQUISITION/REFERENCE NO. RES-16-0318		a. NAME OF CONSIGNEE U.S. Nuclear Regulatory Commission-	
5. ISSUING OFFICE (Address correspondence to) U.S. NRC - HQ Acquisition Management Division Mail Stop: TWFN-5E03 Attn: Rob Robinson, 301-415-0728 Washington DC 20555-0001				b. STREET ADDRESS Mail Processing Center 4930 Boiling Brook Parkway	
d. CITY ROCKVILLE		e. STATE MD	f. ZIP CODE 208523901		e. ZIP CODE 20852
7. TO: a. NAME OF CONTRACTOR ENERGY RESEARCH, INC. b. COMPANY NAME				f. SHIP VIA	
c. STREET ADDRESS 6189 EXECUTIVE BLVD				8. TYPE OF ORDER	
d. CITY ROCKVILLE				<input type="checkbox"/> a. PURCHASE <input checked="" type="checkbox"/> b. DELIVERY 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. 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 Reg Research	

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) 04/15/2016	16. DISCOUNT TERMS
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)
	GSA Contract #: GS23F0110M The U.S. Nuclear Regulatory Commission hereby issues a BPA Call entitled, "TRACE Plant Model Development (Brunswick Unit 1 or 2) and Maintenance/Update of Existing Model (Crystal River Unit 3 and Vogtle)." Continued ...					

SEE BILLING INSTRUCTIONS ON REVERSE	18. SHIPPING POINT		19. GROSS SHIPPING WEIGHT		20. INVOICE NO.		17(h) TOTAL (Cont. pages)
	21. MAIL INVOICE TO:						
	a. NAME U.S. Nuclear Regulatory Commission				\$0.00		
	b. STREET ADDRESS (or P.O. Box) One White Flint North 11555 Rockville Pike Mailstop O3-E17A NRCPayments@nrc.gov				\$330,879.90		
c. CITY Rockville		d. STATE MD	e. ZIP CODE 20852-2738				17(i) GRAND TOTAL

22. UNITED STATES OF AMERICA BY (Signature) 	05/12/2016	23. NAME (Typed) MONIQUE B. WILLIAMS TITLE: CONTRACTING/ORDERING OFFICER
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TEMPLATE - ADMIN

SUNSI REVIEW COMPLETE

JUN - 7 2016

REM002

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

PAGE NO

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

DATE OF ORDER 05/12/2016	CONTRACT NO. NRC-HQ-60-15-A-0001	ORDER NO. NRC-HQ-60-16-O-0001
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ITEM NO. (a)	SUPPLIES/SERVICES (b)	QUANTITY ORDERED (c)	UNIT (d)	UNIT PRICE (e)	AMOUNT (f)	QUANTITY ACCEPTED (g)
	<p>This call is issued under BPA number GS23F0110M - NRC-HQ-60-15-A-0001.</p> <p>Period of Performance: 5/12/2016 - 2/28/2017 Total Ceiling Amount: \$330,879.90 Total Obligated Amount: \$300,000.00</p> <hr/> <p>Signature of Authorized Official Date</p> <p>See attached pages for specific terms and conditions, as well as the Statement of Work for this Order. Period of Performance: 05/12/2016 to 02/28/2017</p>					
TOTAL CARRIED FORWARD TO 1ST PAGE (ITEM 17(H))					\$0.00	

**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 05/12/2016	CONTRACT NO. NRC-HQ-60-15-A-0001	ORDER NO. NRC-HQ-60-16-O-0001
-----------------------------	-------------------------------------	----------------------------------

ITEM NO. (a)	SUPPLIES/SERVICES (b)	QUANTITY ORDERED (c)	UNIT (d)	UNIT PRICE (e)	AMOUNT (f)	QUANTITY ACCEPTED (g)
	<p>This call is issued under BPA number GS23F0110M - NRC-HQ-60-15-A-0001.</p> <p>Period of Performance: 5/12/2016 - 2/28/2017 Total Ceiling Amount: \$330,879.90 Total Obligated Amount: \$300,000.00</p> <p><i>John Paul Kelly</i> _____ 5/11/16</p> <p>Signature of Authorized Official Date</p> <p>See attached pages for specific terms and conditions, as well as the Statement of Work for this Order. Period of Performance: 05/12/2016 to 02/28/2017</p>					
TOTAL CARRIED FORWARD TO 1ST PAGE (ITEM 17(H))						
						\$0.00

