

January 6, 1998

FOR: The Commissioners
FROM: L. Joseph Callan /s/ Executive Director for Operations
SUBJECT: ORGANIZATIONAL CONFLICT OF INTEREST REGARDING DEPARTMENT OF ENERGY LABORATORIES

PURPOSE:

1. To inform the Commission of organizational conflict of interest (COI) issues that have been identified regarding the U.S. Nuclear Regulatory Commission's (NRC) use of Department of Energy (DOE) laboratories for technical assistance and research. These organizational COIs include both those that should be anticipated if NRC is given broad authority to regulate COI activities in the future and those that NRC has experienced regulating a limited number of DOE's current activities.
2. To advise the Commission of the staff's planned course of action to ensure continued availability of technical assistance and research resources to perform NRC work.

ISSUE:

As NRC continues its review of applications already before the Commission where DOE is the license applicant or holds an NRC certification (hereinafter referred to as licensee) and begins a pilot program to regulate DOE selected facilities, there is a risk that NRC will not have contractual sources available to perform technical assistance and research related to DOE's license applications, free of organizational COI.

CONTACT: Mary Lynn Scott, ADM
415-6179

SUMMARY

At the recent Spent Fuel Storage and Transportation Licensing Inspection Program Review, the Program Review Committee expressed concern regarding risk of COI with contractors that operate DOE laboratories now and as NRC and DOE begin a pilot program to regulate DOE facilities. The staff agrees with this assessment and concludes that alternate sources or other solutions need to be identified. ADM will work with the program offices and the Office of the General Counsel (OGC) to determine the availability of commercial contractors and universities as potential alternate sources when organizational COI issues exist for work related to regulating DOE or its contractors. In the meantime, current COI procedures will be applied on a case-by-case basis, as needed.

BACKGROUND:

The NRC relies on the DOE laboratories for technical expertise and facilities to support its research and regulatory programs. Section 205© of the Energy Reorganization Act of 1974, which created the NRC, encouraged NRC to use the DOE laboratories on a non-competitive basis. For more than 20 years, the majority of NRC's research and technical assistance programs have been performed by the DOE laboratories. Because NRC did not exercise general regulatory authority over DOE's activities, the organizational COI restrictions of Section 170A of the Atomic Energy Act of 1954 seldom interfered with NRC's ability to draw upon the DOE laboratories for technical assistance and research.

Recently, DOE and NRC agreed to engage in a pilot program whereby NRC will apply a simulated regulatory process to six to ten DOE facilities over a two year period. The objectives of the pilot program are to determine the desirability of NRC regulatory oversight of DOE nuclear facilities and to support a decision on whether to seek legislation that would authorize NRC to regulate DOE nuclear facilities by licensing either DOE or a DOE contractor. One of the impacts resulting from the pilot project and, ultimately, NRC's regulation of DOE facilities is that it increases the chance of an organizational COI for NRC work placed at DOE facilities. In this situation, NRC would also have difficulty maintaining a dedicated base of private-sector commercial support should NRC's contractors compete for and win large DOE contracts, creating the potential for COI.

In areas where DOE is already an applicant for a license (Independent Spent Fuel Installation for TMI-2 fuel at INEEL, license transfer from Public Service of Colorado to DOE for spent fuel storage, Central Interim Storage and Dry Transfer System for Spent Fuel Storage), NRC has experienced some COI issues. Dealing with these issues on a case-by-case basis as they have arisen has resulted in delays in the start of the work. In addition, DOE's implementation of a congressional mandate to transfer government technology to the commercial sector has the potential to create COI situations for DOE's work supporting NRC's regulation of civilian power reactors and other licensees. This mandate has resulted in competing priorities at the laboratories for NRC projects and commercial work.

In the past, organizational COI issues related to DOE laboratories have been addressed by placing the work with commercial contractors including the NRC's Federally Funded Research and Development Center (FFRDC), or performing the work in house.

The current situation facing the NRC is not unlike the situation that the Commissioners considered in SECY-85-388, when the long duration of the Nuclear Waste Policy Act of 1982 (NWPA) developmental, pre-licensing, and licensing process (estimated to be 20-25 years) posed special, broader COI issues with DOE. At the time, NRC's contractors were competing for and winning larger contracts from the DOE's Civilian Radioactive Waste Management program, creating a potential for COI since DOE would be the applicant for the license. Further, based on previous NRC licensing cases, there was a substantial likelihood that a licensing board would apply a strict standard in evaluating organizational COIs. This threatened the credibility and continuity

of NRC's technical program, and NRC's ability to undertake its statutory requirement for licensing a high-level waste repository.

