INTERAGENCY AGREEMENT	1. IAA NO. 31310019N0005	PAGE 1 OF 66

2. ORDER NO.	3. REQUISITION NO.	4. SOLICITATION NO.

5. EFFECTIVE DATE	6. AWARD DATE	7. PERIOD OF PERFORMANCE
07/18/2019	07/18/2019	07/18/2019 TO 03/24/2024

8. SERVICING AGENCY
ALBUQUERQUESANDIA NATL LAB
ALC:
DUNS: 155505027 +4:
DOENNSASFO
CONTRACTING OFFICER
PO BOX 5400
ALBUQUERQUE NM 87185-5400

POC CHRISTINE WHITLEY
TELEPHONE NO. 505-844-3811

9. DELIVER TO
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US NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REGULATORY RESEARCH
11545 ROCKVILLE PIKE
MAIL STOP T-10A36
ROCKVILLE MD 20852-2738

10. REQUESTING AGENCY
ACQUISITION MANAGEMENT DIVISION
ALC: 31000001 TAS: 31X0200.000
DUNS: 040535809 +4:
US NUCLEAR REGULATORY COMMISSION
ONE WHITE FLINT NORTH
11555 ROCKVILLE PIKE
ROCKVILLE MD 20852-2738

POC MICHAEL TURNER
TELEPHONE NO. 301-415-6712

11. INVOICE OFFICE
US NUCLEAR REGULATORY COMMISSION
ONE WHITE FLINT NORTH
11555 ROCKVILLE PIKE
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12. ISSUING OFFICE
US NRC - HQ
ACQUISITION MANAGEMENT DIVISION
MAIL STOP TWFN-07B20M
WASHINGTON DC 20555-0001

13. LEGISLATIVE AUTHORITY
Energy Reorganization Act of 1974

14. PROJECT ID

15. PROJECT TITLE
TECHNICAL ASSISTANCE IN SUPPORT OF AGENCY PROGRAMS

16. ACCOUNTING DATA
N/A - REFERENCE: ZEROREQ-RES-19-0114

17. ITEM NO.	18. SUPPLIES/SERVICES	19. QUANTITY	20. UNIT	21. UNIT PRICE	22. AMOUNT
	EWA Task Ordering Agreement No. 31310019N0005 The United States Nuclear Regulatory Commission (NRC) and Sandia National Laboratory (SNL) hereby enter into this Enterprise-Wide Task Ordering Agreement No. 31310019N0005, for the project entitled "Technical Assistance in Support of Agency Programs." Funding will be obligated on the individual Task Orders issued under this Task Ordering Agreement (TOA). Task Ordering procedures are found in the Continued ...				

23. PAYMENT PROVISIONS	24. TOTAL AMOUNT
	$0.00

25a. SIGNATURE OF GOVERNMENT REPRESENTATIVE (SERVICING)		26a. SIGNATURE OF GOVERNMENT REPRESENTATIVE (REQUESTING)	
		[redacted]	
25b. NAME AND TITLE	**25c. DATE**	**26b. CONTRACTING OFFICER**	**26c. DATE**
		JILL E. DALY	07/24/2019

Statement of Work under Section 8.0 entitled "Procedures for Placing Task Orders Under this Project."

The Maximum Ordering Limitation (MOL) for products and services ordered, delivered and accepted under this agreement during the five-year period of performance is $60,339,374.00. The Contracting Officer may place orders with the DOE Laboratory during the agreement period provided the aggregate amount of such orders does not exceed the MOL.

The ordering period for this contract shall commence on July 18, 2019 and will expire on March 24, 2024. Any orders issued during this period shall be completed within the time specified in the order, unless otherwise specified herein. All task orders are subject to the terms and conditions of this EWA task ordering agreement. In the event of conflict between a task order and this EWA task ordering agreement, the EWA task ordering agreement shall control.

The following documents are hereby made part of this Agreement:

Attachment No. 1: Statement of Work
Attachment No. 2: DOE Standard Terms and Conditions

This agreement is entered into pursuant to the authority of the Energy Reorganization Act of 1974, as amended (42 U.S.C 5801 et seq.). This work will be performed in accordance with the NRC/DOE Memorandum of Understanding dated November 24, 1998. To the best of our knowledge, the work requested will not place the DOE and its contractor in direct competition with the domestic private sector.

NRC CONTACTS:

Contracting Officer Representative(COR):
Margaret Audrain
Phone No.: 301-415-2133
Email: Margaret.Audrian@nrc.gov
Continued ...

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Master IAA: MASTER IAA

ATTACHMENT NO. 1
SANDIA NATIONAL LABORATORY
ENTERPRISE WIDE AGREEMENT NUMBER 31310019N0005

STATEMENT OF WORK

TITLE: Technical Assistance in Support of Agency Programs

1.0 BACKGROUND

The U.S. Nuclear Regulatory Commission (NRC) regulates the licensing, construction and operation of commercial nuclear power and non-power facilities. The Office of New Reactors (NRO) and Office of Nuclear Reactor Regulation (NRR) with support from the Office of Nuclear Security and Incident Response (NSIR) serves the public interest by enabling the safe, secure, and environmentally responsible use of nuclear power in meeting the nation's energy and research needs. The Office of Nuclear Material Safety and Safeguards (NMSS) is responsible for regulating activities which provide for the safe and secure production of nuclear fuel used in commercial nuclear reactors (uranium recovery, conversion, and enrichment activities; fuel fabrication); and development; the safe storage, transportation and disposal of high-level radioactive waste and spent nuclear fuel; and the transportation of radioactive materials regulated under the Atomic Energy Act. The NMSS ensures safety and security by implementing a regulatory program involving activities including licensing, inspection, assessment of licensee performance, events analysis, enforcement, and identification and resolution of generic issues. The Office of Nuclear Regulatory Research (RES) furthers the regulatory mission of the NRC by providing technical advice, technical tools, and information for identifying and resolving safety issues, making regulatory decisions, and promulgating regulations and guidance. The activities for reactors includes, but are not limited to, reviews of applications for reactor design certifications (DCs), early site permits (ESP), combined license (COL) applications, environmental reviews, reactor pre-application activities, limited work authorizations (LWA), construction permits (CP), operating licenses (OL), license actions (i.e., amendments, relief requests, and exemptions), oversight, decommissioning and staff infrastructure development.

NRC anticipates the continued review of COL applications and operating and renewal reactor licensing actions over the next several years as well as a variety of applications for small modular reactors (SMRs) and other advanced reactor designs (SMRs and advanced non-light-water reactors [non-LWRs]). Due to the volume of new and advanced reactor applications as well as licensing actions for operating reactors, commercial contractor resources are needed to provide technical assistance to the agency. Similarly, NSIR seeks technical assistance in support of security matters including, but not limited to: physical security, cyber security, access authorization, fitness for duty, materials control and accounting security, transportation security, independent spent fuel storage installation security in emergency preparedness.

The activities for materials and waste facilities include, but are not limited to, reviews of license applications, license renewals, license amendments, exemption requests, decommissioning, storage and transportation of radioactive material, and environmental reviews associated with these licensing and decommissioning actions.

NUREG-0800, “Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition,” provides guidance to NRC staff reviewers for performing safety

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reviews of applications to construct or operate nuclear power plants and the review of applications to approve standard designs and sites for nuclear power plants. The principal purpose of the Standard Review Plan (SRP) is to assure the quality and uniformity of staff safety reviews of LWR facilities. It is also the intent of the SRP to make information about regulatory matters widely available and to improve communication between the NRC, the nuclear power industry, and interested members of the public, thereby increasing understanding of the review process.

NUREG-1800,"The Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants" (SRP-LR), provides guidance to NRC staff reviewers in NRR. These reviewers perform safety reviews of applications to renew nuclear power plant licenses in accordance with Title 10 of the *Code of Federal Regulations* (CFR) Part 54. Consistent with NUREG-0800 the principal purposes of the SRP-LR are to ensure the quality and uniformity of staff reviews and to present a well-defined base from which to evaluate applicant programs and activities for the period of extended operation. In addition, there are a variety of NRC regulatory guides available to support the review process.

An Environmental Safety Review Plan (NUREG-1555), "Standard Review Plans for Environmental Reviews for Nuclear Power Plants: Environmental Standard Review Plan [ESRP]" provides guidance to NRC staff reviewers for performing environmental reviews of applications related to nuclear power plants. The ESRPs are companions to regulatory guides that address siting and environmental issues. As with NUREG-0800 and NUREG-1800 the purpose of the ESRP is to assure the quality and uniformity of environmental reviews.

2.0 OBJECTIVES

The Laboratory shall provide qualified, competent, and fully trained personnel to perform the required technical assistance and support services under this contract. The Laboratory shall not determinate NRC policy nor make regulatory decisions.

3.0 SCOPE

The Laboratory shall provide technical assistance and support in a wide range of technical and scientific disciplines, in accomplishing work related activities aimed at ensuring the overall safety, security and adequacy of nuclear power plant design, construction, operations and environmental protection, and materials and waste safety licensing and oversight, storage and transportation of radioactive material.

The scope of work involves placement of task orders. Specific performance standards are delineated in Section 6.0, Performance Standards.

3.1 PRE-APPLICATION

Technical assistance for review of design-specific and other documentation reports, (e.g., technical reports, "white papers," preliminary system designs or features, programmatic plans) in support of DC, ESP, COL, CP, OL and environmental review activities for new and advanced (both light-water and non-light water designs) reactors, materials and waste facilities. These assistance requirements may include topical report review; acceptance review; advanced non-

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LWR regulatory framework development; COL application template development, Construction Inspection Procedure program interface and support; NUREG-0800, 10 CFR Parts 50 and/or 52 rulemaking and other rulemaking, as necessary; and interactions with stakeholders through communication plans and public meetings. Review and technical assistance for materials and waste safety licensing and regulatory actions.

3.2 LICENSING SUPPORT

Licensing support consists of review of numerous interrelated licensing activities associated with operating reactors, new large LWRs, advanced non-LWRs, and materials and waste licensing and regulatory actions.

These technical assistance activities include:

Review of Design Certifications by supporting an acceptance review, a technical review, and a rulemaking to certify the design. This will require reviewing design information with Inspections, Tests, Analyses and Acceptance Criteria (ITAAC), postulated site parameters, interface requirements, resolution of severe accident issues, and testing requirements. In preparation for the anticipated license review of advanced non-LWR designs, the NRC will require necessary computational tools to perform confirmatory analyses of these designs. It is expected that the resulting evaluation model will be composed of both legacy codes and new INL-developed MOOSE-based tools developed under DOE's Nuclear Energy Advanced Modeling & Simulation program (NEAMS). The objective would be to obtain support for the development and validation of the NRC's evaluation model for advanced non-LWR designs. In particular, applications are anticipated using the Multiphysics Object-Oriented Simulation Environment (MOOSE) as well as follow-on applications--Pronghorn, Mammoth/Rattlesnake and Bison.

Review of documentation in support of Design Approval activities. Technical assistance includes performance of acceptance reviews, technical reviews, reviews of final design information with ITAAC, postulated site parameters, interface requirements, resolution of severe accident issues, testing requirements, as necessary, for the NRC to certify the design; and other related activities. DA submittals to be reviewed may include either a complete design or major portions of a complete design.

Review of documentation in support of Manufacturing License activities. Assistance includes performance of acceptance reviews, technical reviews, rulemaking support, review of Applicant organizational and technical qualifications, programmatic plans, reviews of preliminary and final safety analysis reports, reviews necessary to verify that manufacturing activities comply with design requirements; and other related activities.

Technical assistance for review of the safety and environmental portion of new reactor licensing applications. These reviews include preparation of environmental impact statements (EISs), interfacing with applicants, coordination with state and federal agencies, and supporting public meetings and site audits. Also the DOE Laboratory shall provide technical assistance to support the safety and environmental portion of the mandatory hearing on new reactor licensing; site safety reviews; emergency preparedness reviews; evacuation time estimates; environmental protection reviews; environmental assessments for DCs and other new reactor rulemaking activities.

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Technical assistance for review of the environmental portion of Small Modular Reactor (SMR) licensing applications. These include reviews of applicant preliminary and final environmental reports, development of environmental assessments, assistance in preparation of EIS, interfacing with applicants, coordination with state and federal agencies, and supporting public meetings and site audits. Also, the Laboratory shall provide technical support for the environmental portion of the mandatory hearing on SMR licensing and other related rulemaking activities as-needed.

Review of documentation in support of Limited Work Authorization/Construction Permit activities under 10 CFR Part 50. These assistance requirements include reviews of applicant organizational, technical, and financial qualifications, construction and fuel cycle cost estimates, programmatic plans, preliminary safety analysis reports, plans for redress of activities performed under the LWA; and other related activities.

Technical assistance for the review of documentation in support of LWA/ESP activities under 10 CFR Part 52. These assistance requirements include reviews of applicant organizational, technical, and financial qualifications, programmatic plans, preliminary safety analysis reports, site safety and security analysis reports, plans for redress of activities performed under the LWA; and other related activities.

Technical assistance for the review of documentation in support of Operating License activities. These assistance requirements may include reviews of applicant organizational, technical, and financial qualifications, operating cost estimates, design acceptability, operational programs, site safety and security, final/updated safety analysis reports, design verification, construction permit and other related activities.

Technical assistance for review of COLs for new and advanced reactors (including non-LWRs). It is noted that the COL may reference an ESP, a standard DC, both, or neither. The Laboratory will support the necessary reviews to resolve all safety, security and environmental issues to allow the NRC to authorize construction and conditional operation including ITAAC and license amendments. The Laboratory shall also review financial qualifications, decommissioning funding assurances, need for power, capitalization, support design acceptance criteria (DAC), emergency preparedness and security requirements for the COL.

Technical assistance for review of the safety, security and environmental portions of operating reactors licensing, license renewal, or topical report applications. The review may consist of a portion, or the entire contents of an application. The Laboratory shall support the required reviews to resolve all safety, security and/or environmental issues to allow the NRC to authorize approval of the operating reactor licensing or license renewal request. The tasks may involve: an acceptance review of the application; preparation of input for a safety evaluation, an environmental assessment, and/or an EIS, including RAIs; coordination with state and federal government agencies and Indian Nations; support of public meetings, participation in site audits, support of ACRS presentations; and other associated tasks.

Technical assistance for review of license applications for materials and waste facilities, including the safety, security and environmental portions of application. The review may consist of a portion, or the entire contents of an application. The Laboratory shall provide technical assistance to support the necessary reviews to resolve all safety, security and environmental issues to allow the NRC to authorize construction and operation, continued operation (renewal),

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and license amendments. The tasks may involve: an acceptance review of the application; preparation of input for a safety evaluation, an environmental assessment, and/or an EIS, including RAIs; coordination with state and federal government agencies and Indian Nations; support of public meetings, participation in site audits, and other associated tasks.

Provide technical assistance to aid development and implementation of policies, processes, and guidance documents associated with review and approval of licensing and license renewal applications, as well as pre-application activities, staff and management interactions with industry, internal reporting requirements, and interfacing with stakeholders. Provide technical assistance in: 1) establishing decision criteria to reach a safety, security, or environmental finding for non-LWR technologies, and 2) identify and resolve gaps in the current regulatory framework associated with non-LWR reactors and the associated fuel cycle. Prepare for and travel to Headquarters, Regional offices or plant sites to participate in audits, inspections, and attend meetings at other NRC locations, with applicants, potential applicants and licensees and/or reactor vendors.

