

ORDER FOR SUPPLIES OR SERVICES

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

BPA NO.

1. DATE OF ORDER SEP 30 2009		2. CONTRACT NO. (if any) NRC-04-07-112		6. SHIP TO:	
3. ORDER NO. NRC-T018		4. REQUISITION/REFERENCE NO. RES-07-112		a. NAME OF CONSIGNEE U.S. Nuclear Regulatory Commission	
5. ISSUING OFFICE (Address correspondence to) U.S. Nuclear Regulatory Commission Div. of Contracts Attn: Sharon M. Lim Mail Stop: TWB-01-B10M Washington, DC 20555				b. STREET ADDRESS	
				c. CITY Washington	
				d. STATE DC	
				e. ZIP CODE 20555	
7. TO:				f. SHIP VIA	
a. NAME OF CONTRACTOR DADE MOELLER & ASSOCIATES, INC.				8. TYPE OF ORDER	
b. COMPANY NAME				<input type="checkbox"/> a. PURCHASE <input checked="" type="checkbox"/> b. DELIVERY REFERENCE YOUR Except for billing instructions on the reverse, this Please furnish the following on the terms and delivery order is subject to instructions conditions specified on both sides of this order. contained on this side only of this form and is and on the attached sheet, if any, including issued subject to the terms and conditions delivery as indicated. of the above-numbered contract.	
c. STREET ADDRESS 1835 TERMINAL DR STE 200					
d. CITY RICHLAND		e. STATE WA		f. ZIP CODE 993544958	
9. ACCOUNTING AND APPROPRIATION DATA B&R: 960-15-171-277, Job Code: N6332, BOC: 252A, Appropriation No: 31X0200.960, Obligate: \$9,122.00 DUNS: 928304120 FSS: RES-C09-807				10. REQUISITIONING OFFICE RES	
11. BUSINESS CLASSIFICATION (Check appropriate box(es))				12. F.O.B. POINT Destination	
<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. EMERGING SMALL BUSINESS	
				<input type="checkbox"/> g. SERVICE-DISABLED VETERAN-OWNED	
13. PLACE OF		14. GOVERNMENT B/L NO.		15. DELIVER TO F.O.B. POINT ON OR BEFORE (Date)	
a. INSPECTION Destination		b. ACCEPTANCE Destination		N/A 2/28/2011	
				16. DISCOUNT TERMS Net 30	

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)
	Task Order #18 for "Developing the Technical Basis for Revising Regulatory Guide 5.4 - Standard Methods and Design Considerations for Analysis and Measurement of Special Nuclear Materials." Period of Performance: 9/30/09 - 2/28/2011 Estimated Reimbursable Cost: \$252,235.78 Fixed Fee: \$15,134.15 Total Estimated Cost plus Fee (Ceiling): \$267,369.93					

18. SHIPPING POINT		19. GROSS SHIPPING WEIGHT		20. INVOICE NO.		17(h) TOTAL (Cont. pages)
21. MAIL INVOICE TO:						
a. NAME Department of Interior / NBC NRCPayments@nbc.gov						17(i). GRAND TOTAL
b. STREET ADDRESS (or P.O. Box) Attn: Fiscal Services Branch - D2770 7301 W. Mansfield Avenue						
c. CITY Denver		d. STATE CO		e. ZIP CODE 80235-2230		
22. UNITED STATES OF AMERICA BY (Signature) 				23. NAME (Typed) Sharon M. Lim Contracting Officer TITLE: CONTRACTING/ORDERING OFFICER		

TEMPLATE - ADM001

SUNSI REVIEW COMPLETE

OCT 02 2009

ADM002

1. In accordance with contract **Clause G.4 2052.216-72 TASK ORDER PROCEDURES (OCT 1999)** Task Order NRC-T018 is hereby definitized. This effort shall be performed in accordance with the attached Statement of Work (Attachment One).
2. Task Order NRC-T018 shall be in effect from September 30, 2009 through February 28, 2011.
3. The cost ceiling for this order shall be \$267,369.93 of which \$252,235.78 represents estimated reimbursable costs and the amount of \$15,134.15 represents the fixed fee.
4. This task order is being incrementally funded. The current obligation for this order is \$9,122.00. This is a not to exceed amount. Any work undertaken by the Contractor in excess of this obligation is done at the Contractor's risk.
5. The following individuals are considered key personnel and as such are essential to the successful performance of the work under Task Order NRC-T018:



Key personnel shall not be removed from the effort under this task order without compliance with contract **Clause H.2 KEY PERSONNEL (JAN 1993)**.

