

Routine Operation of CINT Integration Laboratories (1500 Labs)

NEPA ID: NM15-0104

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U.S. DEPARTMENT OF ENERGY Sandia Site Office NEPA CHECKLIST

Project/Activity Title: Routine Operation of CINT Integration Laboratories (1500 Labs)	NEPA ID Number: NM15-0104	Date:
Program Office: DOE	Project/Activity Number:	
Contact Name(s)- Owner: Nogan,John, 01132, MS1304, 505-284-8863 NEPA SME: Peek,Dennis W., 04143, MS0729, 505-844-5885	Reviewed and Submitted By: Shinn,Neal D. 01130, MS1315, 505-844-5457	

1.0 PROJECT/ACTIVITY DESCRIPTION: Include who, what, where, and why. (Attached)

2.0 ES&H CONCERNS: Identify ES&H issues in the following categories associated with the proposed project/activity.

	<u>Yes</u>	<u>No</u>		<u>Yes</u>	<u>No</u>
Use and Storage			Land and Building Issues		
2.1 Chemicals	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2.15 Clearing/excavation/land disturbance/landscaping	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2.2 Petroleum/fuel products	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2.16 Archaeological/cultural resources/building modifications	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2.3 High energy sources/explosives	<input type="checkbox"/>	<input checked="" type="checkbox"/>	2.17 Special status species/environment	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2.4 Pesticides/herbicides	<input type="checkbox"/>	<input checked="" type="checkbox"/>	2.18 Real estate issues	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Waste			2.19 Related off-site activities	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2.5 Solid waste	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Special Issues		
2.6 Hazardous waste	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2.20 Asbestos	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2.7 Radioactive waste/materials	<input type="checkbox"/>	<input checked="" type="checkbox"/>	2.21 Utility system modifications/power use/water use	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2.8 Mixed waste (rad + haz)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	2.22 Environmental Restoration/Long Term Environmental Stewardship	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Emissions			2.23 Microorganisms/biological toxins	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2.9 Air emissions	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2.24 Fire danger/Other environmental concerns	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2.10 Liquid effluents (other than those described in 2.5 - 2.8)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2.25 Nanomaterials	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Health & Safety Issues			2.26 Comments on ES&H Concerns	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2.11 Radiation exposure	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
2.12 Chemical exposure	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
2.13 Noise levels	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
2.14 Transport of hazardous materials/waste	<input type="checkbox"/>	<input checked="" type="checkbox"/>			

1.0 Project Description

1.1 Project Title:

Routine Operation of CINT Integration Laboratories (1500 Labs)

1.2 NEPA ID#: NM15-0104

1.3 Project Contacts:

Role	Name	Org	Mailstop	Phone
Owner	Nogan,John	01132	1304	505-284-8863
Entered By	Peek,Dennis W.	04143	0729	505-844-5885
ES&H Coordinator	Nelson,John Seth	01100	1427	284-2570
NEPA Subject Matter Expert	Peek,Dennis W.	04143	0729	505-844-5885
Line Manager Reviewer	Shinn,Neal D.	01130	1315	505-844-5457

1.4 Who/What?

Sandia Corporation CINT User Program (Organization 01132) proposes to continue the operation of all areas within the Integration Lab (1500 Wing) at the Center for Integrated Nanotechnologies (CINT) Core Facility. These laboratories would be the Electron Beam Lithography Room, the High Resolution Laboratory, the Lithography Bay, the Metal Deposition Laboratory, Etch Laboratory and Thermal Processing area (1532/1533).

1.5 Why?

These laboratories are vital for the research activities that are performed at the CINT Core Facility.

1.6 Where?

Site	Area	Building	Room	Description	Historic
SNLNM	KAFB	518	1504	CINT	
SNLNM	KAFB	518	1523	CINT	
SNLNM	KAFB	518	1525	CINT	
SNLNM	KAFB	518	1527	CINT	
SNLNM	KAFB	518	1501	CINT	
SNLNM	KAFB	518	1532	CINT	
SNLNM	KAFB	518	1511		

1.7 When? 03/12/2015 - 03/12/2018

1.8 Project Details

The laboratories that are proposed for continuing operations in the CINT Core Facility are the:

Electron Beam Lithography Room - Bay 1501
 High Resolution Lab - Bay 1504
 Parts Clean - Room 1511
 Lithography Bay - Bay 1523
 Metal Deposition Lab - Bay 1525
 Etch Lab - Bay 1527
 Thermal Processing Area - Bay 1532 / Chase 1533

The primary function and location of each laboratory would be as follows:

Electron Beam Lithography Room - Bay 1501: operations and maintenance for the electron beam lithography tool (EBL) and support tools, point of use controls in the clean room (if any), supporting equipment, and associated hazardous production materials. This area would also contain a small solvent bench/ventilated hood for preparing and finalizing the development of material subjected to the EBL process. The solvent bench would be compliant with Sandia's local exhaust ventilation (LEV) program.