Additional Guidance and/or References: The Laboratory shall utilize 10 CFR Parts 50, 51, 52, 54, 30s, 40, 70, and 72 and associated applicable 10 CFR internal references as necessary, to support the safety, security and environmental reviews. The Laboratory shall use NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition," NUREG-1437 "Generic Environmental Impact Statement for License Renewal of Nuclear Plants," NUREG-1555 "Standard Review Plans for Environmental Reviews for Nuclear Power Plants: Environmental Standard Review Plan," NUREG-1800 "Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants, " NUREG-1801 "Generic Aging Lessons Learned (GALL) Report," and the following NRR Office Instructions (LIC 101 – License Amendment Review Procedures, LIC 102 – Relief Request Reviews, LIC 103 – Exemption from NRR Regulations, LIC 109 – Acceptance Review Procedures, LIC 201 – NRR Support to the Hearing Process, LIC 203 – Procedural Guidance for Preparing Environmental Assessments and Considering Environmental Issues, LIC – 600 Review of Technical Specifications Task Force Travelers and Creation of CLIIP Model Applications), as necessary, to support the safety and environmental reviews. Also any applicable Design Specific Review Standards (DSRS) provided by the NRC (the DSRS will be unique for each SMR design; and performs the reference function provided by NUREG 0800 in previous safety reviews) and other applicable NRC regulatory guidance developed to support review of advanced non-LWRs.

3.3 OVERSIGHT

The Laboratory shall provide technical assistance for review of numerous interrelated oversight activities supporting operating reactors, new large LWRs, and advanced reactors (including non-LWRs) during all phases of the lifecycle from construction through operation. The activities associated with oversight include: quality assurance, vendor inspections, plant inspections, assessment and enforcement, operator licensing, preoperational/start-up testing, nondestructive examination and ITAAC.

Additional Guidance and/or References: The Laboratory shall utilize the appropriate Inspection Manual Chapters (IMCs) to support any inspection activities.

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3.4 REGULATORY INFRASTRUCTURE

The Laboratory shall provide technical assistance for review of the required infrastructure to support the DC, COL, ESP, operating reactor applications, and materials and waste licensing and regulatory review process. This may require technical assistance to the staff in updating guidance documents, office procedures, office instructions, NUREG-0800, NUREG-1555, 10 CFR Part 50 and Part 52, communication plans, reviewing industry documentation, developing templates and licensing procedures, and supporting public meetings. In addition, the staff may require assistance in development of regulatory framework elements (e.g., review plans and regulatory guidance) to support efficient and timely review of future advanced non-LWR facility applications.

3.5 LITIGATION SUPPORT

The Laboratory shall provide written documentation of work performed during technical reviews; providing expert testimony and reports; reviewing and analyzing expert testimony/reports of other parties in the litigation.

3.6 UNIQUE CAPABILITIES

In conjunction with the scope of work above and the unique capabilities provided below, are identified as a unique function provided by a DOE Laboratory.

Prior to placement of a Task Order, the NRC Contracting Officer Representative (COR) will be required to complete an Enterprise Wide Agreement Source Selection Justification. This justification document will be used to verify the technical requirements are within scope and identifying a Unique Capability provided by the DOE Laboratory. The NRC COR will ensure and certify that “Based on my knowledge of technical requirements and the market research conducted, the work request will not place DOE and its contractors in direct competition with the domestic private sector.”

The NRC COR will be responsible to conduct Market Research to determine the capability required is unique and can only be satisfied by the DOE lab, which will be documented in the EWA Source Selection Justification and approved by a Contracting Officer.

The placement of task orders under this agreement is solely an NRC decision. An NNSA Contracting Officer will review and approve individual proposed task orders in accordance with this agreement.

A. UNIQUE TECHNICAL DISCIPLINES OR COMBINATION OF DISCIPLINES

A unique combination of technical skills and highly specialized experience is necessary to conclude on a reasonable basis that the NRC’s minimum need can only be satisfied by a DOE Laboratory.

A minimum of a Bachelor's Degree in Engineering/Science or equivalent experience and at least ten years direct nuclear power related experience in each of the disciplines is required.

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Specialized General Engineering and Scientific Disciplines
Alternative Review
Benefits Assessment
Chemical Systems
Computer Science
Containment Systems
Demography
Electrical Systems
Environmental Justice
Fire Protection
Historic Review
Land Use Review
Licensing
Mechanical Systems
Meteorology and Air Quality
Nuclear Systems
Radiological Engineering and Waste Management
Reactor Fuel and Fuel Cycle
Reactor Physics
Reactor Systems
Risk and Reliability
Severe Accident Progression and Mitigation Alternatives
Site Hazards
Socio-Economist
Specialized Nuclear Power Plant Related Systems, Structures, or Components Expertise
Structural and System Materials
Thermal Hydraulics and Fluid Dynamics
Transportation

Specialized Technical Areas
Accident analysis
Aerosol Sciences
ADAPT Code
Advanced Reactor Designs
Aircraft Impact Assessment
Atmospheric Dispersion: Pertaining to Radioactive Materials and Toxic Chemicals
Chemical Engineering
Code Development, Maintenance, Support, and Distribution (both domestic and international)
Computer Science, including numerical methods
Concrete, Metallic, Polymers (cables)
Containment Integrity
Corrosion and Electrochemical Sciences
Cyber Security
Dakota Code

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DCFPAK Database, Calculations, and Code
Dose Assessment
Emergency Planning and Response
Environmental Testing
Equipment Qualification
Evacuation Time Estimates
Fracture Mechanics
Fire Protection Engineering
Fire Sciences
Fuel Handling Systems
High Fidelity Code Verification & Validation
High Fidelity Finite Element Analysis of Systems, Structures & Components
Human Reliability Analysis
HySplit Atmospheric Transport Model
Instrumentation and Controls
LWR and Advanced Reactor Design Analysis and Evaluations
MACCS2 Code
Materials Behavior in Rad Environments
Materials Science
MELCOR Code
Metallurgy
Methodology and Phenomenological Development (Sever Accident and Consequence Analysis)
MICROSHEILD Calculations
MIDAS (Mobile Instrumentation and Data Acquisition System)
Non-LWR Technologies (Including Simulation Tools)
Nuclear Data Analysis
Nuclear Facility Decommissioning
Pipes, Welds, Vessels, and Containment
Physical Protection
Physical Security
Probabilistic Fracture Mechanics
Probabilistic Risk Assessment
Radiation Protection / Healthy Physics
Radioactive Waste Management and Disposal
Radionuclide Viewer
RASCAL Code
Reactor Core Analysis
Reactor Design: Inspection methods and techniques
Response Technical Tools (RTT) Code
Statistics and Uncertainty Quantification
Thermal hydraulics Analyses and Experiments
Turbo FRMAC (TF) Code
xLPR code

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B. SPECIALIZED FACILITIES OR EQUIPMENT

Specialized facilities or equipment may be necessary when the effort requires their use to successfully complete the project.

- Center for Security Systems (CSS): The CSS contains state-of-the-art equipment to measure attributes of security equipment, and includes exterior sensors test bed, video technology laboratory, robotic vehicle range, and access delay technologies.

- Combustion Research Facility (CRF): The CRF provides a controlled and well instrumented facility focused on understanding combustion and combustion-related processes. This includes specialization in instrument development.

- Concentrated Solar Tower Test Facility (CSTTF): The CSTTF is a venue which offers multiple molten salt loops for thermal hydraulic testing at >1 MWth

- CYBL Test Facility: The CYBL facility features a scaled reactor-Pressure vessel system originally designed for severe accident cooling studies. It also provides an outstanding controlled environment for SNL's recent spent nuclear fuel combustion experiments.

- Design, Evaluation, and Test Technology Facility (DETTF): The DETTF is a controlled and well instrumented facilities designed to test components and systems in normal and extreme accident conditions. Its capabilities include the ability for non-destructive testing, photometric and optics, and data acquisition devices are available.

- Energy-cyber lab complex: SNL's Energy-cyber lab complex is a series of digital I&C and cyber security labs interconnected to provide integrated design, test, and evaluation of digital control systems.

- Engineering Sciences Experimental Facilities (ESEF): The ESEF is a series of controlled and well instrumented laboratories available for experiments in thermodynamics, heat transfer, fluid mechanics, multiphase flow, adhesion, surface rheology, material characterization, X-ray CT, and material decomposition.

- Explosive Components Facility (ECF): The ECF is a state-of-the-art well instrumented experimental facility that covers chemical, material, and performance analysis capabilities for energetic materials.

- Geotechnics Laboratory (GL): The GL is focused on the measurement of rock properties in a wide range of conditions including very high pressures and complex load paths.

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- Integrated Security Facility (ISF): The ISF is a unique venue for physical protection, nuclear materials management, and nuclear safety training, demonstration, and security equipment testing/evaluation for domestic and international partners.

- Ion Beam Laboratory: SNL has multiple facilities that contain ion beam capabilities and high energy accelerators located throughout the laboratories. The ion beam facility is a centrally located facility that has the highest concentration of ion beams used in a broad arrange of configurations for multiple families of experiments.

- Lurance Canyon Burnsite Facility: The facilities within Lurance Canyon are used to study both indoor and outdoor fires associated with nuclear material transportation and handling accidents for safety studies and for evaluating and certifying hazardous material shipping containers. Tests at Lurance Canyon also include rocket propellant fires and test units containing explosives. The facility includes an enclosed pool fire test facility, three open pools used to simulate liquid fuel fires, an igloo structure used to simulate building fires and hot spots in weapons storage bunkers, and a 1.8 m round pool enclosure for smoke reduction tests.

- Materials Science and Engineering Center (MSE): The MSE is focused on structure, properties, and performance of materials and also has the capabilities in developing processes to produce materials.

- Mechanical Test and Evaluation Facility (MTEF): The MTEF is focused on micromechanics and materials mechanics experiments that study the mechanical behavior of materials. The laboratory also has experience in developing diagnostics tools.

- MESA (Microsystems and Engineering Sciences Applications) complex: MESA is a series of facilities that designs and fabricates radiation hardened microelectronics and microsystems for use in harsh environments. Additionally, capability in this area extends to advanced sensors, micromechanical fabrication, and advance electronics.

- Nuclear Energy Safety Technologies (NEST): NEST is focused on the development of nuclear energy and fuel cycle technologies, including repository sciences, safety and security, transportation, modelling, and systems demonstrations.

- Nuclear Facilities Resource Center (NUFAC): NUFAC is a combination of controlled and well-instrumented facilities together focused on designing, operating, and experimenting with nuclear reactors. This includes in core testing of reactor fuel and criticality experiments, radiation processing of semiconductors, performing activation analyses, characterizing radioactive materials and producing radioisotopes. Facilities included in NUFAC are the Annular Core Research Reactor, Gamma Irradiation Facilities, and the

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SNL Pulse Reactor Facility/Critical Experiments. Its capabilities include dosimetry, diagnostic, data acquisition, modelling and analysis.

- Annular Core Research Reactor (ACRR): The ACRR is an advanced swimming pool type reactor with steady-state, pulse, and transient shaping modes. It has two dry experiment cavities (9" and 20") that extend through the reactor core. Additionally, it has neutron radiograph capability.

- Gamma Irradiation Facility (GIF): GIF provides a single structure for performing a wide diversity of gamma irradiation experiments with various test configurations and at different dose and dose rate levels. It is divided into two types of irradiation facilities, in-cell dry and in-pool wet, based on the type of test to be performed.

- Critical Experiments Laboratory (CEL): The CEL is housed in the retired SNL Pulse Reactor facility which is a critical experiment facility capable of performing criticality experiments for multiple purposes.

- Auxiliary Hot Cell Facility (AHCF): Materials are characterized and sorted in the AHCF to determine which materials are suitable for reapplication to DOE and other federal agencies and which materials, if any, have no practical or economic value and may be disposed of as waste at DOE designated facilities

- Packaging and container capabilities: SNL has a full spectrum set of capabilities centered around nuclear waste storage and transportation containers. These include a fully NQA-1 compliant data collection system MIDAS, analysis across multiple physical domains (solid mechanics, thermal analysis, CFD) and expertise in experiments at SNL facilities including experiments on high burnup fuel, fire ignition testing, and full-scale impact (at SNL's Sled Tracks, Aerial Cable Facilities, and Drop Towers) and thermal testing (at SNL's Thermal Test Complex, the Lurance Canyon Burnsite) of packages under NCT and HAC scenarios.

- Shock Thermodynamic Applied Research Facility (STAR): STAR is a unique facility that can perform shock-physics type testing. It is the only facility in the world that can perform up to multi-Mbar pressures for material property study utilizing gas/propellant launchers, ramp-loading pulsers, and ballistic applications.

- Surtsey Test Facility: The Surtsey test facility features a sealed pressure vessel used to conduct accident phenomenology testing including steam explosions, hydrogen detonations, core melt progression, core concrete interactions, high pressure melt ejections, and liquid metal fire testing.

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- Thermal Test Complex (TTC): The TTC provides a controlled environment in which to evaluate the performance of components and assemblies under controlled temperatures (up to 2,200°C) or programmed heat fluxes (up to 200 W/cm2) and includes facilities such as the FLAME Test Cell, the Cross Flow Fire Test Facility, and the Radiant Heat Test Cell. These facilities provide capabilities in both quiescent (calm) wind and wind speeds up to 20 mph.

C. USE OF PATENTS, COPYRIGHTS, PROPRIETARY INFORMATION, OR SECRET PROCESSES

The use of patents, copyrights, proprietary information, or secret processes may be required when the following apply:

(i) One or a combination of patents, copyrights, proprietary information, or secret processes are essential to the successful completion of the effort, or

(ii) The requirement cannot be revised to permit competition and open disclosure in the commercial sector.

Aerosol Physics and Chemistry of the Reactor Accident Source Term

SNL brings over 30 years of experience to understanding reactor accident source terms and aerosol physics. This expertise includes experimental investigations of source term generation and the behavior of radionuclides under prototypic accident conditions, development of validated, mechanistic, source term models and application of these models to NRC's specialized issues of reactor safety. Specifically, SNL has:

- Developed the sectional method for the solution of the aerosol dynamic model now universally used in accident analysis computer codes such as the NRC's MELCOR code.

- Developed models of aerosol and radionuclide removal by engineered safety systems such as suppression pools and containment sprays. These models are used in the NRC's RADTRAD computer model for the siting and licensing of reactors and nuclear facilities, 10 CFR Part 100 (e.g., the RADTRAD computer model has been applied for particularly complicated regulatory issues such as leakage of main steam isolation valves). Results of studies of the engineered safety features are being used by NRC to assess possible safety requirements in the aftermath of the accident at Fukushima Dai-ichi.

- Developed methods for the effective sampling and characterization of aerosols produced in energetic severe accident processes such as melt-concrete interactions, direct containment heating and fuel-coolant interactions.

- Developed the VANESA model of radionuclide release and aerosol formation during core interactions with concrete. This model was adopted whole by both the NRC's Source Term Code Package and the MELCOR computer code.

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- Developed the VICTORIA model to predict chemical transformations of radionuclides during transport from degrading reactor fuel through the reactor coolant system.

- Developed experimental methods to demonstrate both the reversible and irreversible deposition of radionuclide vapors and particles in the reactor coolant system under accident conditions. Results of these experiments were used in the interpretation of findings from the damaged reactor at Three Mile Island (TMI) and used to validate models such as MELCOR and VICTORIA.

- Developed methods based on risk for defining representative source terms for licensing of reactors using high burn up and MOX fuel. These methods are being used by NRC to update the Alternative Source Term used in NRC Regulatory Guide 1.183.

- Developed descriptions of containment dose during design basis and beyond design basis accidents for use in the qualification of equipment needed for accident management. These techniques are being used to update NRC Regulatory Guide 1.89.

- Detailed familiarity with international experimental programs involving aerosol formation and behavior (e.g., Marviken, Phébus-FP, BIP, STEM, ARTIST, and RASPLAV/MASCA).

- Developed steady state water and iodine radiolysis models used in NRC's contributions to international standard problems in the chemistry of iodine

- Developed data and modeling base for aerosol penetration through containment leaks and cracks used in assessing adequacy of 10 CFR Part 50 Appendix J testing

Coupled Fire-Thermal Analysis Codes:

- CAFE: The Container Analysis Fire Environment (CAFE) computer code has been developed to model all relevant fire physics for predicting the thermal response of massive objects engulfed in large fires. The CAFE code can be coupled to commercial finite element codes such as MSC PATRAN/THERMAL and ANSYS Mechanical. This coupled system of codes can be used to determine the internal thermal response of finite element models of packages to a range of fire environments.