6. Contacts for this task order:

Technical Monitor: Thomas Pham
(301) 492-3125

Project Officer: John Ridgely
(301) 251-7458

Alternate Project Officer: Robert Carpenter
(301) 251-7483

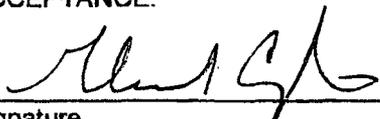
Contracting Officer: Sharon M. Lim
(301) 492-3624

7. The contractor shall be required to comply with the Contractor Spending Plan submitted on September 29, 2009 in the amount of \$267,369.93. The contractor shall immediately notify both the Contracting Officer and the Project Officer, in writing, if the estimated monthly amounts stated in the Contractor Spending Plan change at any time during the period of performance. The contractor shall be required to submit an updated Contractor Spending Plan upon request.

Contract No.: NRC-04-07-112
Task Order No.: NRC-T018
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8. The issuance of Task Order NRC-T018 does not amend any of the terms and conditions of Contract No.: NRC-04-07-112.

ACCEPTANCE:



Signature

9/30/09

Date

CFO

Title

STATEMENT OF WORK

NRC Regulatory Guide Revision Contracts

Task Order No. 18

Developing the Technical Basis for Revising Regulatory Guide 5.4, “Standard Methods and Design Considerations for Analysis and Measurement of Special Nuclear Material”

BACKGROUND

Regulatory Guide 5.4, “Standard Methods and Design Considerations for Analysis and Measurement of Special Nuclear Material,” is to be revised and combined with four (4) other material control and accountability (MC&A) Regulatory Guides. These Regulatory Guides were developed between 1973 and 1980 and were created to provide guidance on complying with the regulations set forth in Title 10 of the *Code of Federal Regulations* (10 CFR) Part 70, “Domestic Licensing of Special Nuclear Material.” Those regulations required, in part, that applicants for approval to possess and use more than one effective kilogram of special nuclear material (SNM) in an unsealed form, must provide among other things, an adequate material control and accounting system. Regulatory Guides 5.4, 5.5, and 5.39 identified acceptable methods for sub-sampling chemical, isotopic, and impurity analysis which an applicant may specify as part of its procedures for accounting of SNM. Regulatory Guide 5.39 referenced the American Society of Testing Materials (ASTM) Standard c-799, “Standard Methods for Chemical, Mass Spectrometric, Spectrochemical, Nuclear, and Radiochemical Analysis of Nuclear Grade Uranyl Nitrate Solutions,” as an adequate basis for the assay, isotopic measurement, and impurity analysis of nuclear grade uranyl nitrate solutions. Regulatory Guide 5.48 pertains to vessel design considerations for methods of measuring the mass of liquid (solution bulk) contained in a vessel and identifies those design considerations adequate for minimizing the error associated with these measurements. Regulatory Guide 5.58 provides conditions and procedures adequate for establishing and maintaining traceability measurements for SNM control and accountability. Because these traceability measurements can be unique, Regulatory Guide 5.58 provided no specific methods for application, but rather, referred to a number of Regulatory Guides, American Nuclear Standards Institute (ANSI) standards, and international standards for consideration in making an application.

The five Regulatory Guides to be combined are:

- (1) Regulatory Guide 5.4, “Standard Analytical Methods for the Measurement of Uranium Tetrafluoride (UF₄) and Uranium Hexafluoride (UF₆),” February 1973,
- (2) Regulatory Guide 5.5, “Standard Methods for Chemical, Mass Spectrometric, and Spectrochemical Analysis of Nuclear-Grade Uranium Dioxide Powders and Pellets,” February 1973,

- (3) Regulatory Guide 5.39, "General Methods for the Analysis of Uranyl Nitrate Solutions for Assay, Isotopic Distribution, and Impurity Determinations," December 1974,
- (4) Regulatory Guide 5.48 "Design Considerations Systems for Measuring the Mass of Liquids," February 1975, and
- (5) Regulatory Guide 5.58, "Considerations for Establishing Traceability of Special Nuclear Material Accounting Measurements," February 1980.