To avoid organizational COI and provide the long-term continuity in technical expertise, the Commission approved the creation of a dedicated FFRDC for a high-level waste management program under the NWPA. The Commission's decision to establish an FFRDC also considered the fact that the applicant for the HLW repository license, DOE, controlled the national laboratories; that DOE's substantial funding of conflicting HLW repository work precluded NRC's use of DOE's most qualified laboratories; and that qualified commercial contractors were found to have COI issues associated with their DOE work. The Center for Nuclear Waste Regulatory Analyses (CNWRA) was established as an FFRDC upon award to Southwest Research Institute.

DISCUSSION:

As is the case with other licensees, DOE may not be in a position to render impartial or objective assistance to NRC in light of its other activities. DOE has the ability to control all work performed at DOE laboratories, including work supporting NRC's exercise of regulatory authority over DOE activities. Consequently, if DOE becomes a licensee as a result of the pilot program initiative, a potential for increased COI exists for NRC's use of DOE laboratories not only for review of DOE's applications as a licensee, but also for analysis and recommendations for regulations, positions and policies that may be applied to DOE as a licensee.

Tasks performed by DOE laboratories for the NRC are subject to the COI restrictions of Section 170A of the AEA of 1954, as amended. Under that section, any person proposing to enter into a contract, agreement or other arrangement for the conduct of research, development, evaluation activities, or for technical and management support services must provide NRC with all relevant information to assure that it can

"render impartial, technically sound, or objective assistance or advice in light of other activities or relationships with other persons..."

This section also provides that NRC may not enter into an arrangement unless, after consideration of relevant information, it finds that it is unlikely that COI would exist or concludes that it is in the best interest of the United States to do so despite the COI. Where work that is vital to an NRC program can not be satisfactorily performed except by a contractor whose interests give rise to an organizational COI, the Executive Director for Operations may grant a waiver and permit the work to be performed by a contractor that has a conflict. In such cases, the COI will be mitigated to the maximum extent practicable.

Since there is no specific implementation of Part 170A of the AEA with regard to DOE laboratories, Subpart 2009.5 of the NRC Acquisition Regulation (NRCAR), which implements Part 170A for commercial contracts, is applied to the DOE laboratories. Management Directive 11.7, Part I, Paragraph H sets forth procedures for actions which can be taken to mitigate or eliminate a COI, including transfer of work to another laboratory or a non-DOE source.

In order to determine the extent to which COI issues associated with the use of DOE laboratories for technical assistance and research, and the status of DOE as a licensee, could affect the carrying out of NRC's mission, the four major NRC program offices were asked to identify potential COI issues. The staff analyzed (1) the work performed by the laboratories, (2) what technical assistance and research will be needed from DOE laboratories in the future, and (3) how the work may cause a COI problem. A synopsis of the staff's findings is attached (Attachment).

The staff determined that work performed by DOE laboratories falls into two categories:

- 1) Work DOE can continue to do without COI
Work that is not related to the formulation of regulations or related regulatory guidance to be applied to DOE as a licensee may continue to be placed with DOE. Examples of work that generally does not present a COI when performed at the DOE laboratories are: technical training, administering reactor operator licensing examinations, collection of data (without analyses) on selected technical issues, technical assistance and research for commercial power reactors, and review of licensee application materials when DOE has no organizational relationship with the licensee and is not subject to the portion of the regulation under which the application is submitted.

- 2) Work for which organizational COI issues exist or may exist at DOE laboratories

No DOE facility can review any DOE license application materials. In addition, as NRC becomes more involved in the licensing of DOE facilities, DOE laboratories will not be able to provide technical assistance or research for NRC's regulatory activities whenever those activities affect DOE facilities.

For example, if DOE is governed by NRC's non-power reactor regulations, a COI would result should DOE give NRC technical advice interpreting or applying NRC's non-power regulations to any entity operating a non-power reactor, including non-DOE licensees. In summary, an entity that is subject to a particular NRC regulatory scheme may not assist NRC in interpreting or applying that regulatory scheme to others, absent a COI waiver.

