MEMORANDUM TO: Chairman Klein

FROM: R. William Borchardt
Executive Director for Operations

James Dyer
Chief Financial Officer

SUBJECT: CHAIRMAN REVIEW OF AN ACQUISITION FOR SPENT FUEL TRANSPORT RISK ASSESSMENT

In accordance with the January 24, 2005, "Delegation of Contractual Authority" memorandum, you are requested to review the project described in the draft Statement of Work (SOW) (Enclosure 1) and to provide to the Director, Office of Nuclear Material Safety and Safeguards (NMSS), notification to proceed with the subject agreement. This project is an appropriate Agency action conforming to Commission budget and program management decisions, and does not duplicate any other U.S. Nuclear Regulatory Commission (NRC) work.

Sandia National Laboratories (SNL or Sandia) can best carry out efforts for the Spent Fuel Transport Risk Assessment (SFTRA) project described in the attached revised SOW, because SNL developed NUREG/CR-6672, "Reexamination of Spent Fuel Shipment Risk Estimates," published in March 2000. Additionally, SNL has developed the key transport campaign risk assessment code, RADTRAN, which has been used in reviews of environmental impact statements, environmental reports, and other transportation-related environmental reviews for licensing actions that involve spent fuel shipments. SNL is also recognized in the industry for its world-renowned expertise, familiarity, and credibility in transport package design, analysis, and evaluation, under normal and accident conditions.

This project is primarily intended to support NMSS/Division of Spent Fuel Storage and Transportation (SFST) reviews of environmental impact statements; environmental reports, and other transportation-related environmental reviews for future nuclear power plants--or other facility licensing actions that involve spent fuel shipments. This project would also further risk-inform the Commission's technical basis for conclusions regarding spent fuel shipment safety, increase public understanding of spent fuel shipment risks and may, through public participation in the NUREG comment process, help to alleviate public concerns in this area. In this regard, "...[s]takeholders are informed and involved in NRC processes as appropriate." Additionally, this project supports Commission direction that "...regulatory policy concerning transportation of radioactive material be subject to close and continuing review, (46 FR 21620, published April 13, 1981)." The Commission could use the updated SFTRA to review its conclusion that "...present regulations [i.e., 10 CFR Part 71] adequately protect the public against unreasonable risk from the transport of radioactive materials, (*ibid.*)." The

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results of the project would also assist NMSS/SFST staff in the review of environmental assessments and impact statements related to interim spent fuel storage facilities.

Consideration was given to having the work done by in-house staff, other U.S. Department of Energy (DOE) laboratories, or a small business. However, none of these alternative organizations possesses all the requisite technical skills or the wealth and breadth of experience and technical competency to perform the work. Furthermore, SNL has completed 80 percent of the SFTRA project under job code J5546, as of March 2009. Using a source other than SNL would be inefficient, in that any new contractor would require time to become familiar with efforts already performed, as well as future tasks, delaying completion unnecessarily, and increasing the total costs. In addition, as noted above, there is no single entity, other than SNL, sufficiently familiar with the SFTRA cask modeling efforts already performed, and that possesses the technical skills and experience to perform the SFTRA. Using multiple contractors would similarly be inefficient, in that it would require additional NRC staff effort to integrate work from several contractors, thereby incurring schedule delays and cost increases.

Therefore, SNL is the only source with the necessary experience and knowledge to successfully complete all aspects of this project. The NMSS/SFST staff: (1) managed the original NUREG-6672 effort, and is managing the existing risk assessment agreement, with SNL, that the revised SOW would modify; (2) has an established working relationship with SNL in the requisite spent nuclear fuel cask technical disciplines; and, (3) will be the principal user of the results. Accordingly, NMSS/SFST will manage the modified agreement.

The desired outcome for SFTRA is an NRC NUREG document that summarizes spent fuel transportation safety (as detailed in the "Description/Scope" section below), and that has undergone public and peer review and comment. This modification is required to complete the SFTRA currently being performed under the existing agreement. This modification provides for: (1) an increase in the level of effort required to complete the analyses, which are more complex than originally estimated and stated in the initial SOW; (2) an increase in the level of effort required to resolve peer and public comments, because of the complexity of the analyses; (3) an increase in the Principal Investigator's level of effort in drafting the NUREG, because of the complexity of the analysis; and (4) the development of an electronic brochure.

