

October 10, 2002

Mr. Michael Holland  
Executive Manager of Brookhaven Group  
US Department of Energy  
Building 464  
Brookhaven National Laboratory (BNL)  
Upton, NY 11973

**SUBJECT: RADIOLOGICAL EMERGENCY ON-SHIFT AND AUGMENTATION STAFFING  
GUIDANCE FOR NUCLEAR POWER PLANTS**

Job Code: J3017

We request a proposal for performance of the attached Statement of Work (SOW) under Job Code J3017 for the Nuclear Regulatory Commission, Office of Nuclear Reactor Regulation (NRR). The enclosed SOW details the required work and should be used as the basis for proposal preparation.

### **Cost Proposal**

Use NRC Form 189, "DOE Laboratory Project and Cost Proposal for NRC Work". The form includes instructions for its completion.

Also submit a spending plan as part of your cost proposal. Guidance for completion of the plan is contained in the instructions portion of NRC Form 189.

### **Technical Proposal Content**

As a minimum, the technical proposal must contain the following:

- A discussion to substantiate BNL's understanding of the scope of work,
- A discussion of BNL's technical approach to meet the project's objective,
- A discussion of the experience and capabilities of key personnel and the laboratory in performing similar work,
- Identification of key personnel and the number of staff hours that will be committed to complete the work. Resumes for key personnel must be included,
- Identification of administrative support personnel and/or facilities needed to assist professional personnel in completing the work,

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- Identification of any hardware or software to complete the project,
- A discussion of any potential organizational conflict-of-interest issues,
- A discussion of anticipated problem areas or deviations from the NRC's SOW.

A DOE-approved proposal must be submitted within 14 calendar days from receipt of the Request for Proposal (RFP). Expedited handling by both DOE and BNL is requested. The RFP is not an authorization to start work.

Work under this project may require access to and/or the origination of classified information as indicated on the enclosed NRC Form 187, or will require access to and/or the origination of sensitive unclassified information.

The original proposal and two copies should be sent to U.S. Nuclear Regulatory Commission, Attn: Lawrence K. Cohen, Office of Nuclear Reactor Regulation, Division of Inspection Program Management, Equipment and Human Performance Branch, Emergency Preparedness and Health Physics Section, Mail Stop O-6H2, Washington, DC 20555-0001.

Questions concerning this request should be addressed to Lawrence K. Cohen, at (301) 415-2923. Thank you for your assistance in this matter.

Sincerely,

**/RA/ Theodore Quay for:**

Bruce A. Boger, Director  
Division of Inspection Program Management  
Office of Nuclear Reactor Regulation

Enclosures:  
Statement of Work  
NRC Form 189 with Instructions  
NRC Form 187

cc: Jim Higgins, BNL  
Tom LeMaire, BNL

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OFFICE	DIPM/NRR	DIPM/NRR	DIPM/NRR	DIPM/NRR
NAME	DSCHNECK	KGIBSON	TQUAY	BBOGER
DATE	10/10/2002	10/10/2002	10/10/2002	10/10/2002

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**OFFICE OF NUCLEAR REACTOR REGULATION  
DIVISION OF INSPECTION PROGRAM MANAGEMENT**

**STATEMENT OF WORK**

PROJECT TITLE: Radiological Emergency On-shift and  
Augmentation Staffing  
for Nuclear Power Plants

JOB CODE: J3017  
CONTRACTOR: NISAC  
SITE: Albuquerque  
STATE: New Mexico

COST CENTER NUMBER: 220-15-130-397

XII. BACKGROUND

The events of September 11, 2001, changes in technology, historical experience with inconsistencies in the implementation of Emergency Response Organization (ERO) staffing requirements, and recent shift staffing changes requested by licensees have made it imperative that the NRC have sound guidance and an up-to-date technical basis for emergency staffing and augmentation. Consistent with the NRC's performance goals, the development of such guidance and updated technical basis for radiological emergency on-shift and augmentation staffing will help maintain safety, make NRC decisions more effective, efficient and realistic, increase public confidence, and reduce unnecessary regulatory burden.