Dynamic Event Tree Code:

- ADAPT – The ADAPT software works alongside a simulator (e.g., MELCOR) to generate event trees in response to state changes in both active and passive systems. For these systems, the time at which a branch is formed is controlled by the simulator in response to predetermined rules supplied by the user. This allows for event trees to be

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generated by the simulator instead of only relying on expert judgement. ADAPT has been used to support NRC's dynamic assessments of human reliability projects by creating the structure to couple the human reliability models within ADS/IDAC with the dynamic event tree capabilities in ADAPT.

Emergency Response Codes:

- RASCAL: The Radiological Assessment System for Consequence Analysis is a tool is a used by the NRC's Protective Measures Team (PMT) in the Headquarters Operations Center and Regional Incident Response Centers for making independent dose and consequence projections during radiological incidents and emergencies.

- DCFPAK: The Dose Coefficient File Package is the Fortran-based computer package developed to provide electronic access to the dose coefficient data files summarized in Federal Guidance Reports 11 and 12. DCFPAK also provides access to standard information regarding decay chains and assembles dose coefficients for all dosimetrically significant radioactive progeny of a specified radionuclide and is used for dose assessment by various dose calculating tools including RASCAL, and TF.

- Nuclear Incident Response Program (NIRP): The NIRP program provides research and technical solutions, expert analysis, and highly trained emergency response professionals to support the federal government's response to an accident or act of terrorism involving radiological, chemical, or biological material. This site provides access to software developed by NIRP's Software Development Team which is used in emergency response.

    - Response Technical Tool (RTT): The RTT software was developed to make the NRC's Response Technical Manual (RTM), which is intended for use during a reactor severe accident, into a software application. The RTM is based on previous experiments and experience with severe accident phenomena. In particular, this work used section A of the RTM devoted to an assessment of core damage. The goal of the RTT is to automate the simple, yet very time consuming, calculations that are necessary to evaluate the status of a reactor during accident. This allows an analyst to spend more time making an evaluation as to the status of the plant and not performing simple calculations.
    - Turbo FRMAC (TF): The TF software program is the software implementation of the science and methodologies utilized by the Federal Radiological Monitoring and Assessment Center (FRMAC). These methods are documented in the FRMAC Assessment Manual and are utilized in the event of the intentional or accidental release of radioactive material to guide and govern the response of the Federal, State, Local, and Tribal governments.
    - Mixture Manager (MM): The MM software tool provides the ability to view default mixtures of radionuclides, create custom mixtures, import mixtures from other radiological tools, and create mixtures from limited information. The primary purpose of MM is the management of mixtures for use in other radiological tools such as TF and RASCAL.
    - Radionuclide Viewer (RV): RV is a tool for viewing the DCFPAK radiological data provided by Oakridge National Laboratories and it allows a user to select a

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radionuclide and visualize its full decay chain and basic data (half-life, decay modes, etc.). In addition to this, RV allows for the viewing of all the various dose coefficients for the selected radionuclide or its daughters and is integrated with RASCAL for performing assessments.

Extremely Low Probability of Rupture (xLPR) Code:

- SNL developed key portions of the Extremely Low Probability of Rupture (xLPR) code. This is the NRC's state-of-the-art probabilistic fracture mechanics code for piping applications and it provides the NRC and the public with new quantitative capabilities to analyze the risks associated with nuclear power plant piping systems subject to active degradation mechanisms, such as stress-corrosion cracking and fatigue.

Fire Science Research Codes:

- SNL has the nation's leading fire test facility. SNL's Thermal Test Complex (TTC) was specially created for fire and thermal experiments. SNL developed the following fire-related codes:

    - **FUEGO**: Developed at SNL, FUEGO is a low Mach number fluid mechanics code. Typically used for heat and mass transport modeling, FUEGO can also be coupled with Syrinx to simulate fire environments.

    - **ARIA:** This SNL-developed Galerkin finite element-based program is capable of solving nonlinear, implicit, transient, and direct-to-steady state problems on massively parallel architectures. ARIA also solves coupled-physics problems.

    - **Patran:** SNL successfully coupled Patran with an in-house computational fluid dynamics fire code for the heat transfer analysis of objects affected by fire. Patran is a commercial finite element code with a comprehensive selection of thermal loading possibilities.

Numerical Analysis Codes:

- Sierra is an engineering mechanics simulation code suite. Distinguishing strengths include: "application aware" development, scalability, SQA and V&V, multiple scales, and multi-physics coupling. Codes part of the SIERRA suite include:

    - Multiphysics Coupling (ARIA): ARIA is a general framework for thermal/ mechanical, thermal/fluid, and fluid/structure interactions. The framework permits a range of uni- and multi-directional coupling strategies from segregated in time and or space to fully coupled (in a matrix sense) in time and/or space.

    - Fluid Dynamics (FUEGO): FUEGO has capability for low-Mach, laminar and turbulent reacting flow. Typically used for heat and mass transport modeling. It can also be coupled with Syrinx to simulate fire environments.

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- Solid Mechanics (PRESTO/ADAGIO): PRESTO/ADAGIO is massively parallel capable and contains a full suite of features that span explicit and implicit transient dynamics, and implicit quasi-statics. These capabilities include a wide variety of element types including, bars, beams, tetrahedral, hexahedral, and particles (mass, SPH, and Peridynamics). Typically used to simulate container and package impact analyses and response of steel and concrete nuclear structures.

- Structural Dynamics and Acoustics is massively parallel capable and performs most traditional structural dynamics simulations in the time and frequency domains. This include stress, fatigue calculations that could include energy dissipation at discrete joints.

- Thermal Mechanics is a general three-dimensional, transient capability for heat conduction and surface/surface radiation in and between solid materials as well as support for thermoelectric problems. Typically, thermal mechanics is used to simulate response of spent nuclear fuel containers under different environments.

- Dakota: The Dakota software's advanced parametric analyses enable design exploration, model calibration, risk analysis, and quantification of margins and uncertainty with computational models. These capabilities may be used on their own or as components within advanced strategies such as hybrid optimization, surrogate-based optimization, mixed integer nonlinear programming, or optimization under uncertainty. The Dakota toolkit provides a flexible, extensible interface between such simulation codes and its iterative systems analysis methods, which include:

  - optimization with gradient and nongradient-based methods;
  - uncertainty quantification with sampling, reliability, stochastic expansion, and epistemic methods;
  - parameter estimation using nonlinear least squares (deterministic) or Bayesian inference (stochastic); and
  - Sensitivity/variance analysis with design of experiments and parameter study methods.

Severe Accident and Consequence Research Modeling: MELCOR and MACCS

SNL developed and maintains the MELCOR severe accident analysis code and the MELCOR Accident Consequence Code System (MACCS) atmospheric transport and radiological consequence assessment code for the NRC through an on-going contract with NRC for decades. Both codes are under ongoing development responding to emerging regulatory issues such as assessment of power plant vulnerabilities, development and modernization of regulatory tools such as Regulator Guides, assessment of licensee submittals including license amendments and new reactor

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design certifications, addressing user-need requests, application to State-of-the-Art Reactor Consequence Analyses of power plant risks (SOARCA) and application to full scope probabilistic risk assessment (PRA) activities at NRC. Both MELCOR and MACCS are widely used both domestically and internationally by regulatory agencies and industry alike to support safe reactor regulation. SNL both develops these essential regulatory tools and provides integrated and expert application of the codes to often urgent safety issues, such as the Aircraft Vulnerability Assessments following the terrorist acts of 2001, and the evaluation of potential consequences and lessons learned from the recent severe accidents at Fukushima Dai-ichi.

Shock Physics:

- CTH - a multi-material, large deformation, strong shock wave, solid mechanics code. It has models for multi-phase, elastic, viscoplastic, porous and explosive materials. Three-dimensional rectangular meshes, two-dimensional rectangular and cylindrical meshes, and one-dimensional rectilinear, cylindrical, and spherical meshes are available. CTH has adaptive mesh refinement and uses second-order accurate numerical methods to reduce dispersion and dissipation to produce accurate and efficient results. CTH provides an end-to-end simulation solution including visualization support and runs on Linux, Windows, Macintosh and UNIX workstations, Beowulf clusters and massively parallel supercomputers.

D. UNIQUE CAPABILITIES

Advanced Reactor Technologies and Advanced Fuel Concepts (aka ATF)

NRC and SNL, in anticipation of license reviews of advanced non-light water reactor designs and advanced fuel concepts, an inter-agency agreement between SNL and NRC was established to support the NRC's evaluation model for advanced non-LWR designs and advanced fuel concepts. Capabilities include nuclear data management and analysis for HTGR design/fuel development and qualification; Graphite reactor R&D; Heat Pipe design, test, and failure; Very High Temp reactor materials analysis; Fast Reactor technology-gas, lead, sodium cooled; Super-critical water-cooled reactor technology; Molten-Salt reactor; and advanced fuel concepts as being developed through DOE programs.

Assuring Safe Transportation of Nuclear and Hazardous Materials

While industry performs the majority of package design, Sandia conducts testing and analysis required to determine the response of packages to various situations. When evaluating the risks of hazardous and radioactive material transportation, two primary elements must be considered: integrity of the transport package and the route used. SNL has expertise and sophisticated testing and analysis resources to analyze both of these elements.

To ensure safe transport of radiological materials, SNL developed RADTRAN as a unique environmental impact and risk assessment code. This code was initially

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developed for the NRC and has been in use around the globe for 35 years. As an internationally- validated code, RADTRAN is also accepted by the International Atomic Energy Agency. RADTRAN displays the transport vehicle as a sphere depicting the external radiation dose as a virtual source. RADTRAN also evaluates accident scenarios by using parts of other risk assessment codes.

Atmospheric Dispersion Modeling

An essential aspect of modeling the impact of a potential or actual reactor accident to the environment is knowledge of atmospheric dispersion modeling. Through its development and support of environmental assessments for the NRC via MACCS; Through its development and support of emergency response for the NRC via RASCAL; Through its development of STORM and SHARC in support of various DOE programs; SNL has built extensive expertise in the area of atmospheric dispersion modeling. Much of this expertise has been used in the assessment of the Fukushima accident and in follow on impact studies.

Cyber-Based Vulnerability Assessments

SNL applies a wide variety of assessment and cyber-based Red Teaming techniques, tools, and facilities to optimize the security assessment process for a wide range of information systems throughout their life cycle. Red Teaming is the practice of viewing a product under evaluation from an adversary's perspective. The goal of most Red Teams is to identify approaches, techniques or procedures that can be used to undermine the product under evaluation. This "product" can take many forms depending on the desired evaluation. The result of the Red Team is normally used to enhance some aspect of security by understanding the strategy of the adversary. SNL teams have developed and applied a set of consistent and transparent methodologies to ensure that an effective and efficient approach is applied to each assessment.

Starting in 2003, SNL led a series of risk informed security assessments (SAs) of NRC materials licensees. This work was performed for the Office of Nuclear Material Safety and Safeguards. The SAs addressed both sabotage events leading to a release of material and events involving theft by outsiders or diversion by insiders of material for potential use in an improvised nuclear device or in a radiological dispersal device.

Dose and Risk Assessment

A critical aspect in assessing the significance of the impact of a reactor accident is being able to appropriately convert radioactivity released by the reactor to the environment to dose and health impacts to people, such as latent cancers, as well as environmental impacts. Through its leadership of the Federal Interagency Assessment Working Group, development of FR, DCFPAK, MACCS, and RASCAL, SNL has a long track record in leading in the avenue of dose and risk assessment to the public and the environment regardless of the mechanism by which the activity is released.

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Emergency Planning

In the aftermath of the attacks of September 11, 2001, the NRC Emergency Preparedness staff began a review of the planning basis for nuclear power plant emergency preparedness programs (SECY-03-0165), and Sandia was at the forefront of this review. In 2003, Sandia supported NRC in the research and assessment of large scale emergency evacuations publishing NUREG/CR-6864, "Identification and Analysis of Factors Affecting Emergency Evacuations," which presented a comprehensive investigation of public evacuations and quantitatively demonstrated that evacuations reduce risk to the public. The data collected has proven valuable in identifying emergency planning activities, public behavior, and other trends observed during evacuations and supported the 2004 project to analyze the efficacy of alternative protective action strategies in reducing consequences to the public from a spectrum of core melt accidents. The study, documented in NUREG/CR-6953, “Review of NUREG 0654, Supplement 3, ‘Criteria for Protective Action Recommendations for Severe Accidents,’ Volumes 1, 2, and 3” (referred to as the PAR [protective action recommendation] study) provided a technical basis for enhancing protective action guidance and was used as the technical basis to update NUREG-0654/FEMA- REP-1, Supplement 3, “Criteria for Protective Action Recommendations for Severe Accidents.” Supplement 3 also defines the staged evacuation as the preferred evacuation approach and suggests wind persistence information be used in the PAR determination.

SNL has also provided technical expertise to assist the NRC staff in determining whether Combined License and Early Site Permit applications met appropriate regulatory requirements, specifically related to radiological emergency plans and ETEs associated with the application

Fire Risk Analysis Research

SNL’s fire science research plays a significant role in ensuring the safe, secure, and responsible operation of nuclear power plants worldwide. SNL research provides the scientific basis for cable and circuit testing and evaluation, transportation vulnerabilities, metal fire phenomenology, and spent nuclear fuel pool ignition phenomena. Through research and experimentation in areas including basic fire behavior, fire modeling, fire protection engineering, and structure fire protection regulation compliance practices, SNL’s nuclear fire protection work leads the field in characterizing and evaluating fire risks and protection strategies necessary for the safe operation of nuclear energy infrastructure.

Human Reliability Analysis Research

SNL developed the Technique for Human Error Rate Prediction (THERP) to evaluate the probability of human failure events occurring at a nuclear power plant. Serving as foundation of HRA methodology and practice, THERP is capable of modeling dependent relations between actions and errors in a way unlike any other technique. It is an extensively documented and widely used HRA technique throughout the U.S. and the international community.

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SNL staff have experience in human reliability analysis (HRA) for nuclear power plant (NPP) and non-NPP applications (including Level 2 PRA). SNL has supported the development of HRA methods such as IDHEAS at-power method and helped organize expert elicitation workshops to determine human error probabilities for quantification through use of the IDHEAS method.

SNL served as HRA lead for the NRC's Level 3 PRA project, directing the overall implementation and integration of HRA into the project. This work included HRA in support of Level 1 and Level 2 at-power, internal events PRAs; Level 1 and Level 2 low-power and shut down PRAs; fire PRA; dry cask storage PRA; spent fuel handling PRA; and site wide, multi-unit risk analysis.

SNL staff have extensive knowledge and experience with psychological and behavioral models, and human factors engineering, especially as it relates to contexts where decision-making and action performance does not take place in the MCR. In addition, SNL staff have In-depth knowledge of the guidance, both qualitative and quantitative, of operator actions taken in response to fire events, including possible contexts and other performance influencing factors for actions during main control room abandonment.

International Consultation

The Office of International Programs (OIP) provides assistance to the Chairman, the Commission and the NRC staff on international issues. The OIP plans and implements programs to carry out policies in the international arena; including regulatory assistance and support to international regulatory counterparts to improve the safe and secure use of nuclear and radioactive materials. Sandia provides support in a wide range of technical and scientific disciplines, in supporting the work of the Office of Nuclear Material Safety and Safeguards and the Office of International Programs.

Large-Scale Validation Experiments

Performance is often tested through large-scale validation experiments. SNL leverages nearly six decades of extensive testing experience with a wide variety of high-profile testing facilities to serve as an institutional hub for the design, preparation, and execution of large-scale validation experiments. With a long history of support to regulatory agencies, SNL researchers apply detailed knowledge of nuclear energy regulations and the regulatory environment to experiments, ensuring that experiments generate the best, most accurate data. Of particular note, is that SNL the only institution in the US capable of testing air transportation packages. Air transportation package designs are tested and certified in extreme environments according to regulations and validation standards. Full-scale fire tests of large packages are also performed at SNL, but nowhere else in the US. These large-scale validation experiments leverage SNL's extensive collection of high profile, large-scale fire testing facilities including the Lurance Canyon Burn Facility and the Thermal Test Complex. Using a variety of data acquisition tools, researchers efficiently and effectively gather performance data needed to satisfy fire-based regulatory and validation requirements.