NRC has used commercial contractors or placed work on a very limited case-by-case basis at CNWRA to resolve recent organizational COI issues regarding DOE laboratories. Examples of these areas include: sealed source and device reviews, dosimetry for radiopharmaceuticals, and high-level waste issues at facilities other than Yucca Mountain. As explained more fully in the Attachment, NRC's ability to utilize the CNWRA is restricted by its charter and the Federal procurement regulations governing the operation of FFRDCs.

In light of NRC's experience with NWPA, where NRC was unable to locate qualified commercial firms to provide technical support for NRC's regulatory activities because DOE was using essentially all qualified commercial resources, there is a strong possibility that NRC will not be able to rely on commercial sources to support NRC's expanded regulation of DOE in the future, should that situation recur. It should be noted that some DOE laboratories capabilities, such as criticality assessments, may simply not be available from any other source in the U.S. Similarly, certain essential facilities, such as hot cell facilities, are unlikely to be available commercially, or if available, would be licensed by the NRC which would produce a similar COI concern.

ALTERNATIVES:

In anticipation of increased cases involving organizational COI, the staff has developed the following alternatives to ensure that adequate resources will continue to be available to perform NRC work:

1. Use existing waiver process. This process requires either case-by-case or class waivers.

PROS:

- Continuing to place work at DOE laboratories will ensure continuity for existing programs and access to essential unique facilities.
- Avoids potentially costly start-up costs for new facilities or an expanded FFRDC. In the case of some unique facilities, such as hot cells, construction and start up costs are estimated to be hundreds of millions of dollars.
- Maintains NRC management's authority to make decisions regarding COI issues.
- Easy to implement because the use of waivers relies on existing statutory and regulatory authority.
- Expertise would be readily available.

CONS:

- Frequent granting of waivers may degrade the credibility of the NRC's COI policy and imposes a greater administrative burden on NRC management.
- Inconsistent with concept that the NRC should act within its established policy and, if necessary, amend the policy rather than deviating frequently.
- Appears to create a lesser standard for COI considerations for DOE activities, which may be contrary to what is needed.
- For some cases, the use of a DOE laboratory may not satisfy the criteria for granting a waiver.

2. Seek legislation amending Sec. 170A of the AEA to redefine what is meant by COI.

PROS:

- Could result in more flexibility to place work at DOE laboratories.
- Continuing to place work at DOE laboratories will ensure continuity for existing programs and access to essential unique facilities.
- Avoid potentially costly start-up costs for new facilities or an expanded FFRDC. In the case of some unique facilities, such as hot cells, construction and start up costs are estimated to be hundreds of millions of dollars.
- Has many of the attractions of an FFRDC in that skilled expertise would be readily available to support NRC's regulatory activities.

CONS:

- Legislation may be difficult to obtain if Congress and/or OMB do not see a need for it.
- While this helps to ensure less rigidity in utilizing DOE laboratories, it could result in a COI statute that is inconsistent with the independence NRC needs to perform its regulatory oversight role properly.
- Easing of rules may degrade NRC's credibility as an independent regulator.

3. Establish a new NRC FFRDC or expand the NRC's existing FFRDC.

PROS:

- Expertise would be readily available.
- FFRDC offers longevity.
- Permits NRC to build a foundation of experts who are dedicated to NRC's regulatory approach. The current FFRDC was able to attract top graduates and now attracts top experts in the nuclear field.
- Essentially eliminates COI concerns, since NRC controls all the "work for others" that an FFRDC may perform.

CONS:

- Requires Office of Federal Procurement Policy (OFPP) approval. OFPP generally discourages the establishment of an FFRDC or substantial expansion of an existing FFRDC, absent compelling justification.
- May be difficult for an FFRDC to maintain a full complement of required expertise to support NRC requirements in areas in which NRC does not call upon given types of expertise frequently enough to support full-time employees.
- Increases cost to NRC, to the degree that new resources must be developed. As stated earlier, in the case of some unique facilities, such as hot cells, construction and start up costs are estimated to be hundreds of millions of dollars.
- May take years to build technical expertise and credibility.
- Requires long-term financial commitment.