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Procurement Method:	The project is an agreement with DOE's SNL.
Title:	"Spent Fuel Transport Risk Assessment"
Type of Action:	This is a modification to an existing interagency agreement.
Program/Contract Background:	There is no Staff Requirements Memorandum, policy guidance, or other authority directing the work. The original agreement required SNL to: (1) perform an updated analysis of the spent fuel transport risk estimates contained in NUREG/CR-6672, based on the collection of new data and estimates of the impact of inner spent fuel canisters on previous spent fuel shipment risk estimates; (2) document the findings in a draft NUREG report; (3) develop graphics and other presentation material to explain NRC's safety role in the transport of radioactive material, especially with regard to spent fuel transport; (4) issue the report for public comment; (5) support a technical peer review (under separate acquisition); (6) consider public and peer comments; and (7) prepare a Final Draft NUREG document to be employed in SFST transportation reviews and other licensing actions. Efforts began in June 2005 and have continued to date. Staff is not aware of any related contracts within NMSS or throughout the Agency for this type of work. There were no conflicts of interest identified with SNL's current or past work for NRC. Since the agreement was initiated in the summer of 2005, and to date, SNL has not contracted to perform work in the same or similar technical areas as the efforts described, in the attached SOW, with any other entities. Work to date has focused on updating the analysis of spent fuel transport risk estimates, including modeling of spent fuel canisters and package impact limiters, and preparing a draft NUREG that will be issued for public comment in early calendar year 2010. SNL has also prepared an interactive web-based document entitled "Understanding Cask Basics" (SAND 2008-2901W). This document is anticipated to be released December 2009, as an electronic brochure (NUREG/BR) by NRC.
Description/Scope:	The desired outcome for SFTRA remains unchanged: an NRC NUREG document that summarizes spent fuel transportation safety (including estimated spent fuel transportation impacts using best available technology), and that has undergone both public and peer review and comment. However, the estimated funds necessary to fully complete SFTRA are greater than previously estimated, necessitating the current modification, as described below.

Task 1 modification. SFTRA differs from all prior transportation risk assessments in that it uses NRC certified casks instead of generic casks. For this reason, it is imperative that the analytical models very closely match the actual cask design. It is not possible to make simplifying assumptions about geometry or to leave out complex details. Results of NUREG/CR-6672 and subsequent analyses have indicated the two aspects of cask design that have the greatest influence on package behavior in extra-regulatory accident scenarios are the closure region and the impact limiter. For the HI-STAR 100 cask used in SFTRA, these are the two areas of the design that are the most complex. In the initial planning for SFTRA, it was recognized that the complexity of these two regions must be included in the cask models. The planning also included a change in the structural finite element analysis code that treats the interaction between different components (such as the impact limiter shell and energy-absorbing material) in a more physically correct manner. The interplay between the complexity of the structure and the added analysis code precision was not clearly understood by either the analysts or the code developers at SNL, and required substantial unplanned effort to adjust the cask model code to achieve analysis success.

In addition, the level of effort is being increased to provide a greater role, for the Principal Investigator, in drafting the NUREG document, and to provide increased support for the public comment and peer review phase of the project.

Task 2 modification. To format the visualization tool. The original SOW focused on developing visual content to help explain transport safety. The SOW did not specify the format of this visual content. Sandia designed a website as a possible mechanism for providing access to this information; however, the website did not meet NRC web protocols. SNL developed an electronic brochure, to be issued by NRC, which will maintain the content and format of the information in the website. This modification will allow for completion of the electronic brochure.

This proposed modification, which requires a $335,300 increase to the agreement ceiling from $1,475,000 to $1,810,300, will enable the SFTRA project to be brought to conclusion with additional benefits beyond those captured in the original SOW. No further increases are anticipated.

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Key Milestones/Outputs:

The agreement is nearing completion on the structural, thermal, source-term estimation, and consequence modeling of the NRC-certified casks. A complete write-up of the results of the series of analyses will be submitted in a draft NUREG report, to NRC, by January 2010. The period of performance will be extended from June 2010 to April 2011, to allow completion of these efforts, including incorporation of comments from stakeholders. Previous modifications were made in the summer of 2006 and 2008. There is no change in the expected outcome of this agreement. This will be a generic-risk assessment; however, specific package designs will be employed in the analysis. The assessment will be informed by results of relevant security assessments, but will not evaluate security-related scenarios nor impacts. This assessment will be performed primarily by computer analysis, will be useful in outreach efforts on communicating transport risks, and will complement the work done on the Baltimore and Caldecott tunnel fires (ADAMS Accession Nos. ML 090570742 and ML 070460351, respectively).

Chairman's approval, to modify the agreement, was requested in 2006, and authorization to increase the ceiling above $1 million was received on May 5, 2006, to obtain: (1) SNL's assistance on an updated analysis of transportation risk estimates; (2) documentation of the findings in a draft NUREG report; (3) support of the public comment period, peer review, and publication processes; and (4) technical support on public outreach, regarding the level of safety provided in NRC's transportation regulations.

The following are remaining milestones for deliverables and their completion dates.

Prepare and submit draft NUREG to NRC.	1/05/2010
Support public meeting.	7/05/2010
SNL presentation to peer review group.	9/23/2010
Public and peer review responses.	1/27/2011
Submit final report to NRC.	4/21/2011

Relationship of the Work To the Agency's Goals and Objectives:

The staff can use the results of SFTRA as a benchmark in its reviews of transportation sections of environmental impact assessments associated with reactor applications, or other future facilities involving spent fuel transport.