September 11, 2001

The terrorist acts of September 11, 2001, far exceeded any actions that the NRC had contemplated as a threat to licensees. On February 25, 2002, the NRC issued an Order to all commercial nuclear power plants, which included a number of interim compensatory measures to address the current threat environment. One of these requested that licensees review their emergency plans and take actions to assure that onsite staffing, facilities, and procedures are adequate to accomplish actions necessary for response to terrorist threats. In addition, a top to bottom review of nuclear security and safeguards is being conducted. If the NRC determines as a result of this review that revisions to regulations are warranted, these changes will occur through the rule-making process. With regard to on-shift staffing and augmentation, the NRC needs to better understand the impact of a threat (and actuality) of a terrorist attack on shift staffing and augmentation from the viewpoint of security and safeguards and emergency preparedness. To this end, NUREG-0654, Table B-1, "Minimum Staffing Requirements for NRC Licensees for Nuclear Power Plant Emergencies" needs to be reviewed, validated, and changes proposed, as necessary, in light of the terrorist actions of September 11, 2001 and any revision to the Design Basis Threat (DBT), security requirements and vulnerabilities issued as a result of the current review being conducted in parallel.

Industry Experience & Changes

In the past 10 years, and in particular since the last related study performed in 1995, changes have occurred within the nuclear industry which potentially impact the numbers and functions associated with shift staffing and augmentation. New analytical techniques, computer modeling, de-regulation, current evidence of lower on-shift staffing levels, the tendency of plant staff to live farther from the site, technological advances in dose assessment, alarming

dosimetry, automated RCA entry, automatic on-line boron concentration determination instrumentation, the removal of post accident sampling systems at certain plants, and the coverage of multiple workers by one radiological protection (RP) technician through telemetry and television are examples of these changes. Furthermore, experience related to shift staffing and augmentation gained as a result of responding to emergencies and the conduct of drills and exercises has not been analyzed since 1995. Industry changes, licensee experience, changes in technology, and the resulting impact on shift staffing and augmentation need to be clearly identified, analyzed and incorporated into an independent study.

### NRC/Licensee Action & Interpretation

Staffing levels at a nuclear power plant must meet two different criteria. There needs to be sufficient staff to operate the plant in a safe manner during periods of normal operation as well as in emergency situations. There are technical specifications which address minimum staffing during normal operation. In addition there are more stringent requirements for on-shift emergency staffing to handle the periods of high task demands associated with emergencies. To meet the additional demands during an emergency, the licensee has the flexibility to call in and augment the on-shift staff. Table B-1 in NUREG-0654 provides minimum staffing guidance and augmentation schedules for NRC licensees for nuclear power plant emergencies to meet the requirement of 10 CFR 50.47 (b)(2):

*“On-shift facility licensee responsibilities for emergency response are unambiguously defined, adequate staffing to provide initial facility accident response in key functional areas is maintained at all times, timely augmentation of response capabilities is available....”*

The disadvantage of providing guidance in a table, such as Table B-1 in NUREG-0654, is that there are widely acknowledged site-specific differences between nuclear power plants. Plants may differ in design, number of units, whether or not control rooms are combined, geographic location, union practices, and on-shift use of severe accident management guides. There may also be differences in relative emphasis placed by plant management on the number of personnel needed to accomplish certain emergency response functions. For instance, some licensees use cross-training to provide backup expertise and reduce staffing levels. And, as a result of these variations, it is possible that existing staffing requirements may be appropriate for most plants, but may be too high or too low for others. The current guidance in Table B-1 also does not take into consideration the possible security threat associated with the events of September 11<sup>th</sup>.