Since the mid to late seventies, significant advances have taken place with respect to MC&A requirements in technology, equipment, and measurement control procedures. Title 10 CFR Part 74, "Material Control and Accounting of Special Nuclear Material," was created in 1985 specifically for SNM/MC&A requirements to separate them from other safety requirements in the regulations.

The purpose of this task order is to develop the technical basis for revising Regulatory Guide 5.4, to combine it with the other four Regulatory Guides, and to reflect the new requirements in the regulations, to enhance or enlarge the scope (as appropriate), and to identify and propose updates to references within the Regulatory Guides.

WORK SCOPE FOR THIS TASK

Under this task order the contractor shall develop the technical basis for revising Regulatory Guides 5.4, 5.5, 5.39, 5.48, and 5.58 as well as review and assess the regulatory positions in the aforementioned Regulatory Guides, including documents referenced within these guides (e.g., relevant technical standards, papers, and NRC regulations). To do this properly requires effectively updating each of the current Regulatory Guides and combining the results into a revised Regulatory Guide 5.4. Throughout the revision process the contractor shall support presentations [e.g., prepare presentations and attend public meetings and the Advisory Committee on Reactor Safeguards (ACRS) meetings], respond to comments (from the public, staff, and ACRS), and provide additional support suitable for the Regulatory Guide development, as needed. The contractor shall propose suitable text for the preparation of the Regulatory Guide. References to guidance and other relevant documents shall be updated to reflect the most current and applicable versions.

Task 1 – Kickoff for Revising Regulatory Guide 5.4

Upon award of this task order, the NRC Project Officer (PO) and the contractor shall agree on the earliest mutually agreeable date and time for the kickoff meeting. The contractor's project manager and technical lead shall attend the kickoff meeting at NRC Headquarters in Rockville, Maryland. The contractor shall review and evaluate relevant information and be prepared to discuss it at the kickoff meeting with the NRC. Seven business days prior to the kickoff meeting, the contractor shall provide to the NRC PO a pre-kick-off meeting summary of its reviews in the context of development of a Regulatory Guide. The summary should be a list, in tabular format, of all regulatory positions, performance objectives, provisions, methodologies (statistical or otherwise), organizational structure, definitions, and references and an assessment as to their

continued validity, proposed revisions, and basis for those proposed revisions. At the kickoff, the NRC technical lead will describe the important issues related to developing the NUREG/CR report to support development of the Regulatory Guide.

Within five working days of the kickoff meeting the contractor shall provide a kick-off meeting summary to the Project Officer that summarizes the outcomes of the kickoff meeting, including clarification of the contractor's understanding of the work to be performed. The NRC staff will provide timely review, comment, and approval of this summary.

Task 2 – Technical Bases for Revising Regulatory Guide 5.4

Combining the five Regulatory Guides into a revised Regulatory Guide 5.4 will provide a single location for all applications of procedures for control and accountability of SNM incorporating the advances in equipment and technology that have occurred over the past 35 years, including acceptable measurement methods of traceability for sub-sampling chemical, isotopic, and impurity analysis. The revised Regulatory Guide 5.4 shall ensure compliance with NRC approved material control and accounting plans and regulations.