NRC-HQ-60-15-A-0001
NRC-HQ-60-16-O-0001

NRCB010 BRIEF PROJECT TITLE AND WORK DESCRIPTION

(a) The title of this project is:

TRACE Plant Model Development and Maintenance in Anticipation of New Rulemaking and Exploratory Simulations

(b) Summary work description:

The contractor shall provide technical assistance in the development, verification, and documentation of one new TRACE plant model and shall update two currently existing TRACE plant models in accordance with the latest TRACE PWR Modeling Guidance. The new TRACE plant model that shall be developed is the model that represents the Brunswick (Unit 1 or 2) nuclear power plant. The existing plant models that shall be updated in accordance with the latest TRACE PWR Modeling Guidance are the Crystal River Unit 3 and the Vogtle TRACE models.

(End of Clause)

NRCB084 CONSIDERATION AND OBLIGATION- LABOR-HOUR CONTRACT

(a) The ceiling price to the Government for full performance under this contract is \$330,879.90.

(b) The contract includes direct labor hours at specified fixed hourly rates, inclusive of wages, fringe, overhead, general and administrative expenses, and profit.

(c) It is estimated that the amount currently obligated, \$300,000.00 will cover performance through December 2016.

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

(End of Clause)

PRICE SCHEDULE

Period of Performance: 5/12/2016 – 2/28/2017

CLIN	DESCRIPTION	EST QTY	UNIT	GSA	RATES	TOTAL
0001	Executive		Hrs			
0002	Senior Engineer/Scientist		Hrs			
0003	Engineer/Scientist		Hrs			
			Hrs		SUB-TOTAL	
0004	ODCs		Lot		Not-To-Exceed	
					GRAND TOTAL	\$330,879.90

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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 Regulatory Research, under Contract/order number NRC-HQ-60-15-A-0001 – NRC-HQ-60-16-O-0001.

(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: N/A

(End of Clause)

NRCE010 INSPECTION AND ACCEPTANCE BY THE NRC (SEP 2013)

Inspection and acceptance of the deliverable items to be furnished hereunder shall be made by the NRC Contracting Officer's Representative (COR) at the destination, accordance with FAR 52.247-34 - F.o.b. Destination.

Contract Deliverables:
See Section 6 of the Statement of Work

(End of Clause)

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

This order shall commence on May 12, 2016 and will expire on February 28, 2017.

(End of Clause)

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NRCF010 PLACE OF DELIVERY-REPORTS

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

Shawn Marshall (1 electronic copy)
Contracting Officer's Representative (COR)
U.S. Nuclear Regulatory Commission
Shawn.marshall@nrc.gov

Rob Robinson (1 electronic copy)
Contract Specialist
U.S. Nuclear Regulatory Commission
Richard.robinsonii@nrc.gov

(End of Clause)

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.

(End of Clause)

2052.215-70 KEY PERSONNEL. (JAN 1993)

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

Dr. M. Khatib-Rahbar
Dr. S. Choi
Dr. Z. Yuan
Mr. M. Zavisca

*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)

2052.215-71 PROJECT OFFICER AUTHORITY. (OCT 1999)

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

Name: Shawn Marshall
Address: shawn.marshall@nrc.gov
Telephone Number: 301-415-2361

(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.

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(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)

NRCH490 AWARD NOTIFICATION AND COMMITMENT OF PUBLIC FUNDS

(a) All offerors will receive preaward and postaward notices in accordance with FAR 15.503.