4. Utilize DOE laboratory in the same manner as an FFRDC, with NRC controlling all work assignments to the laboratory.

PROS:

- Avoidance of COI would be ensured.
- Expertise would be readily available. Has many of the attractions of an FFRDC, in that skilled expertise would be readily available and dedicated to NRC's regulatory activities.

CONS:

- May take years to build up the necessary expertise in one location.
- Does not fully comply with NRC's COI statute, regulations and policies and may require a revision to those authorities or a class deviation.
- May not be possible to assemble a diversified staff in one location for the wide range of work that the DOE laboratories now perform for NRC.
- Whether DOE would be willing to give NRC the assurances and safeguards that NRC would need to use a laboratory is uncertain. These assurances include the right for NRC to assign and direct work at the laboratory without DOE's review, approval or involvement (other

than processing payment) or the right for NRC to exclude DOE work that conflicts with NRC's work at the laboratory.

Given the limited scope of DOE activities currently licensed by NRC, the staff has concluded that the use of a dedicated FFRDC offers the best prospect for avoiding the COI issues inherent in NRC's regulation of DOE activities, and would ensure the availability of needed expertise on a long-term basis. However, if the scope of DOE activities licensed by NRC is significantly expanded, the staff has concluded that legislative changes would likely be needed. In the absence of legislation, the staff has also concluded that long-term solutions other than a new or expanded FFRDC will be needed for facilities (e.g., large hot cells) that can not realistically be replaced. The pilot program for regulation of DOE facilities, in conjunction with the survey described in the following paragraph, will provide a clearer understanding of the need for recommending either specific legislation, or other actions that should be taken by the Commission.

ADM will conduct a source assessment in parallel with the pilot program for regulation of DOE facilities to fully assess the availability of resources to perform NRC work. ADM will work with the offices to determine what disciplines will be needed to review DOE license applications, what work DOE performs for the NRC which falls within those disciplines, and which sources can be used to perform such work. Market research will be used to the fullest extent practical to locate alternate sources. ADM will coordinate with the offices and submit a report of its findings to the Commission with appropriate recommendations, upon completion of the Agency pilot program.

In the meantime, we will continue to apply current COI procedures to work DOE performs for NRC. Where a potential organizational COI issue exists, the technical assistance or research will be acquired from commercial firms or universities using streamlined contracting procedures available under NRC's Procurement Reinvention Laboratory, unless the program office determines that the laboratory is the only source that possesses the requisite capability to perform the work. In such case, the work may be placed in accordance with procedures under Management Directive 11.7, as appropriate. The use of the existing waiver process will be considered, particularly in those cases where the potential COI can be substantially mitigated.

COORDINATION:

This paper has been coordinated with the Office of the General Counsel which has no legal objection. The Chief Financial Officer and the Chief Information Officer have no objection to this paper. OCFO is cognizant that resource impacts will be evaluated and addressed on a case-by-case basis as this study is completed.

L. Joseph Callan
Executive Director for Operations

Attachment: [As stated](#)

ATTACHMENT

SYNOPSIS OF STAFF'S PRELIMINARY FINDINGS CONCERNING POTENTIAL ORGANIZATIONAL COI ASSOCIATED WITH WORK PLACED AT DOE LABORATORIES

AEOD Office for Analysis and Evaluation of Operational Data (AEOD) uses several DOE laboratories (INEEL, ORNL, PNL, and Sandia National Laboratories (SNL)) to support its programs for (1) analysis and evaluation of operating experience (both reactors and nuclear materials), (2) emergency response, and (3) technical training. These tasks cover a range of activities, including database operation and maintenance; risk analyses of systems and events; probabilistic risk assessment (PRA) analyses and training; NRC Senior Management Meeting support; specialized technical assistance in event analyses; emergency consequence analytical codes; emergency response manuals and workbooks; monitoring of radiation releases in emergencies; and training in probabilistic risk analyses, reactor safety, radiation sciences, and fuel cycle technology. There have been no recent conflict issues in these areas. Technical training and technical review activities related to other licensees can continue to be supported by DOE laboratories. Analysis work must be reviewed on a case-by-case basis. With the advent of external regulation of DOE facilities by the NRC, there is a possibility that AEOD will require increased support similar to that provided by the DOE laboratories. Because emergency response programs would need to be expanded to include the DOE facilities, a potential COI issue may occur in the emergency response support activities currently provided by DOE labs. Comparable expertise is available within the NRC (with one exception) and with commercial contractors to handle most of these activities.