Also, licensees have requested changes to their on-shift staffing and staff augmentation levels under the provisions of 10 CFR 50.54(q). Each request has been evaluated on a case-by-case basis, considering site-specific conditions, and the results are documented in a safety evaluation. At present, NUREG-0654 Table B-1 and the set of completed safety evaluations serve as guidance for current and future requests for changes. This guidance, as it has developed, needs to be reviewed, consolidated and updated, with the intent of assisting licensees and the NRC staff in determining whether proposed shift staffing and/or augmentation changes are a “decrease in effectiveness”, as specified in 10 CFR 50.54(q). A basis for adequacy is provided in NUREG-0654 Table B-1, but the numbers provided in this Table were developed in 1980, do not take into account site-specific differences, and were referred to as “goals” in NUREG-0737, Supplement 1, and Generic Letter (GL) 82-33. Therefore, a method

needs to be devised to validate whether current on-shift and augmentation staff guidance is sufficient to assure the timely and effective performance of emergency response functions. Requirements, Related Guidance & Reports

Listed below is a summary of pertinent requirements, related guidance & reports:

10 CFR 50, Section 50.47, *Emergency Plans* (esp. 10 CFR 50.47 (b) and (b)(2)).

10 CFR 50, Section 50.54, *Conditions of Licenses* (esp. 10 CFR 50.54 (m) and (q)).

10 CFR 50, Appendix E, *Emergency Planning and Preparedness for Production and Utilization Facilities*.

Regulatory Guide 1.101, Rev. 2, *Emergency Planning and Preparedness for Nuclear Power Plants*.

NUREG-0654/FEMA-REP-1, Rev. 1, *Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants* (esp. Table B-1, *Minimum Staffing Requirements for NRC Licensees for Nuclear Power Plant Emergencies*).

NUREG-0711, Rev. 1, *Human Factors Engineering Program Review Model*.

NUREG-0737, *TMI Action Plan* (esp. Table III.A.1.2-1) and Supplement 1, *Requirements for Emergency Response Capability* (esp. Table 2).

NUREG-0800, *Standard Review Plan*, Chapter 13, Sections 13.1.2-13.1.3, *Operating Organization*, and 13.3, *Emergency Planning*.

NUREG-0933, *A Prioritization of Generic Safety Issues*, Issue 175, *Nuclear Power Plant Shift Staffing*.

NUREG-1275, Vol. 8, *Operating Experience Feedback Report - Human Performance in Operating Events*.

NUREG/CR-1280, *Power Plant Staffing*.

NUREG/IA-0137, *A Study of Control Room Staffing Levels for Advanced Reactors*.

Generic Letter (GL) 82-33, *Supplement 1 to NUREG-0737 - Requirements for Emergency Response Capability* (esp. Table 2, *Minimum Staffing Requirements for Nuclear Power Plant Emergencies*).

Information Notice (IN) 85-80, *Timely Declaration of an Emergency Class, Implementation of an Emergency Plan, and Emergency Notifications*.

IN 91-77, *Shift Staffing at Nuclear Power Plants*.

IN 93-44, *Operational Challenges During a Dual-Unit Transient*.

IN 93-81, *Implementation of Engineering Expertise On Shift.*

IN 95-23, *Control Room Staffing Below Minimum Regulatory Requirements.*

IN 95-33, *Switchgear Fire and Partial Loss of Offsite Power at Waterford Generating Station, Unit 3.*

IN 95-48, *Results of Shift Staffing Study.*

IN 97-78, *Crediting of Operator Actions in Place of Automatic Actions and Modification of Operator Actions, Including Response Times*

SECY-82-111, *Requirements for Emergency Response Capability.*

SECY-93-184, *Shift Staffing at Nuclear Power Plants.*

SECY-96-170, *Assessment of Exceptions Granted for Locations and Staffing Times of Emergency Response Facilities.*

Courtney, L. and D. Shurberg, Brookhaven National Laboratory, *Analysis of Licensee Event Reports for Shift Staffing Implications.*

Laughery, Ron, et al., Micro Analysis and Design, Inc., *Discrete Event Simulation as a Tool to Determine Necessary Nuclear Power Plant Operating Crew Size.*

Laughery, Ron, et al., Micro Analysis and Design, Inc., *Validation of Discrete Event Simulation as a Tool for Predicting Nuclear Power Plant Operator Performance.*

Laughery, Ron, et al., Micro Analysis and Design, Inc., *NRC Shift Staffing Analysis for Outside of Control Room Activities.*

Lewis, Paul M., Pacific Northwest Laboratory, *Staffing, Overtime and Shift Scheduling Project.*