(b) It is also brought to your attention that the contracting officer is the only individual who can legally obligate funds or commit the NRC to the expenditure of public funds in connection with this procurement. This means that unless provided in a contract document or specifically authorized by the contracting officer, NRC technical personnel may not issue contract modifications, give formal contractual commitments, or otherwise bind, commit, or obligate the NRC contractually. Informal unauthorized commitments, which do not obligate the NRC and do not entitle the contractor to payment, may include:

- (1) Encouraging a potential contractor to incur costs prior to receiving a contract;
- (2) Requesting or requiring a contractor to make changes under a contract without formal contract modifications;
- (3) Encouraging a contractor to incur costs under a cost-reimbursable contract in excess of those costs contractually allowable; and
- (4) Committing the Government to a course of action with regard to a potential contract, contract change, claim, or dispute.

(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

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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, OIU-Allegation Information or OIU-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.

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(End of Clause)

NRCH390 NRC INFORMATION TECHNOLOGY SECURITY

NRC contractors shall ensure that their employees, consultants, and subcontractors with access to the agency's information technology (IT) equipment and/or IT services complete NRC's online initial and refresher IT security training requirements to ensure that their knowledge of IT threats, vulnerabilities, and associated countermeasures remains current. Both the initial and refresher IT security training courses generally last an hour or less and can be taken during the employee's regularly scheduled work day.

Contractor employees, consultants, and subcontractors shall complete the NRC's online annual, "Computer Security Awareness" course on the same day that they receive access to the agency's IT equipment and/or services, as their first action using the equipment/service. For those contractor employees, consultants, and subcontractors who are already working under this contract, the on-line training must be completed in accordance with agency Network Announcements issued throughout the year, within three weeks of issuance of this modification.

Contractor employees, consultants, and subcontractors who have been granted access to NRC information technology equipment and/or IT services must continue to take IT security refresher training offered online by the NRC throughout the term of the contract. Contractor employees will receive notice of NRC's online IT security refresher training requirements through agency-wide notices.

The NRC reserves the right to deny or withdraw Contractor use or access to NRC IT equipment and/or services, and/or take other appropriate contract administrative actions (e.g., disallow costs, terminate for cause) should the Contractor violate the Contractor's responsibility under this clause.

(End of Clause)

NRCH350 FOREIGN OWNERSHIP, CONTROL, OR INFLUENCE OVER CONTRACTOR

The National Industrial Security Program Operating Manual (NISPOM) implements the provisions of E.O. 12829, "National Industrial Security Program." A company is considered to be under FOCI whenever a foreign interest has the power, direct or indirect, whether or not exercised, and whether or not exercisable through the ownership of the U.S. company's securities, by contractual arrangements or otherwise, to direct or decide matters affecting the management or operations of that company in a manner that may result in unauthorized access to classified information or may adversely affect the performance of classified information contracts. (See NRC Management Directive 12.2 – "NRC Classified Information Security Program")

(a) For purposes of this clause, a foreign interest is defined as any of the following:

(1) A foreign government or foreign government agency;

(2) Any form of business enterprise organized under the laws of any country other than the United States or its possessions;