Within AEOD's emergency response programs, support of the RASCAL consequence analysis code may involve a potential conflict of interest. This work is done by PNL and ORNL, which employ leading experts in the field. The code is currently being updated and should not require another update for several years. Future updates cannot be ruled out, however, and at this time there does not seem to be a viable alternative to using DOE laboratories.

NMSS In the Office of Nuclear Material Safety and Safeguards (NMSS), DOE effort is used for environmental radiological measurements, preparing environmental assessments and impact statements, and technical assistance in decommissioning. If NMSS were precluded from using DOE facilities for work involving DOE licensing, one possible option would be to use commercial contractors to complete the work competitively. Where the laboratories have specialized or rare expertise, there could be a problem finding a contractor free of conflicts. DOE work orders are also executed for the general license database, safety assessments, sealed source and device reviews, dosimetry for radiopharmaceuticals. The nature of this work is not novel and does not require rare skills. Therefore, if NMSS could not use DOE facilities, the work could probably be competed commercially.

Also in NMSS, DOE laboratory technical support for transportation and transportation package reviews, cask analyses, and spent fuel movement systems and facilities does not involve scarce skills and abilities. Therefore, if DOE facilities were not available, the office's work could be competitively procured.

Recently, NMSS proposed assignment of three technical support tasks to DOE National Laboratories in circumstances where DOE is the license applicant or is otherwise subject to NRC's regulatory authority. In view of the language of Section 170A of the AEA, the potential for an organizational conflict of interest was a significant consideration in NRC's determination of whether or not to assign this work to DOE laboratories. A short synopsis of each proposed assignment of work to DOE laboratories and the Office of General Counsel's (OGC) conflicts analysis for each case follows. In these cases, management approved that the work be done at CNWRA within the FAR guidelines, without objection from OGC after OGC review and a determination of no legal objection. However, the mechanism allowing placement of this work at the CNWRA would not apply to the vast majority of NRC work performed at the DOE laboratories unless the charter is expanded.

1. Technical assistance for safety review of spent fuel storage facility to house the TMI-2 fuel debris.

DOE elected to seek an NRC license under the provisions of 10 CFR Part 72 for the construction of an Independent Spent Fuel Storage Installation (ISFSI) to house TMI-2 debris canisters, to be located at DOE's Idaho National Engineering and Environmental Laboratory (INEEL). NMSS asked DOE's Pacific Northwest Laboratory (PNL) to provide technical and engineering services to support the review of this license application.

On January 27, 1997, PNL submitted a conflicts disclosure which indicated that PNL staff provided support to a number of DOE projects involving dry storage of spent fuel, including PNL's membership on the National Spent Fuel Nuclear Program Technology Integration Technical Working Group sponsored by DOE's Office of Environmental Management. However, PNL did not work directly supporting DOE's design, construction and operation of the ISFSI.

Battelle Northwest, the corporation that operates PNL, does so under a Management and Operations (M&O) contract with DOE, which gives DOE the general right to approve all work that the laboratory performs for organizations other than DOE. Although the Energy Reorganization Act of 1974 grants the NRC a special right of access to DOE's national laboratories, DOE maintains the ability to control the work that its laboratory contractor performs for NRC. Under current guidelines, the license applicant, DOE, would have both the general ability to control work that PNL performs for NRC and would have a direct role approving and monitoring the specific work that NRC assigns to PNL, reviewing DOE's license application for the ISFSI.

DOE, the intended recipient of the license for ISFSI, continues to operate the national laboratories through its contractors. DOE continues to reserve the right to assign work to the laboratories without regard to the fact that DOE's work may conflict with current NRC work at the lab. Further, judging by the general description of the advisory work PNL performs supporting DOE's spent fuel program, PNL's work for DOE may encompass the same technical considerations as those required to support NRC's review of the ISFSI. For example, PNL is a member of a DOE work group which is charged with identification of technical issues associated with dry storage of DOE-owned spent fuel.