Shurberg, D., Brookhaven National Laboratory, et al., *Identification of Issues Associated With Nuclear Power Plant Shift Staffing Levels.*

Shurberg, D., Brookhaven National Laboratory, et al., *Nuclear Power Plant Shift Staffing Levels: Site Data Collection Report.*

Shurberg, D., Brookhaven National Laboratory, *Review of Diagnostic Evaluation Team Reports for Shift Staffing Issues.*

## II OBJECTIVE

The Contractor shall develop guidance that addresses the on-shift and augmentation staffing needed to respond to a radiological emergency at a nuclear power plant. Guidance provided is to include the necessary functions, the number and types of personnel to perform these functions, and the number of individuals needed over time. This guidance and supporting

information will be provided in the form of a draft NUREG/CR. The Contractor shall address the following issues in the draft NUREG/CR:

- Guidance for validating current on-shift and augmentation staffing levels at nuclear power plants in the event of a radiological emergency.
- Results of shift staffing and augmentation evaluation(s) for a spectrum of events, including security threats and fast-breaking events encompassing all modes and types of plants.
- A revisit of NUREG-0654, Table B-1, "Minimum Staffing Requirements for NRC Licensees for Nuclear Power Plant Emergencies" in light of the terrorist actions of September 11, 2001 and any revision in DBTs, security requirements and vulnerabilities issued as a result of the current review being conducted in parallel. The Table will be reviewed and changes proposed, as necessary.
- Evaluation of industry changes, licensee experience, changes in technology, and their impact on on-shift staffing and augmentation. The information shall be clearly identified, analyzed and integrated into the supporting study(ies) and draft NUREG/CR.
- An updated technical basis for 10 CFR 50.47 (b)(2), which can be used by the NRC or the licensee to determine whether a licensee's request for changes to on-shift staffing and augmentation levels and times are a "decrease in effectiveness" as required by 10 CFR 50.54(q).

### III TASK STATEMENT

The Contractor shall perform the following tasks during the specified period of performance and develop the products specified.

**TASK:** The contractor shall develop a draft NUREG/CR, that addresses the on-shift and augmentation staffing needed to respond to a spectrum of radiological emergencies at a nuclear power plant. The guidance should include the makeup and size of the emergency response staff on site, the makeup and size of the augmentation staff, staff qualifications, and the timing sequence for augmenting the onsite staff. The contractor should consider, but is not limited to, current operating practices, new technologies, security threats, site locations, and the number of units onsite, in performing evaluations. The contractor shall address the following issues.

- Review shift staffing and augmentation levels (i.e., NUREG-0654, Table B-1) for a spectrum of events and operating modes in light of the events of September 11, 2001. Revise the review in the event of any revision in design basis threat (DBT), security requirements and vulnerabilities issued during the review.
- Identify industry changes, licensee experience, and changes in technology, and analyze their impact on shift staffing and augmentation.



- Establish an updated technical basis for 10 CFR 50.47 (b)(2), which can be used by the NRC or the licensee to determine whether a licensee's request for changes to on-shift staffing and augmentation levels and times are a “decrease in effectiveness”.

**Sub-task a: Review current available information.**

The contractor shall review materials related to on-shift and augmentation staffing during actual radiological emergencies, drills/exercises, and studies at commercial nuclear power plants. In addition, the contractor shall also review previous licensee requests and associated Nuclear Regulatory Commission (NRC) safety evaluations for revising their emergency response organization. The Technical Monitor will identify those licensee requests. The contractor shall prepare a summary of the results of the reviews.

Estimated Completion Date: one month after project initiation.

Estimated Level of Effort: two person-months.

**Sub-task b: Identify on-shift and augmentation staffing functions and tasks in emergency operating procedures and emergency plans and the associated implementing procedures.**

The contractor shall review emergency operating procedures and emergency plan implementing procedures representative of the four reactor vendors and identify on-shift and augmentation staff tasks and functions. The functions and tasks identified for each of the four reactor vendors shall be compared, differences addressed, and the results provided to the Technical Monitor for review and comment.