To achieve this goal, the contractor shall perform a comprehensive review of the guidance in the existing Regulatory Guides to determine their validity, accuracy, clarity, technical soundness, and to evaluate the measurements methods for material control accounting of SNM. This review shall include a thorough evaluation of other Regulatory Guides referenced in the subject guides above, including all ANSI and ASTM standards of measurement (both national and international). In particular, the contractor shall review the following standards for applicability:

- (1) ASTM Standard C-799, "Standard Methods for Chemical, Mass Spectrometric, SpectroChemical, Nuclear, and Radiochemical Analysis of Nuclear Grade Uranyl Nitrate Solutions," and
- (2) ANSI Standards:
 - (a) N15.18, "Mass Calibration Techniques for Nuclear Material Control,"
 - (b) N15.19, "Volume Calibration Techniques,"
 - (c) N15.6-1972, "Analytical Standards for Accountability of Uranium Tetrafluoride,"
 - (d) N15.7-1972, "Analytical Standards for Accountability of Uranium Hexafluoride,"
 - (e) N15.20, "Guide to Calibrating Nondestructive Assay Systems," 1975, and

- (3) ISO guide 6-1977(E) of the International Standards Organization definitions for applicability.

At the conclusion of this review, the contractor shall identify the need for: (a) new guidance in the Regulatory Guide, (b) deletion of existing guidance, (c) revision of existing guidance, (d) proposed new references for application of acceptable methods, (e) modifications and enhancements to the guidance, and (f) best practices on a performance basis that should be incorporated in the new Regulatory Guide (with supporting documentation).

The contractor shall review the current reporting requirements to determine if they are adequate to maintain accurate and reliable information to periodically confirm the quantities and locations of SNM in the licensee's possession.

Specifically, the Regulatory Guide update needs to be consistent with the state of the art (as appropriate), and to consider the following areas and propose changes.

1. Are the current references applicable? Do the Regulatory Guides accurately and appropriately reflect the current requirements in the regulations? Have any of the references been revised, replaced, withdrawn, or otherwise been superseded? If a reference has been superseded, is there a reference that reflects current best practices?
2. Do the methods and techniques discussed in the Regulatory Guides reflect the current best practices?
3. Are additional reporting requirements necessary?
4. Have there been any additional regulatory experiences and/or changes in the regulatory position that should be included in the new Regulatory Guide?
5. Is any information contained in similar Regulatory Guides appropriate for inclusion in this Regulatory Guide?

For each document (reference, guidance document (except other Regulatory Guides), code, and standard) that is proposed to be replaced with an updated version, the contractor shall prepare a table comparing all of the items (tables, charts, features, requirements, criteria, guidance, etc.) in the original document and the proposed updated document. The contractor shall provide a discussion for each item as to its applicability and acceptability. The discussion on acceptability shall include, but is not limited to, an assessment of the effect of adding or reducing conservatism, or increasing or decreasing safety or safety margin.

After NRC concurrence, the contractor shall draft the technical basis for the revision of the Regulatory Guide in a technical basis report as a NUREG/CR (in the NUREG report format) for the development of the revised Regulatory Guide. This report shall include a discussion of the work performed, proposed regulatory positions, a regulatory analysis,

the rationale for all positions, modifications, and additions proposed, and all supporting tables, lists, figures and appendices. The report shall be sufficiently complete that someone not familiar with the work is able to follow the discussion, understand the basis and rationale, and reach the same conclusions. The regulatory analysis shall conform to the guidance specified in NUREG/BR-0058, Revision 4, "Regulatory Analysis Guidelines of the U.S. Nuclear Regulatory Commission."

The contractor shall prepare the technical basis report (in the NUREG report format) in accordance with the Presidential memorandum on plain language (63 FR 31883, June 10, 1998). Preparation of the technical basis shall include a "Level 2" technical edit to correct the following problems:

- Misspelled words
- Subject/verb disagreement
- Incomplete sentences
- Punctuation errors
- Typographical errors
- Poor word choices or usage
- Poor syntax
- Overuse of the passive voice
- Faulty parallelisms
- Misplaced modifiers
- Incomplete comparisons
- Inconsistent/incorrect use of symbols, terms, acronyms, and/or abbreviations
- Wordiness
- Overly complex sentences
- Errors in figures and tables, including inconsistencies with the text
- Use of references not available in the public domain

The contractor shall submit the draft report for review by the NRC staff. The staff review is expected to typically take three weeks. Upon receipt of NRC comments, the contractor shall revise the draft report and resubmit the draft report within 30 days.