High Resolution SEM Lab - Bay 1504: The High Resolution SEM Area includes normal operations and maintenance for the focused ion beam tool / secondary electron microscope tool and a maskless lithography system. The primary function of the High Resolution SEM would be to micro-machine silicon (Si) micro-fabricated parts into unique geometries using a 10-nanometer-wide stream of ionized gallium in a vacuum chamber. The chamber is exhausted to the centralized house exhaust system. The primary purpose of the maskless lithography system is to aid in the production of photomasks, as well as laser direct imaging, and direct write-on different substrates.

Parts Cleaning - Room 1511- Houses tools used in support of the Integration Lab activities, and would be a Class 10000 clean room. Systems located in that room include a high-efficiency particulate air (HEPA)-filtered bead-blasting system (bead blaster) attached to the house exhaust, a dicing saw for segmenting completed devices, a series of lapping equipment for thinning and polishing of substrates, substrate scribe and break tool and other equipment in support of lapping, dicing and packaging operations. Bead blaster is used for surface roughening and the cleaning of shielding of e-beam evaporator and sputtering systems, reactive ion etch and cvd chamber parts, which would be typically coated with gold (Au), aluminum (Al), copper (Cu), titanium (Ti), and chromium (Cr), and other III-V semiconductor compounds. The room contains a base and a solvent fume hood, which is be used for degreasing and etching of parts for use in the clean room.

Lithography Bay - Bay 1523: Operations would include processes and associated metrology of contact mask lithography. This would include processing of industry standard photoresist, which typically requires spinning the photoresist on a wafer followed by exposing, using an ultraviolet (UV) contact mask aligner, and baking at 250 Celsius (C) on a hot plate or in an oven. The photoresist is then typically developed using a base such as TMAH and can then be removed using a solvent. Nano Imprint Lithography (NIL) would also be available as a removable module on one of the contact aligners. NIL would allow a mold pattern with features as small as 17 nanometer wide to be imprinted into a UV-sensitive polymer. Unlike contact lithography, the depth of the UV curable polymer would be defined through contact force and then maintained following exposure to UV light. Metrology equipment used in this process typically would include a profilometer to measure resist heights and an optical microscope for visual inspection.

Metal Deposition Lab - Bay 1525: This bay would contain multiple vacuum deposition systems (base pressure 10^{-7} torr) for the directional depositing of high purity material typically used in lift-off and subtractive etching processes. Additionally, the sputter deposition tool could be configured for sputter deposition of metals or dielectrics.

The chemical benches would be used for standard processing of devices fabricated on Si wafers. Typical processes would include the removal of photoresist, and degreasing using solvents, etching of metals, Si, and silicon dioxide (SiO₂), and other standard processes.

The rapid thermal annealer (RTA) would use a set of bulbs to rapidly heat silicon wafers to temperatures in excess of 1,000 C in an inert environment, such as nitrogen (N₂) or argon. Additionally, forming gas (3.8% hydrogen [H₂] in nitrogen) could be used to prevent oxide formation during annealing.

Etch Labs - Bay 1527: Bay 1527 would have two inductively coupled plasma (ICP) etch systems, a plasma enhanced chemical vapor deposition (PECVD) system, a plasma assisted atomic layer deposition (PA-ALD) reactor, a combination electron beam/thermal evaporator, a bench top palladium/gold sputtering system and thin film metrology equipment. The PECVD system would allow the conformal deposition of multiple types of dielectrics and other materials, such as poly-Si, silicon nitride, and silicon oxides. The ICP etch systems are used for dry etching aluminum, carbon, oxides, nitrides, polysilicon, among other materials. The PA-ALD reactor would use metal-organic precursors with oxygen, hydrogen, and water, to allow for thin films such as aluminum oxide, hafnium oxide and platinum to be deposited with atomic precision onto a substrate surface. The toxic gasses are self-contained within built-in toxic gas cabinets in each tool. There are toxic gas monitoring sensors located in each of the gas cabinets,

and in the vicinity of the tools, to detect leaks. Ebeam/thermal evaporator would allow for the deposition of a wide variety of metals and the sputtering system would provide a means for the deposition of ultrathin conductive layers to prepare a sample for assessment in a scanning electron microscope (SEM). Metrology equipment would allow thin film thickness and stress measurements to assess the quality of the thin films produced throughout the lab.