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MIDAS: Mobile Instrumentation Data Acquisition System

Data collection must accurately characterize what happens to a test unit under a variety of circumstances including events such as impact, puncture, fire, and immersion. SNL created the Mobile Instrumentation Data Acquisition System (MIDAS), a fully NQA-1 compliant system, to provide on-site or off-site data acquisition and analysis capabilities for testing of radioactive and hazardous materials packages and other test units. MIDAS allows researchers, designers, and regulators to examine and understand how a test unit behaves in a variety of environments

Multi-Scale, Multi-Process Testing

SNL uses multi-scale and multi-process testing to explore and understand how components and subsystems will behave in different environments. The ability to test components and total systems serves as an important element to ensure system integrity and performance assurance.

SNL's leverages 60 years of weapons component testing experience in generating detailed, increasingly useful data for both designers and regulators.

Nonproliferation

SNL develops the technology to protect potentially vulnerable nuclear and radiological material from malevolent use (e.g., in civilian locations that could be used in either a Radiological Dispersal Device (RDD) or an Improvised Nuclear Device (IND)). SNL conducts work both domestically and internationally, including over 25 countries on five continents. SNL takes a systematic life-cycle approach including analysis, design, implementation, training, operation and sustainment, and disposal/disposition. Additionally, SNL provides expert training in how to effectively search for and secure orphan or lost sources. This methodical approach ensures that the materials that could threaten our homeland security are protected throughout the world.

SNL's capabilities detect and deter illicit trafficking of nuclear material international borders, at points of entry/exit, and through the global maritime shipping network.

Physical Security Vulnerability Assessments

As a National Security Laboratory for the National Nuclear Security Administration (NNSA), SNL has almost four decades of experience providing technical expertise for designing and developing physical security systems, technology, testing, and assessment methods. SNL's physical security activities have supported the DOE, the NNSA, the NRC, the Department of Defense, other Federal, State, and Local agencies, and private industry. Sandia security facilities and capabilities are summarized below.

SNL has been a premier physical security laboratory for several decades and has developed several physical security-related facilities that can be used for security testing, demonstration and training activities. These include:

- Integrated Security Facility – Training, Demonstration, and Testing (former DOE

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Category 1 Facility);

- Sensor Test and Evaluation Center – Intrusion detection lab and test field;
- Access control and contraband detection lab;
- Active response and denial test area;
- Fixed barrier designs and activated dispensable materials for access delay applications test area;
- Physical protection test area;
- Force-on-force simulation laboratory;
- Development and conduct of system vulnerability and risk assessments;
- Nuclear facilities;
- Infrastructure, cyber; and
- Water utilities, dams, communities, prisons, chemical facilities.

Probabilistic Risk Analysis Research

SNL has over 30 years of experience developing and applying PRA methods to civilian nuclear power applications, dating from the Three Mile Island event in 1979. This history coincides with the development of the modern risk-informed, performance-based regulatory framework employed by the NRC today. SNL played a central role in many of the seminal works which form the basis of the NRC's regulatory structure, and continues serving as an active contributor in the development of industry standards, such as the Joint Committee of Nuclear Risk Management, which provide guidance for the correct application of these techniques in an industrial setting. SNL has established a best-in-class reputation in several specific technology areas relevant to Probabilistic Risk Analysis (PRA) of civilian nuclear power. SNL researchers use an array of analysis techniques including event and fault trees, dynamic event trees (particularly with the internally developed code ADAPT), influence diagrams, decision trees, systems theoretic process analysis (STPA), and network diagrams, combined with deep systems knowledge and substantial professional expertise to produce realistic risk estimates for complex systems. SNL has recently supported NRC in scoping a dynamic human reliability analysis using a combination of the University of Maryland's / University of Californian Los Angeles's code ADS-IDAC and SNL's codes ADAPT and MELCOR. SNL is currently supporting the spent fuel pool analysis portion of the NRC's Vogtle Level 3 probabilistic risk assessment. SNL's primary roles on developing and analyzing the level 1 to level 2 transition binning and the level 2 accident progression tress for the coupled multi-unit spent fuel pool. SNL is also innovating new digital hazard informed fault trees using STPA insights.

Regulatory Gap Analysis

The NRC developed an advanced non-light water reactor (LWR) probabilistic risk assessment (PRA) research program to ensure that the NRC staff has the proper knowledge and tools to support risk informed licensing activities for advanced non-LWRs. The objective of this program, supported by SNL, was to identify where guidance, methods, and data are needed to support the technical review of an advanced non-LWR PRA. This work had as its scope the performance of a "gap analysis" to identify where there might be gaps in the guidance, methods, and data needed for an adequate review

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of an advanced non-LWR PRA. Many insights gathered while reviewing existing PRA methods, tools and standards were found to be technology neutral and potentially applicable to nuclear power concepts in the design phase.

SNL also led a DOE sponsored a sodium fast reactor safety and licensing gap analysis from 2007 to 2012. This gap analysis surveyed the licensing readiness of sodium fire experiments and modeling, understanding of important phenomena in accident sequences, fuels and materials understanding, source term issues, and the current state of codes and methods. These gap analyses resulted in a DOE research plan to improve the listenability of the SFR.

Structural Engineering and Containment Integrity Research

SNL's expertise includes evaluation of containment when subjected to high velocity impacts, enormous pressures and stresses, and attacks by saboteurs. SNL's resources enable the completion of a complex scientific investigation in its entirety. Its engineers are capable of performing a numerical analysis in totality from modeling a structure in software to validating the calculations with experiments and journal data**.**

Structural Phenomenological Modeling and Analysis of Complex Systems

SNL has capabi8lities in computational methods developed in structural mechanics, heat transfer, fluid mechanics, shock physics, and many other fields of engineering can be an enormous aid to understanding the complex physical systems.

SNL's infrastructure and capabilities include the multidisciplinary technical expertise and accrued knowledge needed to provide regulatory institutions with the ability to make reliable and technically sound regulatory decisions. For instance, Sandia's Corrosion and Electrochemical Sciences conducts research and development in the areas of materials aging and materials interactions. SNL's ongoing investment in electrochemical and surface analytical techniques and expertise enables us to quantify material behavior under accelerated aging conditions and to develop empirical, phenomenological and fundamental models and understanding of materials aging.

Thermal & Thermal-Mechanical Phenomenology Modeling Complex Systems

SNL has multi-scale test facilities, accrued knowledge and over 30 years of validation testing to model the presence of fire and intense heat during an accident involving nuclear material. Using a comprehensive suite of resources including numerical modeling software and a number of on-site experimental and testing facilities, Sandia performs complete investigations of thermal phenomena. SNL researchers have expertise in the development and application of a number of numerical thermal analysis codes. With high-performance computing capabilities and a broad knowledge of commercial and in-house-developed software, SNL is capable of modeling the most complex multidisciplinary physics simulations related to fire and heat transfer.

Training NRC Staff for Licensing Applications

SNL develops and teaches different courses for NRC staff including basic and advanced

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courses, covering both reactor and nuclear material applications, employing experienced instructors and extensive suite of coursework for both reactor and nonreactor applications. Courses include introductory up through advanced topics, including courses specific for resident inspectors. Courses vary from 1-day to 10-days and may be tailored to meet specific needs for any application. The NRC for example under CSARP, IMUG and AMUG programs sponsors technical training around the world on the application of the MELCOR and MACCS computer codes.

Uncertainty & Sensitivity Analysis

For the past 30 years, SNL has been developing and conducting research to quantify margins, reduce unnecessary burden, and reduce uncertainties for areas of potentially high risk supporting nuclear safety. SNL plans, develops, and manages research programs supporting risk-informed regulatory decision-making. SNL uses probabilistic modeling to understand how well simulations model reality, and thus recognize when we can have confidence in a computational answer. SNL manages the development of computation tools within a robust quality assurance environment

4.0 WORK REQUIREMENTS

The task orders will be placed by the Contracting Officer (CO). SNL shall submit a technical and cost proposal in response to the task order Request for Proposal. SNL shall perform each task order in accordance with the final project plan approved by the COR.

SNL shall follow a quality control plan which outlines the procedures and system they will use for document version control, technical input tracking, change management, and technical and editorial reviews. SNL shall organize, track, and manage changes in a structured, systematic, and transparent manner, throughout the review and production of each deliverable. Further information regarding the staffing plan and project plan are provided in Attachments 1 and 2.

5.0 PERSONNEL QUALIFICATIONS

All personnel performing work under this agreement shall have pertinent technical experience by discipline and technical area, including SNL Project Managers and team members. Experience in these disciplines and technical areas must be related to the design, construction, operation, maintenance, security, inspection and environmental review of nuclear power plants. Emphasis is placed on experience that is related to safety, security and environmental impact where judgments are made as to whether applicable codes and federal regulations are being, or have been, implemented and/or followed. It is the responsibility of SNL to propose technical staff, employees, subcontractors or specialists who have the required educational background, experience, security clearance and/or access authorization or combination thereof, to meet both the technical and regulatory objectives of the work specified in the task order statement of work (SOW). The number of personnel required will vary during the course of the agreement. The availability of qualified Laboratory personnel who shall possess the minimum experience, educational background, and combination thereof, will be negotiated on each task order.

6.0 PERFORMANCE STANDARDS

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SNL's performance for each task order will be evaluated based on meeting the performance standard established for each task order and shall be documented on the performance evaluation form (Attachment 3). It should be noted that award of subsequent task orders will be based on the assigned Laboratory's ability to meet the schedule, milestones, and deliverable requirements of the preceding task orders.

The deliverables required under this agreement shall conform to the standards contained, or referenced, in the SOW for each task order. The Performance Requirements Summary (Attachment 4) outlines the performance requirements, deliverables, acceptable standards, surveillance method, and incentives and/or disincentives applicable to the assigned task. Individual task orders may modify the performance requirements depending on the task order scope of work.

7.0 DELIVERABLES

7.1 Monthly Letter Status Report (MLSR)

In accordance with MD 11.7, the DOE Laboratory shall submit a Monthly Letter Status Report (MLSR) by the 20th day of each month to:

- NRC CO and Task Order COR

With copies to the following:

- Office of Administration/Division of Contracts (electronic copy only) to ContractsPOT.Resource@nrc.gov
- Department of Treasury (electronic copy only) to NRC@fiscal.treasury.gov
- Others as defined in the task order statement of work

The MLSR shall be submitted electronically. See Attachment 5 for the content and format of the Monthly Letter Status Report. Each MLSR submission shall include a projected six-month spending plan of the total estimated costs, at a minimum.

7.2 Technical Reporting Requirements

Unless otherwise specified in a task order, the Laboratory shall provide all deliverables as draft products. The COR will review all draft deliverables (and coordinate any internal NRC staff review, if needed) and provide comments back to the contractor. The Laboratory shall revise the draft deliverable based on the comments provided by the COR, and then deliver the final version of the deliverable. When mutually agreed upon between the Laboratory and the COR, the Laboratory may submit preliminary or partial drafts to help gauge the Laboratory's understanding of the particular work requirement.

SNL shall provide deliverables in electronic format. The electronic format shall be provided in MS Word or other work processing software approved by the COR. For each deliverable, SNL shall provide an electronic copy to the COR and CO, unless specified otherwise in the task order. The schedule for deliverables shall be contained in the approved project plan for the task order effort.

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The types, quantities, and distribution of the reports will be specified in each task order and shall be submitted by the Laboratory. Typically, the reports will involve:

Technical Evaluation Report (TER): Requests for this type of report are made when a formal report is required but the distribution is limited. As appropriate, the draft and final TERs will summarize the work performed, results attained, findings, conclusions and recommendations.

NUREG/CR Report: This is the most formal Laboratory report and is requested when there is significant and important compilation of information and wide distribution of the report as a stand-alone document is required and when the staff believes the document will be referenced frequently. NUREG/CR reports require the completion/execution of an NRC form 426A, to be completed by the Laboratory and sent to the Technical Monitor for processing. For further information refer to Management Directive 3.7, “NUREG-Series Publications”

Trip Report: In general, every trip for which results are not directly incorporated into either of the above types of reports should be documented in a short, concise trip report. Trips that are used as an input to an inspection report need not have a trip report (see the paragraph below).

Technical Letter Reports: All other reports and documents and other information (e.g., RAI, computer software, inspection report inputs) due to be delivered by the Laboratory under the contract that do not fall under the other types of reports listed above are transmitted under the cover of a “Technical Letter Report.”

The transmittal letter and cover page of each report or deliverable should reference the following:

- Agreement and Task Order Number
- Project Title and Facility Name
- Cost Center
- Cost Activity Code (CAC) / Enterprise Project Number (EPID) / Docket number (if applicable)
- Inspections Report (if applicable)

Certain deliverables may need to be prepared in NUREG or NUREG/CR format. If draft reports are required, the number of drafts expected will be stated in each task order. If proprietary or other sensitive information will be included in the report, the report will identify the proprietary or other sensitive information and specify the means of handling this information.

The decision, determination, or direction by the NRC that information possessed, formulated or produced by SNL constitutes sensitive unclassified or safeguards information is solely within the authority and discretion of the NRC. In performing work under this agreement, SNL shall clearly mark sensitive unclassified and safeguards information, to include for example, "OUO-Allegation Information" or "OUO-Security Related Information" on any reports, documents, designs, data, materials, and written information, as directed by the NRC. In addition to marking the information as directed by the NRC, SNL shall use the applicable NRC cover sheet (e.g., NRC

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Form 461, "Safeguards Information") in maintaining these records and documents. SNL shall ensure that sensitive unclassified and safeguards information is handled, maintained and protected from unauthorized disclosure, consistent with NRC policies and directions. SNL shall comply with the requirements to mark, maintain, and protect all information, including documents, summaries, reports, data, designs, and materials in accordance with the provisions of Section 147 of the Atomic Energy Act of 1954, as amended, its implementing regulations (10 CFR 73.21), Sensitive Unclassified and Non-Safeguards Information policies, and NRC Management Directive and Handbook 12.6 and provisions of 10 CFR 810 when applicable. Some reports containing sensitive information will require the contractor to access NRC's Safeguards Information Local Area Network and Electronic Safe (SLES). The contractor shall coordinate with the COR for access to SLES.

Results of this work, other than pre-decisional, proprietary or sensitive information, may be published in the open literature provided the speech, article, or paper has been reviewed and approved by the COR and by the appropriate NRC official prior to its presentation or submission in accordance with procedures established in NRC Management Directives 3.10, "NRC Contractor Unclassified Papers, Journal Articles and Press or Other Media Releases on Regulatory and Technical Subjects." All requests for approval will be sent to the NRC CO with a copy sent to the task order COR. It is recognized that the NRC requires as a minimum that the paper include the statement, "Work Supported by the U.S. Nuclear Regulatory Commission." In addition, the Laboratory will coordinate with the CO and COR to determine whether any additional caveats or disclaimers are necessary.

8.0 PROCEDURES FOR PLACING TASK ORDERS UNDER THIS PROJECT

Task order request for proposal (TORFP): When the need for a task order arises, the NRC CO will send a TORFP which may include the following as appropriate:

(1) Scope of work/meetings/travel and deliverables;
(2) Reporting requirements;
(3) Period of performance - place of performance;
(4) Applicable special provisions;
(5) Technical skills required; and
(6) Estimated level of effort.

Task Order Technical Proposal: By the date specified in the TORFP, SNL shall deliver to the CO a written or verbal (as specified in the TORFP technical proposal submittal instructions) technical proposal that provides a staffing plan, and project plan for performance of the effort. The staffing and project plan shall be submitted in the format (or similar format) of Attachments 1 and 2 of the SOW.