- (3) Any form of business enterprise organized or incorporated under the laws of the U.S., or a State or other jurisdiction within the U.S., which is owned, controlled, or influenced by a foreign government, agency, firm, corporation or person; or
- (4) Any person who is not a U.S. citizen.
- (b) A U.S. company determined to be under FOCI is not eligible for facility clearance (FCL). If a company already has an FCL, the FCL shall be suspended or revoked unless security measures are taken to remove the possibility of unauthorized access to classified information.
- (c) For purposes of this clause, subcontractor means any subcontractor at any tier and the term "contracting officer" shall mean NRC contracting officer. When this clause is included in a subcontract, the term "contractor" shall mean subcontractor and the term "contract" shall mean subcontract.
- (d) The contractor shall complete and submit and SF-328, DD-441 and DD-441-1 forms, prior to contract award. The information contained in these forms may be used in making a determination as to whether a contractor is eligible to participate in the National Industrial Security Program and have a facility security clearance.
- (e) The contractor shall immediately provide the contracting officer written notice of any changes in the extent and nature of FOCI over the contractor which would affect the answers to the questions presented in SF-328, "Certificate Pertaining to Foreign Interest". Further, notice of changes in ownership or control which are required to be reported to the Securities and Exchange Commission, the Federal Trade Commission, or the Department of Justice shall also be furnished concurrently to the contracting officer.
- (f) In those cases where a contractor has changes involving FOCI, the NRC must determine whether the changes will pose an undue risk to the common defense and security. In making this determination, the contracting officer shall consider proposals made by the contractor to avoid or mitigate foreign influences.
- (g) The contractor agrees to insert terms that conform substantially to the language of this clause including this paragraph (g) in all subcontracts under this contract that will require access to classified information and shall require such subcontractors to submit completed SF-328, DD-441 and DD-441-1 forms prior to award of a subcontract. Information to be provided by a subcontractor pursuant to this clause may be submitted directly to the contracting officer.
- (h) Information submitted by the contractor or any affected subcontractor as required pursuant to this clause shall be treated by NRC to the extent permitted by law, as business or financial information submitted in confidence to be used solely for purposes of evaluating FOCI.
- (i) The requirements of this clause are in addition to the requirement that a contractor obtain and retain the security clearances required by the contract. This clause shall not operate as a limitation on NRC's rights, including its rights to terminate this contract.
- (j) The contracting officer may terminate this contract for default either if the contractor

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fails to meet obligations imposed by this clause, e.g., provide the information required by this clause, comply with the contracting officer's instructions about safeguarding classified information, or make this clause applicable to subcontractors, or if, in the contracting officer's judgment, the contractor creates a FOCI situation in order to avoid performance or a termination for default. The contracting officer may terminate this contract for convenience if the contractor becomes subject to FOCI and for reasons other than avoidance of performance of the contract, cannot, or chooses not to, avoid or mitigate the FOCI problem.

(End of Clause)

NRCH340 COMPLIANCE WITH U.S. IMMIGRATION LAWS AND REGULATIONS

NRC contractors are responsible to ensure that their alien personnel are not in violation of United States immigration laws and regulations, including employment authorization documents and visa requirements. Each alien employee of the Contractor must be lawfully admitted for permanent residence as evidenced by Permanent Resident Form I-551 (Green Card), or must present other evidence from the U.S. Department of Homeland Security/U.S. Citizenship and Immigration Services that employment will not affect his/her immigration status. The U.S. Citizenship and Immigration Services provides information to contractors to help them understand the employment eligibility verification process for non-US citizens. This information can be found on their website, <http://www.uscis.gov/portal/site/uscis>.

The NRC reserves the right to deny or withdraw Contractor use or access to NRC facilities or its equipment/services, and/or take any number of contract administrative actions (e.g., disallow costs, terminate for cause) should the Contractor violate the Contractor's responsibility under this clause.

(End of Clause)

TASK ORDER STATEMENT OF WORK
TASK ORDER NO. 2 UNDER BLANKET PURCHASING AGREEMENT NUMBER:
GS23F0110M-NRC-HQ-60-16-A-0001

1. PROJECT TITLE

TRACE Plant Model Development and Maintenance in Anticipation of New Rulemaking and Exploratory Simulations

2. BACKGROUND

One of the mission directives of the Office of Nuclear Regulatory Research (RES) is to provide the appropriate analytical tools for identifying and resolving safety issues. In the area of reactor thermal hydraulics, RES has developed and maintains the TRAC/RELAP Advanced Computational Engine (TRACE) along with a collection of plant models in native TRACE format to perform a range of thermal-hydraulic analyses. These analyses include confirmatory calculations related to design certifications and the auditing of justifications provided by licensees seeking licensing amendments. Taken together, the latest version of TRACE and a full complement of plant input models gives the agency more agility to respond to new rulemaking, exploratory simulations, or any other emergent thermal-hydraulic analytical need.

Over the past decade, a number of steps have been taken to make TRACE and the assortment of input models a more viable analysis tool. TRACE has evolved, through a series of code versions, to expand its applicability and to become more accurate and robust. In conjunction with that evolution, 16 plant models were developed that represent most of the different types of nuclear steam supply systems (NSSS) and containment designs currently in operation. More recently, the TRACE Pressurized Water Reactor (PWR) Modeling Guidance was developed to foster some standardization in plant-model construction and thereby reduce modeling errors made by TRACE users.