Estimated Completion Date: four months after project initiation

Estimated Level of Effort: four person-months

**Sub-task c: Identify the qualifications (knowledge and skills) needed to perform the emergency response tasks identified in Sub-task b above.**

Sub-task c.1 The contractor shall determine the qualifications needed to perform each emergency response on-shift and augmentation staff member task identified in Sub-task b above and the results provided to the Technical Monitor for review and comment.

Sub-task c.2: The contractor shall provide support at the public meeting, hosted by the NRC, to obtain comments on the results of Sub-tasks a through c. The contractor shall support presentations to internal and external stakeholders.

Estimated Completion Date: six months after project initiation

Estimated Level of Effort: two person-months

**Sub-task d: Determine the length of time needed to perform each emergency response on-shift and augmentation staff task identified in Sub-task b above. A range of times and sequence, as to when the task may be needed to be performed in response to a spectrum of events, shall also be identified.**

The contractor shall determine a range of times and sequence to perform each on-shift and augmentation staff member task identified in Sub-task b above for a spectrum of events. (NOTE: Times to perform a task may vary due to plant conditions, personnel errors, etc.) Information should be captured in a database that is compatible with modeling programs used for staffing simulation and optimization. The contractor shall coordinate scenario selection with the Technical Monitor, and the methodology used shall be approved by the Technical Monitor prior to commencing this Sub-task.

Estimated Completion Date: nine months after project initiation

Estimated Level of Effort: two person-months

**Sub-task e: Validate the task information and response times developed in Sub-tasks b, c and d by observing drills and/or conducting tabletop exercises at various commercial nuclear power plant sites or through review by subject matter experts.**

Sub-task e.1 The contractor shall coordinate any site visits with the Technical Monitor. If site visits (up to four) are used as all or part of the validation process, the contractor shall also gather information regarding the qualifications of the personnel performing emergency response tasks. Site visits should consider the following factors:

- various reactor types and vendors,
- single and multi-unit sites,
- separate and common control rooms,
- drills involving only minimum on-shift and augmentation staffing,
- activation of emergency response facilities is not necessary,
- drills using the simulator are preferred; however, in-plant response activities should minimize simulation,
- location(s) where augmented staff report and where they perform their emergency response tasks.

Sub-task e.2: The contractor shall provide support at the public meeting hosted by the NRC to obtain comments on Sub-tasks d and e. The contractor shall support presentations to internal and external stakeholders.

Estimated Completion Date: 12 months after project initiation.  
Estimated Level of Effort: six person-months.

**Sub-task f: Determine the on-shift and augmentation staffing levels needed to handle a spectrum of events.**

Using the information gathered in, and the results from, the completion of Sub-tasks a through e, determine the on-shift and augmentation staffing levels needed to handle a spectrum of events. Document this determination in as reasonably compact form as possible, e.g., a table(s). Results of this Sub-task shall be provided to the Technical Monitor for review and comment.

Estimated Completion Date: 14 months after project initiation.  
Estimated Level of Effort: three person-months.

**Sub-Task g: Prepare draft NUREG/CR:**

Sub-task g.1: The contractor shall prepare a draft NUREG/CR, and include the product prepared in Sub-task f as well as supporting background information and associated documentation resulting from the completion of Sub-tasks a through f.

Sub-task g.2: The contractor shall submit the draft NUREG/CR for review and comment to the NRC Technical Monitor.

Sub-task g.3: Based on NRC comment, the contractor shall revise the draft NUREG/CR, and submit the revised draft to the NRC Technical Monitor.

Sub-task g.4: The contractor shall provide support at a public meeting hosted by the NRC and presentations to internal and external stakeholders to discuss the results and the draft NUREG/CR.

Estimated Completion Date: 15 months after project initiation.  
Estimated Level of Effort: two person-months.

IV DELIVERABLES

A. Technical Reporting

The contractor shall provide for an authorized classifier to assign classification levels for the following documents and material in accordance with classification guidance furnished by the NRC.