Cost Proposal: SNL's cost proposal for each task order must be fully supported by cost and pricing data adequate to establish the reasonableness of the proposed amounts. When the Laboratory's estimated cost for the proposed task order exceeds $100,000 and the period of performance exceeds six months, the Laboratory may be required to submit a Laboratory Spending Plan (LSP) as part of its cost proposal. The TORFP indicates if a LSP is required.

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For each task order request for proposal, the Laboratory shall identify all key personnel and the number of staff hours that will be committed to complete the work specified in the task order. SNL shall include the resumes for all professional personnel proposed to be utilized in the performance of any resulting task order, unless otherwise available as part of the basic contract. SNL shall submit the task order proposal to the CO.

Task Order Award: After reaching agreement on the approach and estimated cost of the task order with the Laboratory, the CO will issue the task order. SNL shall perform all work described in task orders issued by the CO. Task orders include the following:

(1) SOW/meetings/travel and deliverables;
(2) Reporting requirements;
(3) Period of performance;
(4) Key personnel;
(5) Applicable special provisions; and
(6) Total task order amount including any fixed fee.

Within thirty (30) calendar days of receipt of the task order, the Laboratory shall acknowledge receipt and acceptance of the task order and return it to the CO.

Accelerated Task Order Procedures: In case of urgency, the NRC may request that the DOE Laboratory immediately begin work before a definitive task order under an existing DOE approved task ordering agreement is negotiated in accordance with MD 11.7. When this accelerated procedure is requested by the NRC, the DOE Laboratory agrees to begin promptly negotiating the terms of the task order under the existing agreement. Once agreement is reached, a task order will be issued by the COR in accordance with the procedure described above.

Task Order Modification: In the event that the need for a work scope or cost ceiling modification is required after acceptance of the task order, the CO or the DOE Laboratory requesting the change shall initiate contact with the other to reach agreement. Upon completion of negotiations, a modification to the task order that incorporates the agreed upon changes will be issued by the CO.

9.0 MEETINGS AND TRAVEL

Each task order will specify any required meetings or travel to nuclear power plant sites throughout the United States; NRC offices in Rockville, Maryland; NRC regional offices; and any other location required for performance of the work detailed in the task order statement of work. Prior to any trip taken during the period of performance under this agreement that is within the work scope limits, SNL shall obtain approval from the COR or CO if the travel exceeds the total number of person-trips negotiated.

10.0 NRC FURNISHED MATERIALS

Any reports, documents, equipment, and other materials required by SNL to perform the work will be stated in the NRC Furnished Materials Section of the task order. In general, the task order COR will provide those NRC documents related to the task order that is readily available. SNL staff will identify any additional NRC documentation that is needed and the COR will

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determine whether it will be provided by NRC or obtained directly by Laboratory from Agencywide Document Access Management System (ADAMS), the NRC Public Document Room, or the NRC public web site.

11.0 ORGANIZATIONAL CONFLICT OF INTEREST INFORMATION

Upon submitting a proposal to the NRC, each DOE Laboratory would continue to acknowledge the disclosure requirements of: 1) the NRC Clause, the NRC Conflict of Interest, Management Directive 11.7, Section 2.3.2.12 and Section 2.33; and 2) the provisions of the Memorandum of Understanding (MOU) between DOE and NRC, dated 1998 (which states, in part, that DOE recognizes that Section 170A of the Atomic Energy Act of 1954, as amended, requires that NRC be provided with disclosures on potential conflicts when NRC obtains technical, consulting, research and other supporting services). DOE further recognizes that the assignment of NRC work to DOE laboratories must satisfy NRC's organizational conflict of interest (OCOI) standards.

Therefore, each DOE Laboratory, in its proposal to NRC is required to make an assertion per #1 or #2 of Part A below. If the DOE Laboratory selects #1, then, it must also fill out the accompanying Part B; whereby the DOE Laboratory must, again, make an assertion by answering each of the five (5) NRC OCOI provisions per the NRC Acquisition Regulation (NRCAR).

PART A:

"In accordance with [INSERT NAME OF DOE LABORATORY] role in, and responsibility for, disclosing its relationships with organizations which conduct business in the same and/or similar technical area as described by the present and/or ongoing NRC project's scope of work, and in accordance with the NRC clause as stated herein, [INSERT NAME OF DOE LABORATORY] hereby asserts that it has examined its relationships with all such organizations, and has also examined its current and future/planned work, and where appropriate, its past work (generally for the previous five years), for DOE and other organizations, and [INSERT NAME OF DOE LABORATORY] states the following:

1) [INSERT NAME OF DOE LABORATORY] hereby discloses the following relationships _____ [state the name of persons, organizations, and business relationships, etc. **] _____ that may give rise to a potential OCOI. (DOE Laboratory must answer the questions in Part B below);

Or

2) [INSERT NAME OF DOE LABORATORY] to the best of its knowledge and belief, asserts that it has no current work, planned work, and where appropriate, past work for DOE and others (to mean - organizations in the same and/or similar technical area as the present and/or ongoing NRC project scope of work); and [INSERT NAME OF DOE LABORATORY] hereby asserts that it is not aware of any same/similar technical work that would give rise to any potential OCOI as defined in the Atomic Energy Act of 1954, as amended, and in the NRC/DOE MOU.

Signed: _____

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PART B:

In accordance with [INSERT NAME OF DOE LABORATORY] role/responsibility regarding OCOI disclosure, as stated in Part A, above [INSERT NAME OF DOE LABORATORY] further discloses, to the best of its knowledge and belief, that:

1) [INSERT NAME OF DOE LABORATORY] and/or any of its organizational affiliates* as defined in Part A above [does/does not] provide advice and recommendations to the NRC in the same technical area (e.g., fire protection, probable risk assessment, seismic, vulnerability analysis, fracture mechanics) where it is also providing consulting assistance to any organization regulated by NRC. If [INSERT NAME OF DOE LABORATORY] "does" - the [INSERT NAME OF DOE LABORATORY] hereby discloses such organization(s) in Part A above;

2) [INSERT NAME OF DOE LABORATORY] and/or any of its organizational affiliates as defined in Part A above [does/does not] provide advice and recommendations to the NRC on the same or similar matter (e.g., particular licensing amendment, particular EIS, particular high level waste repository site) on which it is also providing assistance to any organization regulated by NRC. If [INSERT NAME OF DOE LABORATORY] "does" - the [INSERT NAME OF DOE LABORATORY] hereby discloses such organization(s) in Part A above;

3) [INSERT NAME OF DOE LABORATORY] and/or any of its organizational affiliates as defined in Part A above [will/will not] be required to evaluate its own products or services, or has been substantially involved in the development or marketing of the products or services of another entity. If [INSERT NAME OF DOE LABORATORY] "does" - the [INSERT NAME OF DOE LABORATORY] hereby discloses such organization(s) in Part A above;

4) [INSERT NAME OF DOE LABORATORY] and/or any of its organizational affiliates as defined in Part A above [does/does not] have a conflicting role, given the award of the present and/or ongoing NRC project, in which its judgment or the judgment of any of its organizations may be biased in relation to its work for NRC. If [INSERT NAME OF DOE LABORATORY] "does" – the [INSERT NAME OF DOE LABORATORY] hereby discloses such conflicting role(s) with organization(s) in Part A above;

5) [INSERT NAME OF DOE LABORATORY] and/or any of its organizational affiliates as defined in Part A above [are/are not] soliciting or performing concurrent work at an applicant or licensee site, while performing work in the same/similar technical area for NRC at the same site. If [INSERT NAME OF DOE LABORATORY] "does" – then the [INSERT NAME OF DOE LABORATORY] hereby discloses such organization(s) in Part A above."

Signed: _____

*Organization affiliate – Business concerns which are affiliates (related) to each other when either directly or indirectly, one concern or individual controls or has the power to control another, or when a third party (i.e., parent firm) has the power to control both.

** The Atomic Energy Act of 1952 uses the term “person” to mean any entity – e.g., sole proprietorship, partnership, joint venture, corporation; university; limited partnership, subchapter S corporation; limited liability company, etc.

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The OCOI disclosure requirement extends to any subcontractors the DOE laboratory intends to use under the agreement.

12.0 LICENSE FEE

Plant specific licensing actions are fee recoverable. Each task order will state whether or not the work is license fee recoverable.

13.0 SECURITY REQUIREMENTS

Work performed under this agreement may have specific security requirements. Individual task orders will define the security requirements necessary for the scope of work being performed.

14.0 ATTACHMENTS:

1. Staffing Plan Format
2. Project Plan Format
3. Performance Evaluation Plan
4. Performance Requirements Summary
5. Monthly Letter Status Report Requirements

Staffing Plan Format

The staffing plan shall identify all proposed organizational resources to be dedicated to the task order effort. The plan shall clearly indicate the capabilities of the proposed personnel to perform the effort described in the statement of work for the specific task order effort. The following (or similar) format shall be used to represent the staffing plan. The staffing plan shall include the name, discipline/expertise, project role, and estimated hours of all personnel proposed to accomplish the effort, as well as, all proposed consultants and subcontract personnel. For all personnel not initially proposed in the base agreement, provide a resume.

You are also required to identify any current/former NRC employees (list name, title, and date individual left NRC and provide a brief description of the individual's role under this proposal). If there are no current/former NRC employees involved, a negative statement is required.

Staffing Plan - Task Order

Name	Expertise	Project Role (task)	Title	Est. Hours

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Project Plan Format

The project plan shall clearly describe your organization's planned technical and management approach to performing the effort described in the statement of work for the specific task order. You shall describe your proposed technical approach by task or phase, identifying for each, the schedule, milestones, and deliverables (in Microsoft Project[7] or similar format); the methodology, innovations, and quality control measures to be used; problems and risks anticipated, as well as your risk mitigation plans. You shall also describe the management and administrative controls your organization will employ to meet the cost, performance, and schedule requirements of the effort. Once established, and approved by the COR, the project management plan, inclusive of schedule, shall form the basis for accomplishment of the task order and shall be used as a means to assess performance.

Project Plan Approach
A team of experts (e.g., Key Personnel) as identified in the attached staffing plan will be assigned to this effort. The effort will be conducted according to the following process and schedule. Innovations to be used to ensure the schedule is met consist of use of Microsoft Project[7] or similar format.

Task Name	Duration	Projected Start Date	Projected Finish Date
Authorization to Proceed - Staff assignments finalized			
Meeting with NRC for review of Project Plan			
Finalized Project Plan submitted (Deliverable)			
Task 1 – AAA			
Task 2 - BBB Report Completed (Deliverable)			
Internal Performance assessment completed (midproject-)			
Lessons learned documented			
Review NRC completed Performance Assessment and provide comments & lessons learned			

Quality Control — All deliverable products will receive peer review by an independent experienced editor and technical reviewer prior to being submitted to NRC. A NUREG template will be used by all reviewers.

Risk Mitigation — The schedule for this effort is critical to completion of the entire review and update program. As such, a webbased- database will be used to accumulate and share updated reports. Staff will meet with all stakeholders to discuss changes prior to incorporation of the changes into the final document to eliminate numerous iterations.

Performance Evaluation Plan

Agreement No. Rating Period: MM/DD/YYYY to MM/DD/YYYY

Task Order No.

COR: Laboratory PM:

Assessment of Task Order Performance

Category	Rating			
I. Technical Performance	Excellent	Satisfactory	Unsatisfactory	N/A
Appropriate Standard Review Plan (SRP)/Environmental Impact Statements (EIS) Sections/Licensing Documents/Amendments Reviewed				
Incorporation of Comments				
II. Task Management	Excellent	Satisfactory	Unsatisfactory	N/A
Timeliness (Schedule)				
III. Budget Management	Excellent	Satisfactory	Unsatisfactory	N/A
Budget Compliance				

Note: A written justification is required, and must be attached, for any rating of Unsatisfactory; however, comments may still be provided with a Satisfactory rating if there are issues of concern.

COR:

I certify that the above evaluation is accurate.

Comment:

Signature Date

Rating Scale and Subcategory Definition

Appropriate Documents Reviewed and Technical Input Submitted

- Excellent - Reviewed all appropriate documents and provided input as specified in the Task Order. Interfaced with NRC staff as required to collect their inputs, and made recommendations in a clear and concise manner.

- Satisfactory - Addressed all appropriate documents as specified in the Task Order. Communication with the NRC staff was infrequent (less than weekly) but adequate.

- Unsatisfactory - Did not address 2 or more appropriate input requirements as specified in the Task Order. Communications with NRC staff was infrequent and inadequate.

Budget

- Excellent - Performed all work specified in the Task Order at or within the initial budget.

- Satisfactory - Performed all identified tasks within the NRC adjusted budget that was adjusted for issues outside the Contractor's control. Contractor identified budget and schedule issues promptly to NRC to allow adequate time to evaluate the situation and revise the budget as needed.

- Unsatisfactory - Failed to complete work specified in the Task Order within budget. Did not adequately keep NRC advised of issues that could affect the task budget or schedule.

Incorporation of Comments

- Excellent - Communicated effectively and in a timely manner with NRC to incorporate NRC comments promptly and correctly. Resolved or incorporated major comments in one iteration. General and editorial comments were resolved quickly and ahead of schedule. Questions and potential issues were resolved in a highly professional manner.

- Satisfactory - Communicated adequately with the NRC staff to collect and incorporate comments. One or more rounds of comment resolution were required to resolve major issues. General and editorial comments were resolved within the established scheduled time period.

- Unsatisfactory - Communication between the contractor and NRC was inadequate to identify and incorporate comments in a timely manner. Several iterations of comment resolution were insufficient to incorporate the NRC comments. Major issue resolution was not pursued appropriately, and general and editorial comments were not adequately addressed, which caused a schedule delay.

Timeliness

- Excellent - Completed all tasks on or ahead of schedule
- Satisfactory - Completed all tasks at or ahead of the schedule revised due to circumstances beyond the contractor’s control.
- Unsatisfactory - Exceeded the agreed upon (or revised) schedule by greater than 2 business days.

Performance Requirements Summary

Performance Requirements and Deliverables	Standard	Method of Review	Incentive/Disincentive
Management Controls	A Project Plan shall be established consistent with the NRC licensing review schedule. The format for this Project Plan is provided in Attachment 2. Once established, and approved by the COR, the project plan, inclusive of schedule, shall form the basis for accomplishment of the task order and shall be used as a means to assess performance.	The COR or designee will review. The licensing review schedule will be updated and monitored on a frequent basis. The COR shall assess the performance of the contractor for each task order using the Performance Evaluation Plan provided in Attachment 3.	Award of subsequent task orders will be based on the assigned contractor's ability to meet the schedule, milestones, and deliverable requirements of the preceding orders as documented on Attachment 3. Failure to meet the schedule, milestones, and deliverable requirements of preceding orders as documented on Attachment 3 may result in non-award of subsequent task orders, or even shortening of the EWA stated period of performance.

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Performance Requirements and Deliverables	Standard	Method of Review	Incentive/Disincentive
Technical Evaluation Report	The format is provided in each task order. The content should address the relevant portion of the reference standard and any Safety Evaluation Report (SER) writing templates furnished by the NRC.	The COR or designee will review the technical letter report to the standards to assure compliance. The COR shall assess the performance of the contractor for each task order using the Performance Evaluation Plan provided in Attachment 3.	Award of subsequent task orders will be based on the assigned contractor's ability to meet the schedule, milestones, and deliverable requirements of the preceding orders as documented on Attachment 3. Failure to meet the schedule, milestones, and deliverable requirements of preceding orders as documented on Attachment 3 may result in non-award of subsequent task orders, or even shortening of the EWA stated period of performance.

Performance Requirements and Deliverables	Standard	Method of Review	Incentive/Disincentive
Request for additional information (RAIs)	Guidance for writing RAIs is provided in each task order.	The COR or designee will review the RAIs to the standards to assure compliance. The COR shall assess the performance of the contractor using the Performance Evaluation Plan provided in Attachment 3.	Award of subsequent task orders will be based on the assigned contractor's ability to meet the schedule, milestones, and deliverable requirements of the preceding orders as documented on Attachment 3. Failure to meet the schedule, milestones, and deliverable requirements of preceding orders as documented on Attachment 3 may result in non-award of subsequent task orders, or even shortening of the EWA stated period of performance.