As a result of the past efforts, the use of TRACE and the collection of plant models has increased significantly and has played a vital role in ensuring reactor safety. However, more plant-model development and plant-model maintenance are necessary to fortify the TRACE plant-model collection. With respect to model development, plant models that represent the NSSS and containment designs missing from the plant-model collection must be developed. The decks currently missing from the collection include a variety of plants across the five BWR product lines, a raised-loop Babcock & Wilcox (B&W), and a PWR with an ice condenser containment.

Maintenance of the plant models that are currently in the collection is necessary because all of those models were developed using modeling practices and component nodalizations considered appropriate for a particular code version. With the continued enhancement of TRACE over the years, there has been a departure from some of the modeling practices and components that were previously proposed. Therefore, the currently available plant models, along with the corresponding documentation, must be updated in accordance with the latest TRACE PWR Modeling Guidance, which corresponds with the latest version of TRACE, Patch 4.

3. SCOPE

The contractor shall provide technical assistance in the development, verification, and documentation of one new TRACE plant model and shall update two currently existing TRACE plant models in accordance with the latest TRACE PWR Modeling Guidance. The new TRACE plant model that shall be developed is the model that represents the Brunswick (Unit 1 or 2) nuclear power plant. The existing plant models that shall be updated in accordance with the latest TRACE PWR Modeling Guidance are the Crystal River Unit 3 and the Vogtle TRACE models.

The newly developed and updated models shall be verified by performing steady-state and transient calculations, and the modeling details and simulation results for each input deck shall be documented in a calculation notebook and analysis report, respectively.

4. APPLICABLE DOCUMENTS AND STANDARDS

Applicable documents include the following:

- TRACE PWR User Guidance (Rev.1)
- TRACE Theory Manual V5.840
- TRACE User's Manual V5.840
- Brunswick Units 1 and 2 Updated Final Safety Analysis Report (UFSAR) (Rev. 22)
- Crystal River Final Safety Analysis Report (Rev. 34)
- Vogtle Electric Generating Plant Final Safety Analysis Report Updated (Rev. 17)

5. SPECIFIC TASKS

Task 1: Develop a Brunswick TRACE Input Model

The contractor shall use the latest version of the Symbolic Nuclear Analysis Package (SNAP), the latest version of TRACE architecture (Patch 4), and the latest available Brunswick-specific information to assemble a complete base TRACE model and two transient restart cases that represent the Brunswick plant. The base TRACE model shall contain all of the systems, components, and controls necessary to simulate the steady-state operation of Brunswick at nominal conditions. One of the transient restart cases shall be a large-break loss-of-coolant accident (LBLOCA) and the other shall be a small-break LOCA (SBLOCA). Each of the transient restart cases shall be developed as separate cases using the graphical editing mode in SNAP. The rationale and sources of all plant-model input for both the base model and the transient cases shall be documented in a calculation notebook.

After the base model and transient cases have been assembled, the contractor shall perform demonstration calculations to verify the inputs and demonstrate the operability of the models. The results from these demonstration calculations shall be documented in an analysis report.

Deliverable: The contractor shall provide a single SNAP (*.med) file that contains the base Brunswick TRACE model and the two transient cases as described above, along with the corresponding calculation notebook and analysis report.

Estimated completion date: 8 months after contract award and receipt of all necessary plant-specific information.

Task 2: Update the Crystal River 3 TRACE Model in Accordance with the TRACE PWR User Guidance and Create a Corresponding Calculation Notebook

Task 2.1 Update Crystal River Model in Accordance with the TRACE PWR User Guidance

The contractor shall modify each component, control system, and boundary condition currently employed in the Crystal River 3 model to produce a complete, base Crystal River 3 model and three transient restart cases that adhere to the latest TRACE PWR User Guidance. The base model shall contain the requisite nodalization, input specifications, and intended functionality, and the restart cases shall be a LBLOCA, a station blackout, and a SBLOCA, each of which are to be developed as separate cases using the graphical editing mode in SNAP. If accuracy or robustness issues arise, alternative modeling methods may be explored after consultation with the NRC COR. The contractor shall perform demonstration calculations to verify the inputs and demonstrate the operability of the base-model steady state and the LOCA models. The results from these demonstration calculations shall be documented in an analysis report.