In light of these considerations, a potential for organizational COI resulted from (1) PNL's status as a

2. Technical Assistance in the preparation of an Environmental Impact Statement (EIS) for a license to operate an Independent Spent Fuel Storage installation (ISFSI) to store TMI-2 spent fuel at the Idaho National Engineering Laboratory (INEEL) site.

In connection with its consideration of DOE's license application to construct an ISFSI for storing TMI-2 debris at INEEL, discussed above, NRC planned to prepare an EIS. NMSS asked DOE's Oak Ridge National Laboratory (ORNL) to provide NRC with technical support for all phases of the EIS process, from an initial scoping of the work to the issuance of the final EIS. One step in this process is an assessment of DOE's programmatic EIS on its overall spent fuel management program to determine what additional information NRC needs for an EIS covering just the ISFSI.

ORNL's January 31, 1997. proposal disclosed information on potential conflicts relating to this work. Specifically, both ORNL and INEEL, are operated by subsidiaries of Lockheed Martin Corporation. ORNL advised that "...ORNL staff members that will be involved in this project are employees of [the ORNL sub] and have no direct association with [the INEEL sub] or DOE activities at INEEL." Also, ORNL advised that some ORNL staff served as reviewers of DOE's programmatic EIS on spent fuel management, but were not involved in its preparation.

OGC had concerns that a potential conflict resulted from the circumstance that the license applicant, DOE, had substantial control over the activities of the DOE contractor that NMSS intended to use to support NRC's review of DOE's license application. Moreover, two corporations affiliated with Lockheed Martin Corporation would be involved here supporting the license applicant, DOE, and the licensor (regulator), NRC, on the same technical matters. In this respect, consistent with its COI regulations, NRC considered the relevant activities of related corporations, including subsidiaries when analyzing potential conflicts. One Lockheed Martin subsidiary would be assisting NRC in assessing the environmental aspects of a facility to be built and operated by another Lockheed Martin subsidiary in this case. This circumstance of commonly controlled subsidiaries working for both NRC and the license applicant on the same matter, created a potential for organization conflict of interest that precluded assigning this work to ORNL, without an EDO waiver. In addition, ORNL participated in reviewing DOE's programmatic EIS, which must be reviewed as part of ORNL's work for NRC. These circumstances would

3. Technical assistance in the review of the spent fuel dry transfer system submitted by the Department of Energy as a Topical Safety Analysis Report (TSAR) for use under the provisions of 10 CFR Part 72.

DOE submitted a TSAR to NRC for a Dry Spent Fuel Transfer System, consisting of a large shielded transfer-cell that would permit a nuclear utility or other spent fuel handling facility to perform cask to cask transfers of individual spent fuel bundles without the need to return the fuel to a spent fuel pool. While this transfer system could be used at the ISFSI, the system is generally applicable to DOE dry fuel handling operations and DOE was seeking separate approval of the system. NMSS asked PNL to support NRC's review of the TSAR. PNL's technical support would include reviewing the design criteria, performing structural, thermal, radiation, protection, criticality and confinement evaluations; performing an accident analysis; and reviewing the operating procedures.

PNL's letter of January 27, 1997, indicated that PNL had advised and was advising DOE at that time on matters pertaining to the dry storage of spent fuel, which includes cask to cask transfer of such fuels. Further, although NRC would not license the TSAR, NRC's review and approval of the TSAR for the Dry Spent Fuel Transfer System is a regulatory action that is bound by the same COI considerations as direct applicants may rely upon an approved TSAR in their requests to license spent fuel handling facilities. Therefore, due to DOE's general and specific ability to control the activities of its operating contractors, OGC advised that assignment of work to PNL reviewing DOE's TSAR

submission would constitute an organizational COI. OGC agreed with staff that this work could be done under the CNWRA Charter, since it is related to NWPAs activities.

DOE also provides NMSS technical assistance in materials control and accounting, criticality analyses, threat assessment, and uranium enrichment. If NMSS were precluded from using DOE facilities, it would be very difficult to find another contractor with these skills and abilities that would not have a COI. The only practical option to replace the DOE facilities would be to create another FFRDC or expand the existing FFRDC charter, since this work is beyond the current charter of the CNWRA and its current technical capabilities.