MONTHLY LETTER STATUS REPORT INSTRUCTIONS

In accordance with Management Directive 11.7, NRC Procedures for Placement and Monitoring of Work with the U.S. Department of Energy, the DOE Laboratory must submit an electronic Monthly Letter Status Report (MLSR) by the 20th day of each month to the Contracting Officer's Representative (COR), the Contracting Officer (CO), and ContractsPOT.Resource@nrc.gov. If the project is a task ordering agreement, a separate MLSR and a summary project MSLR must be submitted for each task order. A task order MLSR is required even if work was not performed during the reporting period. When NRC determines that work under a task order was completed and that the final costs are acceptable, the task order may be omitted from the MLSR. The MSLR for each task order shall match the billing invoice for the billing period and the amount billed. If there is a discrepancy between the billing invoice and the MSLR then the MSLR shall provide the reason for the discrepancy.

The MLSR must include the agreement number; the task order number, if applicable; the job code number; the title of the project; project period of performance; the task order period of performance, if applicable; the COR's name, telephone number, and e-mail address; the full name and address of the DOE Laboratory; the principal investigator's name, telephone number and e-mail address; and the reporting period. In addition, the MLSR must include the following information:

FINANCIAL STATUS SECTION

A. Overall Funding

Provide the following:
Total Ceiling Amount: $
Total Amount of Funds Obligated to Date: $
Total Amount of Funds Expended to Date: $
Percentage of Funds Expended to Date: %
Balance of Obligated Funds Remaining: $
Total Estimated Encumbered Costs: $
Balance Available Less Encumbered Costs: $
Estimated Date Based on Spend Plan When Obligated Funds Will Be Expended: [Date]

Encumbered costs are committed costs (also known as commitments) against a specific purpose. Costs are considered encumbered, or set aside, when funds are reserved for payment once the materials are received or services are rendered.

B. DOE Laboratory Acquired Property

Report all property with an acquisition cost of $5,000 or more, including Information Technology (IT) hardware and software, acquired for the project during the month. Report all sensitive property regardless of cost. The following information is required on each reported property: item; the property description; the manufacturer, model number, and serial number, if applicable; the acquisition cost; the date received; and the DOE Laboratory property identification number, when appropriate. If property was not acquired during the reporting month, include a negative statement to that effect in the MLSR.

The final MLSR must include a closeout property report certifying that property acquired under the NRC project with an acquisition cost of greater than $5,000, including IT hardware and software, and sensitive property regardless of cost, is included in the DOE Laboratory official property records and that the list is complete. For each item listed, the report must contain the item description; manufacturer, the model number, the serial number, if applicable; the acquisition or development cost; the date received, and the DOE Laboratory property identification number, when appropriate. The closeout property report must identify any ongoing or contemplated NRC projects on which the property could be utilized. The report must identify if property was not acquired under the project, include a negative statement property if requiring special handling based on security, health, safety, or other reasons as to that affect.

C. NRC-Funded Software Developed

Report NRC funded software with a useful life of 2 years or more and a development cost of greater than $5,000. Provide the following information on each NRC funded software: the software name and function; the development cost; the computer language used; the operation system; the physical location of the software and/or the hardware system; the date the software development was completed; and the scheduled replacement date or projected useful life. If the useful life is not readily apparent, the useful life is considered to be 5 years from the day the software was considered operational.

TECHNICAL STATUS SECTION

A. Deliverables/Milestones Schedule

Provide the following information for each deliverable/milestone identified in the SOW: the associated task; the description; the planned completion date; the revised completion date if applicable; and, the actual completion date. The deliverables/milestones schedule must be revised as necessary. Any variance in schedule must be identified and discussed in detail. Discussion must include the cause for the variance, together with any proposed solution to bring the dates within the original planned dates.

B. Progress During Reporting Period

Provide a clear and concise discussion of the work performed during the reporting period. At a minimum, these discussions must include sufficient detail to support the costs reported for the reporting period. A summary of significant meetings and conference calls may be included. In addition, the current status of each task must be identified. **Progress reported as "worked on all tasks" is not acceptable.**

C. Travel

Travel taken during the reporting period must be fully described and must include, at a minimum, the purpose of the travel, whether prior NRC authorization was required and obtained, the names of all travelers, the beginning and ending dates of the travel, and the destination point.

D. Description of Estimated Encumbered Costs

INSERT LANGUAGE HERE

E. Anticipated and Encountered Problem Areas

Problems encountered during the reporting period and anticipated in subsequent period(s) must be identified. Discussion of problems encountered during the reporting period must include the actual solution. If the solution was not implemented during the reporting period, a detailed discussion of the proposed solution must be included. The status of the problem must be updated in subsequent MLSRs until problem resolution is achieved and reported. Clearly identify the person(s) and/or organization(s) with responsibility to address the problem. If NRC is required to take action to resolve a problem or concern, the COR should be notified separately.

A discussion of the impact on the projected cost and schedule of the project or task order must be included. If the projected actual cost is expected to be greater than or less than the planned cost and/or if the schedule is projected to be longer than or less than the planned schedule, an in depth rationale for the difference(s) must be provided. Actions to mitigate schedule delays and/or cost increases must be thoroughly described.

Problems or circumstances requiring a modification to the level of effort, estimated cost, scope of work, or travel requirements must also be discussed in the MLSR. The COR should be notified separately if a modification is needed. **Such notification must not be delayed until issuance of the MLSR.**

F. Plans for the Next Reporting Period

Provide a concise discussion of work to be performed and a description of anticipated travel during the next reporting period. Describe milestones anticipated to be completed in the next reporting period.

License Fee Recovery Cost Status (Applicable to Fee-Recoverable work only)

Pursuant to the provisions on fees of Title 10 of the *Code of Federal Regulations* Parts 170 and 171, provide the total amount of fee recoverable costs incurred during the reporting period and fiscal year to date for each project or task order. The License Fee Recovery Cost Status (LFRCS) must be on a separate page as part of the MLSR for the agreement, and must be in the format provided in the MLSR template under the LFRCS Section. If fee recoverable costs were not incurred during the reporting period. The DOE Laboratory must indicate if fee recoverable costs should not be rounded to the nearest dollar.

Facilities must be sorted by docket number. Unit numbers, for example, Beaver Valley 2, must be identified for each facility included in the LFRCS table. For projects or task orders that involve more than one unit, each unit must be listed separately and the costs must be split appropriately between the units. Common costs, as defined below, must be identified separately in the LFRCS table and must be divided among all facilities where work was performed during the reporting period. The total of the period costs reported in the LFRCS table must equal the total of the period costs reported in the Financial Status section of the MLSR. In the event the LFRCS and Financial Status section totals are not equal, an explanation for the variance must be provided.

"Common costs" are costs associated with the performance of an overall program that benefit all similar licensees covered under that program or that are required to satisfactorily carry out the program. Common costs include costs associated with the following: preparatory or startup efforts to interpret and reach agreement on methodology, approach, acceptance criteria, regulatory position, or technical reporting requirements; efforts associated with the lead-plant concept that might be involved during the first one or two plant reviews; meetings and discussions involving the above efforts to provide orientation, background knowledge, or guidance during the course of a program; any technical effort applied to a category of plants; and project management. Common costs, at a minimum, must be reported quarterly in the MLSR. The common costs for the quarter must be apportioned in proportion to the costs incurred during the quarter for each of the plants for which work was performed. DOE laboratories that are able to report common costs on a monthly basis must do so.

SPENDING PLAN UPDATE

The initial DOE Laboratory Project Spending Plan must be included in the initial MLSR. Thereafter, the spending plan must be updated on the MLSR Spending Plan Update Template in Excel, and submitted with the MLSR. Spending plan updates cover two fiscal years (current fiscal year and following fiscal year). Discussion must include significant spending plan variances, the cause for the variance, and proposed solutions to bring the cost within planned amounts. Definitions of spending plan are provided below:

Planned – Spending plan agreed to by the parties in Part 3, Spending Plan, of the DOE Laboratory Project and Cost Proposal for NRC Work.
Revised – Updated spending plan revised by the DOE Laboratory. Spending plan must be updated as necessary.
Actual – Total costs expended by the DOE Laboratory as reported in the MLSR.
Variance – Percentage difference between planned, or revised if applicable, and actual.

MONTHLY LETTER STATUS REPORT

Reporting Period Start Date	**Reporting Period End Date**	
NRC Agreement Number	**Task Order Number (if applicable)**	**Common Cost Center Code**
Project Title		
Period of Performance Start Date	**Period of Performance End Date**	
COR	**Telephone**	**E-mail**
DOE Laboratory		
DOE Site Address		
Principal Investigator	**Telephone**	**E-mail**

Financial Status Section

A. Overall Funding

Current Month Cost: $
Total Ceiling Amount: $
Total Amount of Funds Obligated to Date: $
Total Amount of Funds Expended to Date: $
Percentage of Funds Expended to Date: %
Balance of Obligated Funds Remaining: $
Total Estimated Encumbered Costs: $
Balance Available Less Estimated Encumbered Costs: $

B. DOE Laboratory Acquired Property

Item*	Description	Manufacturer	Model Number	Serial Number	Acquisition Cost ($)	Receipt Date	Property Identification Number

*****Asterisk represents sensitive item

C. NRC-Funded Software Developed

Name *	Function	Development Cost ($)	Computer Language Used	Operating System	Location of System	Date Software Completed	Date of Scheduled Replacement /Useful Life

*Asterisk represents sensitive software

Technical Status Section

A. Deliverables/Milestones Schedule

Task	Description	Planned Completion Date	Revised Completion Date (if applicable)	Actual Completion Date

B. Progress During Reporting Period

C. Travel

D. Description of Estimated Encumbered Costs

E. Anticipated and Encountered Problem Areas

F. Plans for the Next Reporting Period

LICENSE FEE RECOVERY COST STATUS
(Sample Task Order)

DOE Contract No./Job Code:

Title:

Period:

Report Title	Facility Name	Docket Number	Identification Number	Costs	Period Cost This	Cumulative Fiscal Year
Common Costs*						
Task 1						
Task 2						

No license fee recoverable costs were incurred during the reporting period.

*Common costs shall be reported on a quarterly basis in the MLSR at a minimum. Those laboratories that are able to report common costs on a monthly basis shall do so.

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STANDARD TERMS AND CONDITIONS TO BE ATTACHED TO ALL NRC INTERAGENCY AGREEMENTS AWARDED TO DEPARTMENT OF ENERGY (DOE) NATIONAL LABORATORIES

All work performed for NRC at a DOE laboratory is conducted under the terms and conditions of the DOE contract in place to manage and operate that laboratory. The below set of terms and conditions provide additional guidance in specific areas that are particular to work performed for NRC and supplement the DOE contract provisions.

1. Technical Direction

The NRC Contracting Officer's Representative (COR), as named in the NRC Statement of Work (SOW), is responsible for ensuring that the services required under this project are delivered in accordance with the terms of the SOW. All technical direction instructions to the DOE Laboratory must be issued through the COR.

Technical direction includes interpreting technical specifications, providing needed details, and suggesting possible lines of inquiry. Technical direction must not constitute new work or affect overall project cost or period of performance. Technical direction must be confirmed in writing to the DOE Laboratory, a copy provided to the DOE Site Office or the DOE Field Office, and a copy placed in the NRC Program Office project file.

2. Key Personnel

The individual(s) identified as key personnel in the Technical Proposal, is (are) considered essential to the successful performance of the work. The DOE Laboratory agrees that these personnel shall not be removed from the project or replaced without complying with the following:

- If one or more of the key personnel, for whatever reason, becomes or is expected to become unavailable for work under this contract for a continuous period exceeding 30 workdays, or is expected to devote substantially less effort to the work than indicated in the proposal or initially anticipated, the DOE Laboratory shall immediately notify the Contracting Officer (CO) in NRC's Acquisition Management Division of its intent to make key personnel replacements.

- All requests for approval of substitutions on a project shall be in writing and shall provide detailed explanation of the circumstances necessitating the proposed substitutions. The request shall contain a complete résumé for the proposed substitute and other information requested by the NRC office to approve or disapprove the proposed substitution. The NRC will evaluate such requests and promptly notify the DOE Laboratory of its approval or disapproval thereof in writing.

- The project may be terminated if the office determines that:

  Suitable and timely replacements of key personnel who have been reassigned, terminated, or have otherwise become unavailable for the project is not reasonably forthcoming.

The resultant reduction of effort or expertise would be so substantial as to impair the successful completion of the project or work order.

3. Billing Requirements

DOE or DOE Laboratory shall bill NRC monthly for costs paid in support of NRC projects by the agreement number and task order number (if applicable). The DOE or DOE Laboratory shall bill and collect from NRC by an electronic transfer of funds through the U.S. Treasury Intergovernmental Payment and Collection System (IPAC).

The DOE or DOE Laboratory voucher shall identify the NRC Agreement Number and the NRC Task Order number (if applicable). The DOE voucher, as a minimum, shall indicate the month that costs were incurred and the dollar amount of these costs. In some instances because of accrual accounting and other adjustments, the amounts may differ slightly from the original accrual amount.

When monthly letter status report (MLSR) costs differ from the amount billed, DOE or DOE Laboratory shall provide an explanation of the difference on the voucher.

The DOE or DOE Laboratory voucher shall be sent to support the IPAC funds transfer. The instructions must identify the billable activities as specified by 10 CFR Part 170. The DOE voucher and other required documentation shall be submitted to—

NRC Payments
U.S. Nuclear Regulatory Commission
One White Flint North
11555 Rockville Pike
Mailstop O3-E17A
Rockville, MD 20852-2738

Electronic Commercial Vendor and IPAC Payments:
Effective immediately, commercial vendors and Federal entities should use the new electronic mailing addresses shown below:

Invoice and training billing Email address – NRCPayments@NRC.gov
IPAC billing Email address – NRCIPAC.Resource@NRC.gov

4. Monthly Letter Status Reports (MLSR)

In accordance with MD 11.7, the DOE laboratory shall submit a Monthly Letter Status Report (MLSR) by the 20th day of each month to:

- NRC Contracting Officer's Representative

With copies to the following:

- Office of Administration/Acquisition Management Division (electronic copy only) to ContractsPOT.Resource@nrc.gov

The MLSR should contain at a minimum all of the information required in the instructions for completing Monthly Letter Status Reports as defined in Attachment 1 of the NRC SOW.

5. Limitation of Funds

NRC is not obligated to reimburse DOE or DOE Laboratory for costs incurred by its contractors in excess of the total amount obligated by an appropriately executed interagency agreement form. The NRC CO in NRC's Acquisition Management Division will formally notify the appropriate DOE Site Office or the DOE Field Office of any projects that are intended to be phased out or terminated as soon as such intent is known, preferably at least 30 days before the proposed termination date. For work orders with fixed performance periods, the DOE Site Office or the DOE Field Office should assume that the program will terminate on the last day of the period specified in the award form unless notified otherwise.

If at any time the Laboratory has reason to believe that the costs will exceed the total amount authorized, the Laboratory must notify NRC and the DOE Site Office or the DOE Field Office. In the absence of formal NRC instructions to continue or to terminate a work order, the DOE Site Office or the DOE Field Office contract officer or his or her designee will notify NRC by e-mail or other suitable written means when the accrued costs of any NRC work order approaches 75 percent of the authorized funding level for a project or task order (TO).

The notification should include the estimated date when the accrued costs will equal the authorized funds, and may, if appropriate, recommend or request the NRC action desired. The notification should be sent to the appropriate NRC CO and COR with a copy to DOE. After this notification, the NRC will evaluate costs incurred against technical progress and, if necessary, will:

- Increase funding authorization
- Change the scope of the work
- Change the period of performance
- Terminate the project

The performance of work shall be completed within the period stated in the most current authorization document. When the DOE Laboratory anticipates that the work cannot be completed within the fixed time period, it shall notify the NRC CO and COR in writing and send a copy of the notice to the DOE Site Office or the DOE Field Office. Notification shall be made in sufficient time to allow for the issuance of a modification to the agreement, authorizing an extension of the work period to the date necessary to complete the authorized work. If the period of performance is not extended, the office shall notify DOE and the DOE Laboratory via issuance of a modification which should contain closeout instructions, including the reconciliation of any excess funds.