Task 2.2 Develop a Calculation Notebook for the Crystal River TRACE Model

The contractor shall use all available Crystal River 3 information to create a separate, stand-alone Crystal River 3 calculation notebook. The notebook shall be structured in a manner similar to the Grand Gulf Calculation Notebook, such that there is a graphical depiction of each major component showing the relevant dimensions and that there is sufficient text to describe all modeling assumptions, the rationale behind input-parameter selections, and the sources of all plant-model input. The notebook shall include all information necessary to assemble the Crystal River 3 model, to include the modifications made to bring the model into compliance with the TRACE PWR User Guidance.

Deliverable: The contractor shall provide a single SNAP (*.med) file that contains the base Crystal River 3 TRACE model and the two transient cases as described above, along with the corresponding calculation notebook and analysis report.

Estimated completion date: 6 months after contract award and receipt of all necessary plant-specific information.

Task 3: Update the Vogtle TRACE Model in Accordance with the TRACE PWR User Guidance and Create a Corresponding Calculation Notebook

Task 3.1 Update Vogtle Model in Accordance with the TRACE PWR User Guidance

The contractor shall modify each component, control system, and boundary condition

currently employed in the Vogtle model to produce a complete, base Vogtle model and two transient restart cases that adhere to the latest TRACE PWR User Guidance. The base model shall contain the requisite nodalization, input specifications, and intended functionality, and the restart cases shall be a LBLOCA and a SBLOCA, both developed as separate cases using the graphical editing mode in SNAP. If accuracy or robustness issues arise, alternative modeling methods may be explored after consultation with the NRC COR.

The contractor shall perform demonstration calculations to verify the inputs and demonstrate the operability of the base-model steady state and the LOCA models. The results from these demonstration calculations shall be documented in an analysis report.

Task 3.2 Develop a Calculation Notebook for the Vogtle TRACE Model

The contractor shall use all available Crystal River 3 information to create a separate, stand-alone Vogtle calculation notebook. The notebook shall be structured in a manner similar to the Grand Gulf Calculation Notebook, such that there is a graphical depiction of each major component showing the relevant dimensions and that there is sufficient text to describe all modeling assumptions, the rationale behind input-parameter selections, and the sources of all plant-model input. The notebook shall include all information necessary to assemble the Vogtle model, to include the modifications made to bring the model into compliance with the TRACE PWR User Guidance.

Deliverable: The contractor shall provide a single SNAP (*.med) file that contains the base Vogtle TRACE model and the two transient cases as described above, along with the corresponding calculation notebook and analysis report.

Estimated completion date: 6 months after contract award and receipt of all necessary plant-specific information.

6. DELIVERABLES AND DELIVERY SCHEDULE

1. The contractor shall provide draft versions of the Brunswick TRACE model and corresponding analysis report 6 months after contract award and receipt of requisite information from NRC COR.
2. The contractor shall provide final versions of the Brunswick TRACE model and corresponding calculation notebook and analysis report 2 months after delivery of the draft Brunswick deliverables.
3. The contractor shall provide draft versions of the updated Crystal River 3 model and corresponding analysis report 4 months after contract award and receipt of requisite information from NRC COR.
4. The contractor shall provide final versions of the Crystal River 3 TRACE model and corresponding calculation notebook and analysis report 2 months after delivery of the draft Crystal River 3 deliverable.
5. The contractor shall provide draft versions of the updated Vogtle model and corresponding analysis report 4 months after contract award and receipt of requisite information from NRC COR.

6. The contractor shall provide final versions of the Vogtle TRACE model and corresponding calculation notebook and analysis report 2 months after delivery of the draft Vogtle deliverable.