- Sub-task a                      Written summary of reference materials review.  
Estimated Completion Date: one month after project initiation.
- Sub-task b                      Written description of on-shift and augmentation staff functions and tasks, and results of the comparison of the functions and tasks for the four reactor vendors.  
Estimated Completion Date: four months after project initiation.
- Sub-task c                      Results of qualifications determination and public meeting summary.  
Estimated Completion Date: six months after project initiation.
- Sub-task d                      Response times and sequence database.  
Estimated Completion Date: nine months after project initiation.
- Sub-task e                      Public meeting summary.  
Estimated Completion Date: 12 months after project initiation.
- Sub-task f                      Documentation of recommended on-shift and augmentation staffing levels.  
Estimated Completion Date: 14 months after project initiation.
- Sub-task g                      Public meeting summary. Initial and Final Draft NUREG/CR, in electronic and camera-ready copy. See Section IV.D for details related to formatting and submittal.  
Estimated Completion Date: 15 months after project initiation.

#### B. Monthly Business Letter Report

The Contractor shall submit a monthly business letter report by the 20<sup>th</sup> of each month to the Project Manager listed in Section VIII, with a copy provided to the NRC Technical Monitor. The Contractor shall include the following information, at a minimum, within the report's content:

- Title of Project.
- Job Code.
- Primary Contractor Contact & Contact Information.
- Period of Performance of the Contract.
- Reporting Period.
- List of Sub-Tasks Accomplished to Date.
- Sub-Tasks Accomplished During the Reporting Period (along with brief descriptions of how these items were accomplished & dates of accomplishment).
- Sub-Tasks to be Accomplished During the Upcoming Reporting Period (along with brief descriptions of how & when these items are to be accomplished).
- Monthly Spending, Total Spending to Date, and Remaining Funds.
- Identification of Any Changes Needed to the Project Scope, Sequencing, etc.
- Identification of Any Problems or Concerns.\*

\* The Contractor shall bring any administrative or technical difficulties which may affect the schedule or costs of the project to the immediate attention of the NRC Project Manager.

C. Submittal of Written Material

All documents mailed from DOE to NRC should have "Addressee Only" on the envelope to keep it from being entered into ADAMS. Send mail for the addressee and cc's as separate mailings.

D. New Standards for Contractors Who Prepare NUREG-Series Manuscripts

The guidance document will be in the form of a NUREG/CR.

All format guidance, as specified in NUREG-0650, Revision 2, remains the same with one exception. There is no longer a requirement to include the NUREG-series designator on the bottom of each page of the manuscript.

For the electronic manuscript, prepare the text in WordPerfect 8, and use any of the following file types for tables, charts, spreadsheets, etc.

<u>File Type</u>	<u>File Extension</u>
WordPerfect®	.wpd
Microsoft® PowerPoint®	.ppt
Corel® QuattroPro®	.wb3
Corel® Presentations	.shw
Lotus® 1-2-3	.wk4
Portable Document Format	.pdf

If you chose to publish a compact disk (CD) of your publication, place on the CD copies of the manuscript in the following formats: (1) PDF; (2) WordPerfect 8; and, (3) an Adobe Acrobat Reader, or alternatively, print instructions for obtaining a free copy of the Adobe Acrobat Reader on the back cover insert of the jewel box.

V. MEETINGS AND TRAVEL REQUIREMENTS

Frequently and periodically, over the course of this contract, the contractor and the NRC Technical Monitor will interact (e.g., email, telephone, conference call) to discuss the contract's progress, NRC comments, and the conduct and content of the specific sub-tasks of this contract. It is anticipated that most of the communication between the NRC and the Contractor will be handled in this manner. The following specific meetings and travel are anticipated under this project:

Sub-task a: Review information.

One trip (for two) for two days to NRC Headquarters is anticipated to kick-off the project, meet with the Project Manager & NRC Technical Monitor, collect information, and discuss project requirements and schedule as a whole.

Upon completion of this Sub-task, a meeting (via conference call) will be held to discuss the project and the path forward.

Sub-task c: Support public meeting.

One trip (for one) for two days to NRC Headquarters is anticipated to support the preparation and conduct of a public meeting.

Sub-task d: Discuss scenarios and evaluation methodology to be used.

