Penelope Kinney

From: Jessica Glenny
Sent: Monday, March 30, 2009 2:44 PM
To: Penelope Kinney; David Pstrak; John Cook
Subject: Memo and SOW
Attachments: J5546 Revised SOW jrc1; Chairman Memo for J5546 SFTRA.doc; Revised SOW for J5546 SFTRA.doc

Penny,

Attached are the Chairman Memo and the SOW. I am sending these versions to the Tech Editor for review today. If you have any questions please see me or John.

Thanks again for all your help with this endeavor.

Jess

From: John Cook
Sent: Monday, March 30, 2009 1:11 PM
To: Jessica Glenny
Subject: RE: Chairman Memo attached

Per attached, did you send it to Penny, and is Section 17 up-to-date?

From: Jessica Glenny
Sent: Monday, March 30, 2009 1:08 PM
To: John Cook
Subject: RE: Chairman Memo attached

Okay, let me know when I can fax the SOW to Kraus.

From: John Cook
Sent: Monday, March 30, 2009 10:00 AM
To: Jessica Glenny
Subject: RE: Chairman Memo attached

Perhaps, but in any case close enough to send to Kraus.

From: Jessica Glenny
Sent: Monday, March 30, 2009 9:26 AM
To: John Cook
Subject: RE: Chairman Memo attached

Hi John,

Will do. I'm working on it now. Do you think we'll have everything complete by COB today?
FYI, I'll be in tomorrow, too.

Jess

From: John Cook
Sent: Sunday, March 29, 2009 3:15 PM

D-26

To: Jessica Glenny
Subject: RE: Chairman Memo attached

Jessica-

Given Bill's direction, I plan to spend (at least) Monday continuing to refine to the SOW. Perhaps you should give the Memo another look?

-John

From: Jessica Glenny
Sent: Friday, March 27, 2009 9:31 AM
To: John Cook
Subject: Chairman Memo attached

John,

I don't know where you are with the SOW, but I'd like to try to fax this to Ellen Kraus for tech editing before I leave today. Is that too ambitious of a goal?

Jess

accidents, but were omitted from previous analyses because of the complexity in modeling the structure and deformation of the impact limiters. Impact limiters will be included in the finite element modeling and evaluation of spent fuel cask behavior under accident conditions in this subtask.

Deleted: ¶

Finally, under this subtask, SNL will evaluate available information and update assumptions and parametric values used to estimate the behavior of fuels under impact- and/or fire-accident conditions.

Subtask 1c. SNL will perform 3-D thermal analysis, including 3-D modeling of fuel assemblies, to improve predictions of spent fuel cask behavior during accidents involving fire.

Subtask 1d. SNL will perform other analyses to reduce uncertainty in the risk estimates and/or to corroborate previously used values, based on SNL review of previous and related work, SNL recommendation and consultation with SFST staff, and as directed by the TPM. This work may include scale testing of packaging components (e.g., bolt/closure system, calorimeter test on ground, etc.).

Subtask 1e. SNL will calculate spent fuel shipment risk estimates, under routine and accident conditions, using RADTRAN 6. SNL will address both population and (maximum) individual risks (the latter may involve the use of RISKIND). SNL will use available and appropriate event trees and shipment route models, including event trees with new wayside surface frequencies, and Transportation Routing Analysis Geographic Information System (TRAGIS)-based routes, with the most recently available Census population data.

Subtask 1f. Since past spent fuel transportation risk assessments have used the uniform thermal boundary condition specified in 10 CFR 71.73 and only adjusted the duration of the fire, the NRC now requires a full-scale rail-cask sized calorimeter test to measure the heat flux that is applied to a cask in a real fire. Real fires have non-uniform heating of the package both spatially and temporally and the CAFE fire code of SNL is capable of modeling this behavior. To provide higher defensibility of the results calculated by the CAFE code, SNL shall compare the calculated heat flux to that measured in the calorimeter tests.

Subtask 1g. SNL shall determine a package's response to impacts onto yielding targets. The primary analyses will be for impacts onto rigid targets. Since all real world accidents involve impacts onto (or into) a target that has some degree of deformation, a way to correlate the damage of the package determined from the analyses of package impacts onto rigid targets to higher speed impacts onto yielding targets will be developed. In NUREG/CR-6672 this correlation was carried out using an energy balance method. In this task finite element analyses of cask impacts onto select yielding targets will be performed to validate the energy balance method.