Table 1 Deliverables

Tasks	Delivery Dates		Deliverables
	Preliminary Deliverables	Final Deliverables	
Task 1	6 months after contract award and acquisition of plant-specific information	2 month after receipt of NRC comments on draft deliverables, but no later than the last date of the period of performance.	The contractor shall provide the TRACE Brunswick plant model and corresponding calculation notebook and analysis report for review and comment after the delivery of preliminary and final deliverables.
Task 2	4 months after contract award	2 month after receipt of NRC comments on draft deliverables, but no later than the last date of the period of performance.	The contractor shall provide the TRACE Crystal River 3 plant model and corresponding calculation notebook and analysis report for review and comment after the delivery of preliminary and final deliverables.
Task 3	4 months after contract award	2 month after receipt of NRC comments on draft deliverables, but no later than the last date of the period of performance.	The contractor shall provide the TRACE Vogtle plant model and corresponding calculation notebook and analysis report for review and comment after the delivery of preliminary and final deliverables.

7. GOVERNMENT-FURNISHED PROPERTY

- Crystal River 3 SNAP model
- Vogtle SNAP model
- TRACE Patch 4 and applicable upgrades
- SNAP Version 2.3.1 or later

8. PLACE OF PERFORMANCE

All work will be done at the contractor's site.

9. PERIOD OF PERFORMANCE

May 12, 2016 through February 28, 2017.

NRC-HQ-60-15-A-0001
NRC-HQ-60-15-O-0001

Attachment 1
Statement of Work

10. SECURITY

All work related to this task order shall be PROPRIETARY.

**BILLING INSTRUCTIONS FOR
TIME-AND-MATERIALS/LABOR-HOUR 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 Central Contractor Registration (CCR) database and for any liability resulting from the Government's reliance on inaccurate or incomplete CCR 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 WILL RESULT IN REJECTION OF THE INVOICE/VOUCHER AS IMPROPER.

Standard Forms: Claims 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 vouchers/invoices is electronically to the U.S. Nuclear Regulatory Commission, via email to: 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 claims 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 (q) 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 claimed 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 Time-and-Materials/Labor-Hour 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. **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 Central Contractor Registration (CCR) database at <http://www.ccr.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).

- c. 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))).
- 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. Labor Hours Expended. Provide a general summary description of the services performed and associated labor hours utilized during the invoice period. Specify the Contract Line Item Number (CLIN) or SubCLIN, as applicable, and information pertaining to the contract's labor categories/positions, and corresponding authorized hours.
- j. Property. For contractor acquired property, list each item with an initial acquisition cost of \$50,000 or more and provide: (1) an item description, (2) manufacturer, (3) model number, (4) serial number, (5) acquisition cost, (6) date of purchase, and (7) a copy of the purchasing document.
- 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 (Burdened) Labor. This consists of salaries and wages paid (or accrued) for direct performance of the contract itemized, including a burden (or

load) for indirect costs (i.e., fringe, overhead, General and Administrative, as applicable), and profit component, as follows:

<u>Labor</u> <u>Category</u>	<u>Hours</u> <u>Billed</u>	<u>Burdened</u> <u>Hourly Rate</u>	<u>Total</u>	<u>Cumulative</u> <u>Hours Billed</u>
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(2) 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.

(3) Contractor-acquired property (under \$50,000), Materials, and Supplies. These are equipment other than that described in (2) 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.

(4) Materials Handling Fee. Indirect costs allocated to direct materials in accordance the contractor's usual accounting procedures.

(5) 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).

(6) 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.)

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

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

q. Adjustments. Insert columns for any adjustments, including outstanding suspensions for unsupported or unauthorized hours or costs, for the current and cumulative periods.

r. 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 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)	Total Amount Billed	\$ _____	\$ _____
(c)	Adjustments (+/-)	\$ _____	\$ _____
(d)	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 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	<u>\$1,000</u>	<u>320</u>
			\$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
\$2,000

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

(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

7) 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.)

Total Amount Billed \$99,580
Adjustments (+/-) - 0
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.