6. Organizational Conflict of Interest

Upon submitting a proposal to the NRC, each DOE Laboratory would continue to acknowledge the disclosure requirements of: 1) MD 11.7, "Organizational Conflict of Interest"; and 2) the provisions of the Memorandum of Understanding (MOU) between DOE and NRC, dated 1998 (which states, in part, that DOE recognizes that Section 170A of the Atomic Energy Act of 1954, as amended, requires that NRC be provided with disclosures on potential conflicts when NRC obtains technical, consulting, research and other supporting services). DOE further recognizes

that the assignment of NRC work to DOE laboratories must satisfy NRC's organizational conflict of interest (OCOI) standards.

Therefore, each DOE Laboratory, in its proposal to NRC (which will be incorporated into an interagency agreement between NRC and DOE), is required to make an assertion per #1 or #2 of Part A below for themselves and all subcontractors proposed prior to their award. If the Laboratory selects #1, then, it must also fill out the accompanying Part B – whereby the Laboratory must, again, make an assertion by answering each of the five (5) NRC OCOI provisions per the NRC Acquisition Regulation (NRCAR).

PART A:

"In accordance with [INSERT NAME OF DOE LABORATORY OR SUBCONTRACTOR] role in, and responsibility for, disclosing its relationships with organizations which conduct business in the same and/or similar technical area as described by the present and/or ongoing NRC project's scope of work, and in accordance with the NRC clause as stated herein, [INSERT NAME OF DOE LABORATORY OR SUBCONTRACTOR] hereby asserts that it has examined its relationships with all such organizations, and has also examined its current and future/planned work, and where appropriate, its past work (generally for the previous five years), for DOE and other organizations, and [INSERT NAME OF DOE LABORATORY OR SUBCONTRACTOR] states the following:

1) [INSERT NAME OF DOE LABORATORY OR SUBCONTRACTOR] hereby discloses the following relationships _____ [state the name of persons, organizations, and business relationships, etc. **] _____ that may give rise to a potential OCOI. (DOE Laboratory or subcontractor must answer the questions in Part B below);

Or

2) [INSERT NAME OF DOE LABORATORY OR SUBCONTRACTOR] to the best of its knowledge and belief, asserts that it has no current work, planned work, and where appropriate, past work for DOE and others (to mean - organizations in the same and/or similar technical area as the present and/or ongoing NRC project scope of work); and [INSERT NAME OF DOE LABORATORY OR SUBCONTRACTOR] hereby asserts that it is not aware of any same/similar technical work that would give rise to any potential OCOI as defined in the Atomic Energy Act of 1954, as amended, and in the NRC/DOE MOU.

Signed: _____

PART B:

In accordance with [INSERT NAME OF DOE LABORATORY OR SUBCONTRACTOR] role/responsibility regarding OCOI disclosure, as stated in Part A, above [INSERT NAME OF DOE LABORATORY OR SUBCONTRACTOR] further discloses, to the best of its knowledge and belief, that:

1) [INSERT NAME OF DOE LABORATORY OR SUBCONTRACTOR] and/or any of its organizational affiliates* as defined in Part A above [does/does not] provide advice and recommendations to the NRC in the same technical area (e.g., fire protection, PRA, seismic, vulnerability analysis, fracture mechanics) where it is also providing consulting assistance to any

organization regulated by NRC. If [INSERT NAME OF DOE LABORATORY OR SUBCONTRACTOR] "does" - then [INSERT NAME OF DOE LABORATORY OR SUBCONTRACTOR] hereby discloses such organization(s) in Part A above;

2) [INSERT NAME OF DOE LABORATORY OR SUBCONTRACTOR] and/or any of its organizational affiliates as defined in Part A above [does/does not] provide advice and recommendations to the NRC on the same or similar matter (e.g., particular licensing amendment, particular EIS, particular high level waste repository site) on which it is also providing assistance to any organization regulated by NRC. If [INSERT NAME OF DOE LABORATORY OR SUBCONTRACTOR] "does" - then [INSERT NAME OF DOE LABORATORY OR SUBCONTRACTOR] hereby discloses such organization(s) in Part A above;

3) [INSERT NAME OF DOE LABORATORY OR SUBCONTRACTOR] and/or any of its organizational affiliates as defined in Part A above [will/will not] be required to evaluate its own products or services, or has been substantially involved in the development or marketing of the products or services of another entity. If [INSERT NAME OF DOE LABORATORY OR SUBCONTRACTOR] "will" - the [INSERT NAME OF DOE LABORATORY OR SUBCONTRACTOR] hereby discloses such organization(s) in Part A above;

4) [INSERT NAME OF DOE LABORATORY OR SUBCONTRACTOR] and/or any of its organizational affiliates as defined in Part A above [does/does not] have a conflicting role, given the award of the present and/or ongoing NRC project, in which its judgment or the judgment of any of its organizations may be biased in relation to its work for NRC. If [INSERT NAME OF DOE LABORATORY OR SUBCONTRACTOR] "does" – then [INSERT NAME OF DOE LABORATORY OR SUBCONTRACTOR] hereby discloses such conflicting role(s) with organization(s) in Part A above;

5) [INSERT NAME OF DOE LABORATORY OR SUBCONTRACTOR] and/or any of its organizational affiliates as defined in Part A above [are/are not] soliciting or performing concurrent work at an applicant or licensee site, while performing work in the same/similar technical area for NRC at the same site. If [INSERT NAME OF DOE LABORATORY OR SUBCONTRACTOR] "are" – then the [INSERT NAME OF DOE LABORATORY OR SUBCONTRACTOR] hereby discloses such organization(s) in Part A above."

Signed: _____

*Organization affiliate – Business concerns which are affiliates (related) to each other when either directly or indirectly, one concern or individual controls or has the power to control another, or when a third party (i.e. parent firm) has the power to control both.

** The Atomic Energy Act of 1952 uses the term “person” to mean any entity – e.g., sole proprietorship, partnership, joint venture, corporation; university; limited partnership, subchapter S corporation; limited liability company, etc.

7. Incompatibility Between Regular Duties and Private Interests

(a) Employees of a management and operating contractor shall not be permitted to make or influence any decision on behalf of the contractor which directly or indirectly affects the interest of the Government, if the employee’s personal concern in the matter may be incompatible with

the interest of the Government. For example: An employee of a contractor will not negotiate, or influence the award of, a subcontract with a company in which the individual has employment relationship or significant financial interest; and an employee of a contractor will not be assigned the preparation of an evaluation for DOE or for any DOE contractor of some technical aspect of the work of another organization with which the individual has an employment relationship, or significant financial interest, or which is a competitor of an organization (other than the contractor who is the individual's regular employer) in which the individual has an employment relationship or significant financial interest.

(b) The contractor shall be responsible for informing employees that they are expected to disclose any incompatibilities between duties performed for the contractor and their private interests and to refer undecided questions to the contractor.

8. Intellectual Property Rights

The statutory, regulatory, and procedural intellectual property policies of DOE will be applicable to the work falling under this work order—

- Provided that information concerning disclosures of inventions identified as having been conceived or first actually reduced to practice under Commission-funded work will be reported to the Commission, and the Commission will be kept advised as to their status.

- Except that the Commission reserves the right to control title to inventions as to any rights that vest in the Commission under statute. If DOE and DOE's contractor, where the contractor has such rights, should determine not to protect these inventions either domestically or abroad, the Commission will have the right to protect these inventions.

- Provided that if the technology covered by an invention disclosure upon which DOE intends to file a patent application on behalf of the U.S. Government is deemed by the Commission to fall within the Commission's mission, that is, when the technology relates to nuclear facilities and materials safety, safeguards, and environmental protection in support of the Commission's licensing and regulatory functions, the Commission may so notify DOE and a determination will be made by the parties as to which party will file the patent application or applications.

- Provided that neither party shall grant an exclusive patent license on an agency owned invention without the approval of the other party.

9. Acquired Material, Equipment, or Software (Property)

In accordance with Management Directive 11.7, the Laboratory proposal must include a description of the property required for project performance that has an estimated acquisition cost of $500 or more. The proposal must also identify the potential development of NRC-funded software during the project. NRC-funded software is software specifically developed for NRC by the Laboratory and is generally the deliverable for the project.

After the NRC reviews the list of property and NRC-funded software included in the Laboratory proposal, any questions regarding the acquisition of property or the development of NRC-funded software will be addressed with the Laboratory during negotiations. After negotiating

project terms and conditions, NRC shall issue an agreement authorizing the work and approving acquisition of property or development of NRC-funded software.

Laboratories shall submit a written request to the NRC project manager for approval to develop additional NRC-funded software or purchase additional property with an estimated acquisition cost of $500 or more after work initiation. The project manager shall approve or disapprove the acquisition or development of any additional items in writing.

DOE Laboratories shall report property, including software, with an acquisition cost of $500 or more in the monthly letter status report in the month the property or software was acquired. DOE laboratories shall forward an electronic copy of all monthly letter status reports to the NRC Office of Administration, Acquisition Management Division: ContractsPOT.Resource@nrc.gov, in addition to the NRC COR. DOE Laboratories shall provide the information listed in the Monthly Letter Status Report instructions for each item reported as appropriate, in the monthly letter status report.

10. Dissemination of Project Information/Publication Requirements

(a) Prior to any dissemination, display, publication, presentation, or release of papers, articles, reports, summaries, or abstracts developed under the NRC/DOE Agreement, the DOE Laboratory shall submit them to the NRC for review and comment. NRC shall have a review and comment period of at least [60] days, after which both an NRC and DOE Laboratory representative at the lowest management level, shall attempt to resolve any differing viewpoints or statements which are the subject of NRC objection. If the matter cannot be resolved at that level, the issue shall be brought up to the next management level in both organizations until an agreement can be reached or it reaches the Office Director level. Matters which cannot be resolved at this level shall be submitted for resolution to the Laboratory's Technology Partnership Ombudsman (as set forth in the Laboratory's Management and Operating contract with DOE or NNSA pursuant to § (p) of Department of Energy Acquisition Regulation (DEAR) 970.5227-3 "Technology Transfer Mission" (Aug 2002)). In the event resolution cannot be achieved by the Ombudsman, the NRC may direct the Laboratory/DOE to not publish the work as a NUREG/CR, but publish as a Laboratory report without the NRC office name or Project Manager's name listed on the report, and with a Disclaimer conspicuously noted on the report, article, summary, abstract or related document that the Laboratory/DOE intends to release, display, disseminate or publish to other persons, the public or any other entities:

> "The views expressed in this [paper, journal article, report, summary, or abstract] do not represent those of the U.S. Nuclear Regulatory Commission."

(b) The NRC and DOE agree to handle all classified information provided or developed during the course of this project in accordance with all applicable laws and regulations governing the handling of such information. In the event NRC determines during its review and comment period that a draft Laboratory paper, article, report, summary, or abstract contains classified information regarding the work performed for NRC, NRC, in addition to commenting on the subject matter, shall also direct the Laboratory/DOE to direct an authorized classification authority to appropriately review, classify and mark the product, pursuant to nationally acceptable standards/guidelines. Under these circumstances, the Laboratory will either publish the work solely as a classified product pursuant to NRC direction, or not publish the work in any format. In cases where classification of the product is in dispute, NRC may consult with DOE's

Office of Classification; however NRC retains the ultimate authority over the classification of the product.

(c) In addition, travel costs to present papers or reports developed under the NRC/DOE Agreement may not be authorized if the NRC program manager determines that presentation of the paper does not support the NRC program or project. Such determination will not affect payment of the contract work costs.

(d) The DOE Laboratory contractor, to the extent it is permitted to and asserts copyright therein, grants a royalty-free, nonexclusive, irrevocable worldwide license to the Government to use, reproduce, modify, distribute, prepare derivative works, release, display or disclose the articles, reports, summaries, abstracts, and related documents developed under the Agreement, for any governmental purposes and to have or authorize others to do so.

11. Review and Approval of Reports

The Laboratory/DOE shall comply with the terms and conditions of the agreement regarding the contents of the draft and final reports, summaries, data and related documents, to include correcting, deleting, editing, revising, modifying, formatting and supplementing and of the information contained therein. Corrective actions shall not be undertaken unless sufficient funding from NRC is available to cover the costs of the corrective actions. Performance under the agreement shall not be deemed accepted or completed until it complies with NRC's directions.

Identification/Marking of Sensitive Unclassified and Safeguards Information. The DOE Laboratory shall comply with the requirements stated MD's 12.7 "NRC Safeguards Information Security Program" as follows:

a) Classification Clause

To the extent that the performance of work under this work order involves classified information, the following clause is applicable:

- In the performance of work under this work order, DOE shall ensure that a DOE Laboratory authorized classifier shall assign classification levels to all documents, material, and equipment originated or generated by the performing organization in accordance with classification guidance furnished by the Commission. Each subcontract and purchase order issued hereunder involving the generation of classified documents, material, or equipment shall include a provision to the effect that in the performance of such subcontract or purchase order, a DOE Laboratory authorized classifier shall assign classification levels to all such documents, material, and equipment in accordance with classification guidance furnished by the NRC.

- When appropriate, the attached NRC Form 187, "Contract Security and/or Classification Requirements," is a part of this work order. It is the responsibility of the NRC office originating the work order to review the classification assigned and to refer any problems to the NRC Division of Security Operations (DSO), NSIR, for resolution.

b) Safeguards Information, Unclassified Controlled Nuclear Information, or Unescorted Access to Protected and Vital Areas of Nuclear Power Plants

To the extent that the performance of work under this work order involves Safeguards Information (SGI), the following clause is applicable:

> In the performance of the work under this project, DOE shall assure that the DOE laboratory shall mark and protect all documents, material, and equipment originated, generated, or received by the performing organization in accordance with the provisions of Section 147 of the Atomic Energy Act of 1954, as amended, its implementing regulations (10 CFR 73.21), “Protection of Safeguards Information: Performance Requirements.” Further guidance on the protection of Safeguards Information and examples of proper marking of cover; title page, and back cover are contained in NRC Management Directive (MD) 12.7, "NRC Safeguards Information Security Program” and the NRC Guide to Marking Safeguards Information.

To the extent that performance of work under this work order involves unclassified controlled nuclear information (UNCI), the following clause is applicable:

> In the performance of the work under this project, DOE shall assure that the DOE laboratory shall mark and protect all documents, material, and equipment originated, generated, or received by the performing organization in accordance with the provisions of Section 148 of the Atomic Energy Act of 1954, as amended, is implementing DOE regulations, and DOE orders and guidance.

It is the responsibility of the NRC office originating the work to indicate whether the work will involve SGI or unescorted access to protected and vital areas of nuclear power plants. An NRC Form 187, “Contract Security and/or Classification Requirements,” shall be completed to indicate such access.

c) Proprietary Information

In connection with the performance of work under this work order, NRC may furnish for DOE review, evaluation, or other use certain trade secrets or confidential or privileged commercial or financial information determined by the office to be exempt from public inspection or disclosure. A synopsis of such information must be submitted in writing to the DOE contracting officer for reaching agreement with the office on the acceptance and use of the information. Up-to-date guidance on the protection of proprietary information used in reports prepared by the DOE laboratory on proper marking of cover, title page, and back cover may be obtained from the NRC COR.

Proprietary or other privileged information may be provided by the office on an individual basis to DOE laboratory employees working as NRC consultants with the understanding that it shall be protected from disclosure and shall be returned to the office upon completion of the work. Any such claimed proprietary data will be appropriately identified and marked as such. The use of proprietary information in reports prepared by consultants requires protection. Further information may be obtained from the NRC COR.

d) Other Sensitive Unclassified Non-Safeguards Information (SUNSI)

Information other than safeguards, unclassified controlled nuclear, proprietary information, and pre-decisional information may at times be determined to be sensitive. The use of such

information in reports requires the specific NRC designation and protection as prescribed by the NRC SUNSI policy. Further information may be obtained from the NRC COR.