A key component of the spent fuel transportation risk assessment is the response that spent fuel casks will have to impact accidents. Previous work (from NUREG/CR-6672, and PPS) indicated that the cask closure is the region of the cask, that if significantly damaged, could lead to release of radioactive contents. Therefore for a highly defensible risk assessment, it is imperative to determine the response of this region of the package in the most accurate manner possible. The use of bolt sub-models with several hundred

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 Laboratory (SNL or Sandia) can best carry out efforts for the Spent Fuel Transport Risk Assessment (SFTRA) project described in the attached modified 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 which involve spent fuel shipments. SNL is also recognized in the industry for their world-renowned expertise, familiarity, and credibility in transport package design, analysis, and evaluation under normal and accident conditions. Consideration was given to having the work done by in-house staff, other DOE laboratories, and 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% 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. These issues would not be present if SNL continues the SFTRA to completion as proposed.

CONTACT: John Cook, NMSS/SFST, 301-492-3318
Penelope Kinney, POC Lead, NMSS/PBPA, 301-492-3248

Therefore, SNL is the only source with the necessary experience and knowledge to successfully complete all aspects of this project. The NMSS/Division of Spent Fuel Storage and Transportation (SFST) staff (1) has managed the original NUREG-6672 effort, and is managing the existing risk assessment agreement with SNL that the attached draft 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.

This modification is required to complete the SFTRA and also expands on the work currently being performed under the existing agreement. 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 spent fuel transport risk assessment 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 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.

Procurement Method:	The project is an agreement with DOE's Sandia National Laboratory.
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; (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 commenced 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 the 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 which will be issued for public comment in mid 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 scope of the tasks identified in the original SOW has been expanded to include an electronic brochure versus an NRC website and to provide increased support for the public comment and peer review phase of the project, resulting in a modification to the original effort for the risk assessment.

A web-based interactive electronic document entitled "Understanding Cask Basics" was developed by Sandia, in order to better demonstrate the robustness of the casks used for transportation of spent nuclear fuel. The document was not developed for posting on the NRC website, and subsequently did not meet NRC web protocols. An electronic brochure, to be issued by NRC, will maintain the basic content and format of the information and make it readily available and accessible to members of the public. Development of the brochure, which was reviewed and commented on internally at NRC, will include content and format revisions which will be completed by Sandia. The development of the SFTRA analytical models resulted in a modification to the level of effort required for the risk assessment, and an increase for the public comment and peer review phase of the project. The SFTRA analytical models have proven to be a significantly more complex effort than was originally planned. It will therefore, require greater contractor effort to complete than estimated. As a result of this effort, the analytical models will more closely reflect certified spent fuel cask design response to transportation accidents than did the models originally planned under the original SOW. The increase in the public support area includes a greater role for Sandia's Principal Investigator in drafting the NUREG document, and reflects and increases in the estimated effort to respond to public and peer review comments. The expected outcome of this SOW modification is a more complete assessment of transportation risk for spent fuel shipments in NRC certified casks.

This proposed modification, which requires an 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.

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 the 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 or 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.

Chairman's approval, to modify the agreement, was requested in 2006, and authorization to increase the ceiling above $1,000,000 was received on May 5, 2006, to obtain SNL's assistance on an updated analysis of transportation risk estimates; documentation of the findings in a draft NUREG report; support of the public comment period, peer review and publication processes; and 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 meetings	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:

This task is primarily intended to support NMSS/SFST reviews of environmental impact statements; environmental reports and other transportation-related environmental reviews for other future plants; or other

	facility licensing actions that involve spent fuel shipments. 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 have 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 which would also further address public concerns. Staff believes that an updated assessment of spent fuel transport risk estimates should be completed in the near future, prior to future spent fuel shipments. In addition, this task would 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."
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 (include FY 2009 funding of $235,300)
Estimated Cost by FY:	FY 2009: $235,300 FY 2010: $25,000 FY 2011: $75,000
Budget Availability:	The Office of Nuclear Material Safety and Safeguards 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 spent fuel transport risk assessment 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 spent fuel transport risk assessment. 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 in order to complete the Chairman Review process.

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

The Office of Nuclear Material Safety and Safeguards will consider all pertinent requirements associated with the organizational conflicts of interest (OCOI) for this project including Sandia's role and activities for the Department of Energy'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 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 prior to 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.

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The Director of the Office of Nuclear Material Safety and Safeguards requests your notification to proceed with this action. If you or your staff desire, a briefing on the project can be provided.

Enclosures:
Draft Statement of Work

Cc: Commissioner Jaczko
Commissioner Lyons
Commissioner Svinicki
OGC
SECY
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DATE:	/ /09	/ /09	/ /09	/ /09	/ /09	/ /09
OFC:	SFST	SFST	PMDA	ADM	OGC	NMSS
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Comment [JMG1]: Not sure who would concur in ADM. Info based on org chart from website.

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