During the conduct of Sub-task d, one trip (for one) for one to three days to NRC Headquarters is anticipated to meet with the NRC Technical Monitor, and discuss the scenarios to be evaluated as well as the evaluation methodology to be used.

Sub-task e: Observe drills and/or conduct tabletop exercises.

Four trips (for two) for three days to various sites to observe emergency response drills may be needed to complete Sub-task e. The sites shall be approved by the Technical Monitor.

During the conduct of Sub-task e, one trip (for one) for three to five days to NRC Headquarters may be necessary to adequately conduct the evaluation(s) (e.g., tabletop exercises). Upon mutual agreement, it may also be the case that it is more efficient and effective to conduct the evaluation(s) at the contractor's work site, at a site remote to both the contractor and NRC Technical Monitor, or a combination of both of these alternatives. In the first alternative, the NRC Technical Monitor and another NRC staff member will travel to the contractor's work site. In the second alternative, contractor and NRC staff and personnel sufficient to run and observe the evaluations will be expected to travel to the mutually agreed upon remote location. The third alternative will be an appropriate combination of alternatives one and two.

Sub-task e: Support public meeting.

One trip (for one) for two days to NRC Headquarters is anticipated to support the preparation and conduct of a public meeting.

Sub-task g: Support public meeting.

One trip (for one) for two days to NRC Headquarters may be necessary to adequately support the public meeting.

Sub-task g: Project closure.

Upon completion of the project, one trip (for two days) to NRC Headquarters to meet with the NRC Technical Monitor will be necessary to cover issues related to project closure.

The contractor may propose additional travel deemed necessary for the successful completion of this effort. And, over the course of the contract, NRC staff may travel to the contractor site for meetings. Once the contract has been awarded, the NRC Technical Monitor and Project Manager must approve all additional travel in advance.

VI. LEVEL OF EFFORT

Management & Technical Staff: 21 man-months. Management & Technical Staff person-months are broken down by task in Section III, Task Statement.

VII. PERIOD OF PERFORMANCE

Proposed Period of Performance: 11/01/02 – 01/31/04. No deviation from this schedule is anticipated, though the results of certain studies (e.g., DBT review) currently in progress may need to feed into this project. Deviation from this time frame must be approved by the Project Manager, upon advisement by the NRC Technical Monitor.

VIII. CONTACT INFORMATION

TECHNICAL MONITOR

Robert E. Moody  
Emergency Preparedness Specialist  
Emergency Preparedness and Health Physics Section  
Equipment and Human Performance Branch

Phone: 301-415-1737  
E-mail: rem2@nrc.gov

PROJECT MANAGER

Lawrence K. Cohen  
Project Manager  
Emergency Preparedness and Health Physics Section  
Equipment and Human Performance Branch

Phone: 301-415-2923  
E-mail: lkc@nrc.gov

IX. NRC FURNISHED MATERIALS

NRC documents related to shift staffing.

## X. CONTRACTOR-ACQUIRED MATERIAL

Normally, the purchase of property costing \$500 or more (including Federal Information Processing (FIP) resources) will be approved through issuance of a work order accepting the proposal in which the property is listed. If additional property costing \$500 or more (including FIP resources) is needed after work starts, the Contractor shall request approval of the additional property in writing to the Project Manager. This written request shall be in the form of a revised proposal or a letter.

## XI. SUBCONTRACTING/CONSULTANT INFORMATION

Describe any technical support effort that is proposed to be performed by a subcontractor or consultant. Identify the level of effort, by task, of any proposed subcontractor or consultant and provide an explanation of the need for subcontracting that portion of the effort. Note that "pass through" contracting is not allowed under the requirements of the DOE/NRC Memorandum of Understanding. For the purposes of this effort, a "pass through" contract is generally defined as subcontracting 50 percent or more of the technical effort. For any subcontract or consultant effort, describe the following:

- Necessity of subcontracting,
- Sub-tasks the subcontractor or consultant will perform,
- Level of effort proposed for the subcontract effort,
- Status and expected time frame for selection, and
- Method of selection of the subcontractor or consultant.