12. Sensitive Information Work Efforts

To the extent that the performance under this work order involves classified information, the following clauses are applicable:

- Responsibilities. DOE and the DOE contractor (performing organization) shall be responsible for safeguarding Restricted Data, Formerly Restricted Data, and other National Security Information and for protecting it against sabotage, espionage, loss, and theft in accordance with applicable NRC and DOE security regulations and requirements.

- Transmission of Classified Matter. Except as otherwise expressly provided, DOE or the DOE contractor shall, upon completion or termination of the work order, transmit to the NRC program office all classified matter in its possession or in the possession of any person under its control in connection with performance of this project or work order. If retention of any classified matter is required by DOE or the DOE contractor, DOE must obtain the approval of the NRC program office and complete a certificate of possession specifying the classified matter to be retained.

- Regulations. DOE and the DOE contractors shall be responsible for compliance with all applicable NRC and DOE security regulations and requirements.

- Definition of Restricted Data. The term “Restricted Data,” as used in this clause, means all data concerning (1) the design, manufacture, or utilization of atomic weapons; (2) the production of special nuclear material; or (3) the use of special nuclear material in the production of energy, but does not include data declassified or removed from the Restricted Data category pursuant to Section 142 of the Atomic Energy Act of 1954, as amended.

- Definition of Formerly Restricted Data. The term “Formerly Restricted Data,” as used in this clause, means classified information related primarily to the military utilization of atomic weapons that can be adequately safeguarded as National Security Information, subject to the restrictions on transmission to other countries and regional defense organizations that apply to Restricted Data.

- Definition of National Security Information. National Security Information is information that has been determined pursuant to Executive Order 13526 or any predecessor order to require protection against unauthorized disclosure and is so designated.

- Security Clearance of Personnel. DOE and DOE laboratories shall not permit any individual to have access to Restricted Data, Formerly Restricted Data, or National Security Information, except in accordance with the Atomic Energy Act of 1954, as amended, Executive Orders 12968 and 10865, and DOE regulations or requirements applicable to the particular type or category of classified information to which access is required.

- Safeguards Information Access. DOE laboratories shall not permit any individual to have access to Safeguards Information, except in accordance with 10 Code of Federal Regulations Part 73.22 and NRC Management Directive 12.7.

- Liability. It is understood that the unauthorized disclosure or the failure to properly safeguard Restricted Data, Formerly Restricted Data, or National Security Information that may come to the DOE or to any person under an NRC/DOE work order in connection with work under the work order may subject the performing organization, and its agents, employees, or subcontractors, to administrative sanctions and criminal liability under the laws of the United States. (See the Atomic Energy Act of 1954, as amended [42 U.S.C. 2011et seq.], 18 U.S.C. 793 and 794; and Executive Orders 13526 and 12968.)

- Subcontracts and Purchase Orders. Except as otherwise authorized in writing by the Commission, the DOE Laboratory shall insert provisions similar to the foregoing in all subcontracts and purchase orders under this project or work order.

13. Software Development

Systems development efforts shall comply with applicable Government-wide Federal Information Processing Standards developed by the National Institute of Standards and Technology, applicable public laws, Office of Management and Budget circulars, and NRC policies and procedures. Particular attention is necessary to incorporate security features in the design of systems that process sensitive data. The format of software deliverables is specified in NRC Bulletin 0904-4. If any deliverable is provided on diskette, the diskette shall be scanned for viruses by the contractor and verified to be free of viruses before delivery to NRC. All software development, modification, or maintenance tasks shall follow general guidance provided in NUREG/BR-0167, “Software Quality Assurance Program and Guidelines.” NRC shall advise the DOE Patent Counsel with respect to any rights in the software that NRC desires under any particular project, which rights include NRC imposing restrictions on use, and distribution of the software by DOE or the Laboratory.

14. Copyright in Computer Software and Codes

In the event that a DOE Laboratory desires to assert a copyright of any computer software or computer code funded in whole or in part by NRC, the Laboratory shall request, in writing, the written approval of the cognizant NRC division director or designee before advising DOE's patent counsel of the Laboratory’s desire to seek the copyright.

If NRC determines that public health and safety or other programmatic considerations dictate that the DOE Laboratory contractor should not be given permission to copyright the computer software or code, the NRC CO, after consultation with the NRC Office of the General Counsel (OGC) and the division director or designee, shall so advise the Laboratory in writing.

Alternatively, if permission to copyright computer software or a computer code is granted, the cognizant NRC CO, after consultation with OGC and division director or designee, shall provide the Laboratory with written notice of that decision. In those cases in which the cognizant NRC CO determines that the rights retained by the Government pursuant to the copyright provisions of the Laboratory contract should be modified to protect NRC's interests, NRC will advise DOE's patent counsel of NRC's desire to modify DOE's standard policy with respect to permission for a contractor to assert copyright in that code. DOE and NRC will then jointly determine the appropriate provisions for the code. The DOE patent counsel shall provide the Laboratory with written notice, with a copy to the cognizant NRC division director or designee, of that joint determination. The Laboratory may then proceed to assert copyright.

In no case shall the DOE Laboratory take action relating to assertion of copyright until the NRC CO provides written approval to the Laboratory's request to assert copyright. Further, DOE shall not permit a contractor to assert copyright of an NRC-funded computer code or computer software without the written approval of the cognizant NRC division director or designee. Where NRC has not granted permission to copyright, NRC recognizes that once a Laboratory has delivered to NRC a developed version of a particular code, the Laboratory may exercise the existing right that both the Laboratory and other parties have to further develop, without NRC funds, software codes that are in the public domain and to copyright the new, non-NRC-funded versions of these codes without NRC approval.

15. Appropriate Use of Government Furnished Information Technology (IT) Equipment and/or its Services/Access

When the NRC work at a DOE site requires electronic processing of information, DOE or DOE Laboratory will follow NIST Special Publication (SP) 800-37 Rev. 1 or later, and SP 800-53 Rev. 3 or later (which are based on FIPS-199 and FIPS-200). For those specific projects with electronic processing of Safeguards Information (SGI), Restricted Data (RD) and/or Unclassified Nuclear Information (UCNI), the NRC shall provide DOE or DOE Laboratory with the appropriate requirements that must be met on a project by project basis. In addition, for those specific projects that require classified electronic information processing, DOE or DOE Laboratory will follow the CNSS policy, directives, instructions, and guidance.

16. NRC Information Technology Security Training

Agencies/Contractors shall ensure that their employees, consultants, and subcontractors with access to the NRC's information technology (IT) equipment and/or IT services complete NRC's online initial and refresher IT security training requirements to ensure that their knowledge of IT threats, vulnerabilities, and associated countermeasures remains current. Both the initial and refresher IT security training courses generally last an hour or less and can be taken during the employee's regularly scheduled work day. Agency/Contractor shall ensure that their employees, consultants, and subcontractors, with access to the NRC's IT equipment, complete the Information Security (INFOSEC) Awareness Training annually; no later than December 31st.

Agency/Contractor employees, consultants, and subcontractors shall complete the NRC's online, "Computer Security Awareness" course on the same day that they receive access to the NRC's IT equipment and/or services, as their first action using the equipment/service. For those Agency/Contractor employees, consultants, and subcontractors who are already working under an existing agreement/contract, the online training must be completed in accordance with agency Network Announcements issued throughout the year.

Agency/Contractor employees, consultants, and subcontractors who have been granted access to NRC information technology equipment and/or IT services must continue to take IT security refresher training offered online by the NRC throughout the term of the agreement/contract. Agency/Contractor employees will receive notice of NRC's online IT security refresher training requirements through agency-wide notices.

The NRC reserves the right to deny or withdraw Agency/Contractor use or access to NRC IT equipment and/or services should the Agency/Contractor violate the Agency/Contractor's responsibility under this clause.

17. Contract Security Requirements for Unescorted Access to Nuclear Power Plants

If performance under this work order involves unescorted access to protected and vital areas of nuclear power plants or access to nuclear power reactor SGI, individual contractors requiring access to protected and vital areas of nuclear power plants or access to nuclear power reactor SGI shall be approved for unescorted access in accordance with the following procedures:

17.1 Temporary Approval

The contractor (DOE laboratory employees and laboratory contractors) does not need a temporary approval if he or she has a valid Government clearance, for example, a DOE “Q” or “L” clearance. If the contractor employee does not have such a clearance, the contractor shall submit the information discussed below within 30 calendar days following contract award, modification, or proposal of new personnel for contract tasks. This information shall be provided for each person proposed to perform tasks requiring unescorted access to nuclear power plants or access to nuclear power reactor SGI. If access to SGI is needed, and unescorted access is not required, the provisions of 10 CFR 73.22 must be followed as a condition for access to SGI. The information shall be provided to the NRC Division of Facilities and Security (DFS) through the NRC COR and consists of the following:

- A completed Personnel Security Forms Packet, including an SF 86, "Questionnaire for National Security Positions,” and copies of the individual’s 5-year employment and education history checks, including verification of the highest degree obtained

- A reference from at least one additional person not provided by the individual

- Results of a psychological evaluation (This is not a requirement of the background check that is required for access to SGI.)

- Form FD-258, ORIMDNRC000Z (Fingerprint Card)

- A certification that the contractor has found all checks acceptable

The results of a psychological examination that uses a reliable written personality test or any other professionally accepted clinical evaluation procedure shall be used to evaluate a subject’s trustworthiness, reliability, and stability. The contractor shall review all required information for accuracy, completeness, and legibility, except Part 2 of the SF 86, which must be completed in private and submitted, along with the Form FD-258 by the individual to the contractor in a sealed envelope, or the individual shall be fingerprinted by the subject utility, and the contractor shall be subject to the utility’s access authorization program. As described in this section, DFS shall conduct criminal history and credit checks and a security assurance interview with the individual. On the basis of the results of these checks, DFS shall determine the individual’s eligibility for temporary access and indicate an objection or no objection to NRC pending completion of the required background investigation.

17.2 Final Approval

Final approval shall be granted if:

- The individual has completed processing (by the Office of Personnel Management) of the required investigation resulting in NRC endorsement for unescorted access at all nuclear facilities for the life of the contract.

- The contractor has obtained unescorted access authorization (other than temporary access) at the specific utility through that utility's access authorization program, resulting in unescorted access at a specific facility.

- The individual possesses a valid Government-issued clearance as verified by DFS.

- A valid Government-issued clearance is defined as a U.S. Government-issued security clearance equivalent to or higher than an NRC "L" clearance (i.e., Secret) based on a comparable investigation not more than 10 years old. The investigation specified in MD 11.7, Section 11.12.2 may involve an National Agency Check and Inquiries (NACI) or other investigation as deemed necessary by DFS in accordance with 10 CFR Part 10, 10 CFR 73.22, NRC MD's 12.3, "NRC Personnel Security Program" and 12.7 "NRC Safeguards Information Security Program." Any question regarding the individual's eligibility for unescorted access to protected or vital areas of nuclear power facilities will be resolved in accordance with the provisions set forth in MD 12.3, which are incorporated into the work order by reference as though fully set forth therein. The contractor shall, for each contractor individual approved for access under the provisions of this section, submit to DFS through NRC a signed statement from the individual that he or she understands his or her responsibility to report information bearing on his or her continued eligibility for access authorization as specified in MD 12.3. Access to SGI not also involving unescorted access to protected and vital areas of nuclear power plants shall require the submission of a completed Personnel Security Forms Packet to DFS through NRC and will require a Background Check in accordance with 10 CFR Part 73.22 and MD 12.7. Any questions regarding the individual's eligibility for access to nuclear power reactor SGI shall be resolved in accordance with the provisions set forth in MD 12.7, which is incorporated into this contract by reference as though fully set forth herein. On the basis of the review of the applicant's security forms by DFS and/or the receipt of adverse information by NRC, the individual may be denied access to nuclear power reactor SGI until a final determination of his or her eligibility for access is made under the provisions of MD 12.7.

17.3 Fitness for Duty

Pursuant to NRC policy, all individuals proposed for work under this contract who require unescorted access to nuclear power plants shall be subject to the requirements of the licensee's fitness-for-duty program (10 CFR Part 26).

17.4 Basic Exposure Control and Personnel Dosimetry Training Requirements

The contractor shall certify that personnel working under the scope of this contract have completed basic exposure control and personnel dosimetry training sufficient to meet the requirements of commercial nuclear power plants for unescorted access. Site specific training obtained at each site shall still be required during the performance of work under this contract in addition to the basic training.

17.5 Subcontractor Information—Subcontracting

The DOE or DOE Laboratory organization shall notify the issuing NRC CO in writing reasonably in advance of entering into any major or significant technical service subcontract not contained in the original proposal. “Major or significant’’ must be used with judgment and related to the total value of the project and/or impact on the results. This advance notification shall include the following:

- A description of services to be called for by the subcontract
- Identification of the proposed subcontractor
- The proposed subcontract costs (in total)
- A signed conflict of interest statement

The NRC CO may require additional specific subcontractor information or limitations. The NRC CO will issue a modification to the agreement upon approval of the subcontracting effort.

18. Information on NRC Cooperative Programs with Foreign Governments and Organizations and With U.S. Industry

DOE facilities, contractors, and subcontractors working on NRC cooperative programs with foreign governments and organizations and with U.S. industry perform this work with the understanding that draft or formal reports on this work are to be available only to participants in the program until public availability is authorized by the NRC office. Reports or codes (including data) on this work shall be issued as “Draft Preliminary Reports (Codes)” until the office authorizes issuance of the report as a formal report with the designation NUREG/IA-XXXX for international agreement reports or NUREG/CR-XXXX for contractor reports. Details of the handling of reports may be obtained from the NRC COR.

19. Stop-Work Order

The NRC CO may, at any time, by modification to the agreement to the DOE CO, require the DOE Laboratory to stop all or any part of the work called for by this work order for a period of up to 90 days after the order is delivered to the DOE Laboratory, and for any further period to which the parties may agree. Any such order will be specifically identified as a “stop-work order” issued pursuant to this clause. Upon receipt of such an order, the DOE Laboratory shall forthwith comply with its terms and take all reasonable steps to minimize the incurrence of cost allocable to the work covered by the order during the period of work stoppage.

Within a period of 90 days after a stop-work order is delivered to DOE or within any extension of that period to which the parties shall have agreed the office shall either:

- Cancel the stop-work order
- Terminate the work covered by this work order

If a stop-work order issued under this clause is cancelled or the period of the stop-work order or any extension thereof expires, DOE or DOE Laboratory will authorize its contractor to resume work. An adjustment will be made in the delivery schedule or cost, or both, and the work order must be modified in writing accordingly. If a stop-work order is not cancelled and the work

covered by the order is terminated in accordance with the terms of this work order, costs resulting from the stop-work order will be allowed in arriving at the termination settlement.

20. Termination

Circumstances may arise in which either NRC or DOE wishes to terminate performance of a project in whole or in part. If both parties agree, the work order may be terminated. If DOE wishes to terminate the project, it shall advise the cognizant NRC CO. If NRC wishes to terminate the project, the cognizant NRC CO will advise the cognizant DOE Site Office or the DOE Field Office and send a copy of the termination agreement to the DOE Laboratory.

Within 60 days after the effective date of the termination of the work order, the DOE Laboratory shall submit a termination settlement proposal to the cognizant NRC CO, through the cognizant DOE Site Office or the DOE Field Office. When additional time is required to compile all outstanding costs, such as subcontractor costs, the DOE Site Office or the DOE Field Office shall provide a written notification to the NRC CO that includes a proposed due date for the final settlement proposal. In the event of disagreement between the parties, the cognizant NRC CO will make the final decision. The DOE Laboratory shall not incur new obligations for the terminated portion of the project after the effective date and must cancel as many outstanding obligations as possible. NRC will allow full credit to the DOE Laboratory for obligations properly incurred by the recipient before termination.