A secondary purpose is to support openness and outreach efforts associated with spent fuel transportation. NMSS/SFST staff previously studied spent fuel transport impacts and found that spent fuel shipment risks are low. However, the public remains concerned about spent fuel

	shipments in anticipation of shipment campaigns to storage and/or disposal facilities. Since publication of NUREG/CR-6672 in March 2000, staff has recently completed spent fuel cask security assessments, and believes those results can be leveraged to improve the assessment of spent fuel transport risk estimates. Staff also has a new capability to better model spent fuel cask components and their effects on transport risk estimates, and believes the results could be used to represent more realistic transportation risk assessments that would also further address public concerns. Staff believes that an updated assessment of spent fuel transport risk estimates should be completed soon, before future spent fuel shipments.
Period of Performance:	The performance period of this agreement began on June 23, 2005, and currently ends on June 10, 2010. The proposed modification includes an extension until April 2011.
Chairman Action Needed by:	July 14, 2009
Total Estimated Cost:	$335,300 [includes fiscal year (FY) 2009 funding of $235,300]
Estimated Cost by FY:	FY 2009: $235,300 FY 2010: $25,000 FY 2011: $75,000
Budget Availability:	NMSS has budgeted $350,000 for this effort in FY 2009, of which $114,700 will fully fund the current agreement up to the cost ceiling. Contract support of $25,000 is included in the FY 2010 budget, and $75,000 is included in the base budget request for FY 2011, as part of the Planning, Budgeting, and Performance management process. FY 2010 resource requirements decrease to reflect the completion of the SFTRA, and issuance of the draft NUREG for public comment. Efforts under this agreement during FY 2010 will principally be to support a separate peer review of the SFTRA. FY 2011 resource requirements increase to reflect incorporation of the peer review comments and issuance of the final NUREG report. All prior-year funds were expended by January 2009. FY 2009 budgeted funds are needed for completion of the original effort, and the expansion discussed in this paper. The FY 2009 budgeted funds are planned for obligation in August, but most of these funds will be carried over into FY 2010, for the reasons outlined below. These funds will provide for contractor support from September (estimated to be $38,000) through the issuance of the draft NUREG in

early January 2010 (estimated to be an additional $127,000). Also, approximately $65,000 will be carried over from FY 2009 into FY 2010, to allow continuation of contractor efforts from January through July 2010, to support the separate peer review. These efforts were originally anticipated and budgeted to occur during FY 2009, but are now deferred to FY 2010, to complete the Chairman Review process.

Job Code/Program Planned Activity: J5546/Spent Fuel Storage and Transportation/ Licensing

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NMSS will consider all pertinent requirements associated with the organizational conflicts of interest (OCOIs) for this project, including Sandia's role and activities for DOE's Office of Civilian Radioactive Waste Management, in accordance with the NRC requirements stated in Management Directive 11.7, "NRC Procedures for Placement and Monitoring of Work with the U.S. Department of Energy," and the Nuclear Regulatory Commission Acquisition Regulation, Subpart 2009.5, and will ensure compliance with OCOI requirements, with regard to placement of the resulting agreement.

It is requested that all budget information concerning this project be guarded as official use, only until after the agreement is awarded.

The Office of the General Counsel has reviewed this paper and has no legal objection.

Once the Chairman has reviewed this procurement, the Chairman will be notified of any subsequent significant changes, whether the changes occur before or after the award, or throughout the period of the contract.

This proposed procurement has been evaluated by the Procurement Oversight Committee, to ensure that it supports the Commission's programmatic direction and is consistent with Commission-approved budget resources, and to ensure that appropriate and sufficient programmatic and contractual content is included to facilitate a streamlined Chairman review.

The NMSS Director requests your notification to proceed with this action. If you, or your staff, wish, a briefing on the project can be provided.

Enclosure:
"Revised Statement of Work"

Cc: Commissioner Jaczko
Commissioner Lyons
Commissioner Svinicki
OGC
SECY
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OFC:	SFST	SFST	NMSS	SFST	SFST	SFST
NAME:	JGlenny	JCook	EKrauss	DPstrak	EHuemann	RLorson
DATE:	3/31/2009	3/31/2009	4/6/2009	3/31/2009	3/31/2009	4/2/2009
OFC:	SFST	SFST	PMDA	ADM	OGC	NMSS
NAME:	NMamish	WBrach	PEasson	MFlynn	MMaxim	MWeber
DATE:	4/3/2009	/ /09	/ /09	/ /09	/ /09	/ /09
OFC:	EDO	CFO				
NAME:	RBorchardt	JDyer				
DATE:	/ /09	/ /09	/ /09			

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