Also in NMSS, SCALE (Standardized Computer Analysis for Licensing Evaluation) is a system of codes used to perform nuclear criticality, shielding, depletion, radiation and decay heat source term, and heat transfer calculations. The SCALE system was developed by Oak Ridge National Laboratory (ORNL) for the NRC in the late-1970s to give the NRC staff an accurate and reliable computational tool for performing safety evaluations of nuclear systems. For almost 20 years, SCALE has been the primary code used by the staff to perform nuclear and thermal reviews and confirmatory analyses of transportation packages and spent fuel storage systems. Today, SCALE is also used by the NRC to perform safety reviews of fuel cycle systems and waste disposal systems. SCALE is also used by DOE, private industry, and many international organizations (both private and governmental).

SCALE is a large, complex code system, available in nine platforms and consisting of 37 code modules, 250,000 lines of coding, 4,200 pages of documentation and 113 MB of data libraries. Continued maintenance and development are needed to preserve the code's reliability and state-of-the-art computing capabilities. ORNL continues to maintain and develop the SCALE.

The staff needs SCALE to perform its safety reviews, and the staff needs assurance that the code remains accurate and reliable. The continued accuracy and reliability of SCALE depends heavily on the expertise available at ORNL. The staff at ORNL are the experts in the programming of SCALE. In addition, the ORNL staff are world-renowned experts in nuclear physics, criticality safety, shielding assessment, and heat transfer. Thus, ORNL has the expertise in both the programming of SCALE and its technical/theoretical basis. This level of expertise is not available elsewhere.

There is concern that with both the NRC and the DOE using the same laboratory, there may be potential for organizational COI if the NRC staff is using SCALE as part of a review of a DOE application. Also, it is possible that industry will request the laboratories to perform analyses in support of licensing submittals that draw on specialized capabilities at the laboratories. For example, recently EPRI requested that ORNL perform neutron transport calculations. There have been similar requests from the industry for other analyses that were rejected by the laboratories in the past.

One area of support to NMSS and NRC is in the area of radiation effects and internal dosimetry modeling. The REACT/TS function at Oak Ridge is the national and internationally recognized center of expertise on radiation effects and treatments. The NRC has accessed this source in dealing with events, and has contract vehicles available to obtain assistance in dosimetry modeling and assessment of intakes. However, this resource is not available in the commercial sector in a single location.

NRR Recently, the Office of Nuclear Reactor Regulation (NRR) reviewed the High Flux Beam Reactor Spent Fuel Pool Liner at Brookhaven National Laboratory. The first phase of this effort was done completely in-house. If additional effort is required, it will also be done in-house.

NRR has a technical assistance contract with the Idaho Engineering and Environmental Laboratory (INEEL) for the review of non-power reactor applications and other technical issues. If NRR assumes the regulation of DOE non-power reactors, use of INEEL may pose an organizational COI situation for DOE reactors and technical assistance and research related to the regulation of DOE as a licensee.

RES In the Office of Nuclear Regulatory Research (RES), DOE laboratories provide a broad range of support, impacting most of the program areas in the Office. The research programs draw on both expertise and unique facilities at the laboratories. The expertise and unique facilities will be required for the foreseeable future to support the anticipated programs.

The impact on the research program of the COI concerns discussed in this paper are potentially much more severe than those that resulted in establishment of the FFRDC because very expensive test facilities are involved. For example, the NRC's research program makes extensive use of hot cell facilities at two of the DOE laboratories, where the cost of operating those facilities is shared among NRC and DOE programs. It would not be financially practical for the NRC to move that work to universities or commercial facilities. Further, even if the work could be moved to the private sector, the hot cell facility operators would still be NRC licensees which could raise another COI concern.

The research program also makes use of certain highly specialized facilities that are primarily funded by DOE programs. It would not be feasible to reconstruct these facilities at another laboratory and then fully subsidize their operation.

Several of the research programs that use the hot cell and other unique facilities are involved with internationally funded research programs and the disruption of those programs while new facilities were constructed, or the work moved to other existing facilities if they could be identified, would have a significantly adverse impact on the programs and on the NRC's ability to leverage our funding through participation in those programs.

The loss of the DOE laboratories on the research program would have a major negative impact on the research program. The potential financial impact in establishing credible expertise, and in constructing new, highly specialized facilities, could be measured in the hundreds of millions of dollars. Further, these changes would disrupt the programs for several years.