Task 3 –Support for Revising Regulatory Guide 5.4

The contractor shall prepare slides or other briefing material and attend advisory committee or public meetings as requested. The contractor shall respond to comments from advisory committees and public meetings as requested. The contractor shall revise the technical basis as a result of advisory committee or public comments as requested.

Using comments from the public, staff, and ACRS obtained for the draft NUREG/CR, finalize the document, as directed by the staff, and provide the final NUREG/CR to the NRC.

The activities in Task 3 will typically be performed after Task 2 is completed.

DELIVERABLES

The contractor shall be required to comply with the delivery schedule stated below. All deliverables shall be formatted and prepared using Microsoft Word for documentation and reports, Microsoft PowerPoint for briefings, and Microsoft Project for schedules. Contractors are encouraged to submit deliverables as soon as they are completed, which may be prior to the due dates listed below.

The contractor shall provide the following deliverables:

Deliverable	Due Date
Technical Progress Report	Monthly by the 10 th day of the following month
Financial Status Report	Monthly by the 10 th day of the following month
Pre-Kick-Off Meeting Summary	7 working days prior to kick-off meeting
Kick-Off Meeting Summary and Action Items	Within 5 working days of the kick-off meeting
Initial Technical Basis Report (Task 2)	Within 6 months of the kick-off meeting
Revised Technical Basis Report (Task 2)	Within 30 days of receipt of comments
Final Technical Basis Report (Task 3)	<ul style="list-style-type: none"> • Within 30 days of notification from the Project Officer – if only editorial comments • Within 3 months of notification from the Project Officer – if technical comments

Technical Progress Report – shall meet the requirements of Clause F.3 - 2052.211-71 Technical Progress Reports (JAN 1993) of the base contract.

Financial Status Report – shall meet the requirements of Clause F.4 – 2052.211-72 Financial Status Report (OCT 1999) of the base contract.

Kick-Off Meeting Summary and Action Items – shall also reflect the contractor's understanding of the issues and the contractor's approach for development of a new Regulatory Guide.

Initial Technical Basis Report – shall be submitted by the above due date after the completion of Task 2.

Revised Technical Basis Report – shall be submitted 30 days after receipt of comments on the Initial Technical Basis Report.

Final Technical Basis Report – shall be submitted by the above due date after the completion of Task 2, after receipt of comments and instructions from the Project Officer (approximately 18 months after the kick-off meeting).

All of the above deliverables shall be submitted in accordance with Clause F.6 Place of Delivery – Reports (JUN 1988) of the base contract.

Any deliverables rejected by the Project Officer shall be revised and resubmitted within 10 working days of notification from the Project Officer that the deliverable was rejected.

REQUIRED EXPERTISE

Technical staff proposed for this project shall have recognized knowledge of and experience with the current general requirements in 10 CFR 74, "Material Control and Accounting of Special Nuclear Material." The contractor shall also have general knowledge of the requirements of 10 CFR 70, "Domestic Licensing of Special Nuclear Material," and 10 CFR 73, "Physical Protection of Plants and Materials." The proposed staff shall have experience in the practice and procedures used in MC&A activities. In this regard, the contractor shall have working knowledge of statistics, equipment, and measurement methods for sub-sampling chemical, isotopic and impurity analysis which an applicant may specify as part of its procedures for accounting of SNM. One method to demonstrate experience or familiarity with MC&A is through publications of topics in these fields and /or advanced formal education directly related to the subject matter above.

MATERIALS PROVIDED

The Regulatory Guides are available on the NRC's public web site at:

<http://www.nrc.gov/reading-rm/doc-collections/reg-guides/environmental-siting/active/>.

Other references mentioned above are publically available in NRC's Code of Federal Regulations, Title 10, in ADAMS on NRC's public web site, or available from the specific standards organizations.

TRAVEL REQUIREMENTS

Travel is required to NRC headquarters to attend kickoff meetings, ACRS meetings, public meetings, and to discuss the contractor's work with the staff. It is anticipated that two people would attend each kickoff meeting and one person will attend each of the other three one-day meetings for a total of five person-meetings.

TASK MANAGER

The Task Manager for this Task Order is Thomas Pham (301) 492-3125.