Thermal Processing Area - Bay 1532. Chemical vapor deposition (CVD) is a chemical process used to produce high-purity, high-performance solid materials. The process is often used in the semiconductor industry to produce thin films. In a typical CVD process, the wafer (substrate) is exposed to one or more volatile precursors, which react and/or decompose on the substrate surface to produce the desired deposit. Low pressure CVD (LPCVD) is a process that is performed at sub-atmospheric pressures. Reduced pressures tend to reduce unwanted gas-phase reactions and improve film uniformity across the wafer.

Below are the corresponding PHS numbers for each laboratory and the status of each PHS:

- CINT Rm: 1501 - Electron Beam Lithography Room - SNL06A00462-008 (Approved)
- CINT Integration lab # 1504 - SEM/FIB - SNL06A00989-008 (Approved)
- CINT Rm: 1511 - Integration Lab Parts Clean Room - SNL08A00071-008 (Approved)
- CINT Rms: 1522 & 1523 - Lithography Bay and Chase - SNL06A00922-008 (Approved)
- CINT Rm: 1525 - Metal Deposition Lab - SNL07A00125-008 (Approved)
- CINT Rm: 1527 - Etch Lab - SNL07A00126-009 (Approved)
- CINT Rm: 1532 - Thermal Processing Area - SNL10A00276-005 (In Review)

Will any part of your work take place on KAFB but outside the SNL/NM Technical Areas? Yes No

1.9 Primary Hazard Screening

Associated PHS Documents	
PHS Number	PHS Title
SNL06A00462-008	Bldg. 518, Room 1501 CINT Electron Beam Lithography Room
SNL06A00922-008	CINT Rms: 1522 & 1523 - Lithography Bay and Chase
SNL06A00989-008	CINT Integration lab # 1504 - SEM/FIB
SNL07A00125-008	CINT Rms: 1524, 1525 & 1526 - Metal Deposition Lab and Associated Chases
SNL07A00126-007	CINT- Rm: 1527/1528 - Etch Lab
SNL07A00126-009	CINT- Rm: 1527/1528/1530 - Etch Lab
SNL08A00071-008	Integration Lab Parts Clean Room 1511
SNL10A00226-005	CINT IL: Thermal Processing Equipment

2.0 Environmental Concerns

2.1 Chemicals

The range of chemicals that would be used in these laboratories would include standard laboratory compounds such as acids, solvents, organics, and inorganics. The volumes of chemicals would generally be low (approximately one gallon each). Approximately 25 liters/year of organic solvents (acetone, methanol, isopropanol, ethanol) would be used in laboratory operations.

Procedures for chemical use are documented in local Standard Operating Procedures (SOPs) and Operating Procedures (OPs) and are consistent with the guidance provided by Corporate Processes and Procedures and accepted best management practice. Storage of chemicals would be done in accordance with Corporate Processes and Procedures and would include separation of incompatible chemicals, secondary containment of liquids, and appropriate storage containers. Chemicals would be purchased using a Just-in-Time purchasing system that would allow quick delivery of chemicals, and therefore would reduce the need to stockpile and store chemicals. Small amounts of chemicals would be stored either in authorized flammable chemical storage cabinets, or metal cabinets, depending on the chemical.

Applicable SNL SOPs and OPs are in place and would be followed for chemical storage, use, and disposal.

Employees would receive training on handling and storage of these chemicals, and the handling of these chemicals would be in accordance with Corporate Processes and Procedures and area-specific SOPs.

All activities involving chemical use and storage would be performed in keeping with SNL Corporate Procedures ESH100.2.ENV.2 through .27, "Environmental Hazards and Controls," ESH100.2.IH.1 through .24, "Industrial Hygiene Hazards and Controls," including ESH100.2.IH.4, "Evaluate and Control Chemical Hazards," ESH100.2.IS.1 through .22, "Industrial Safety Hazards and Controls," and ISS100.6.1, "Prepare for and Manage Emergencies."

2.2 Petroleum/fuel products

Approximately 1 gallon/year of vacuum pump oil would be used.

All activities involving petroleum/fuel products use and storage would be performed in keeping with SNL Corporate Procedures ESH100.2.IS.1 through .22, "Industrial Safety Hazards and Controls," ESH100.2.IH.1 through .24, "Industrial Hygiene Hazards and Controls," ESH100.2.ENV.2 through .27, "Environmental Hazards and Controls," ESH100.2.ENV.4, "Manage Oil and Fuel Storage," and ISS100.6.1, "Prepare for and Manage Emergencies."

2.5 Solid waste

A total of approximately 700 pounds of solid waste, comprised mostly of used wipes and gloves, would be generated in the Integration Laboratories, per year.

Solid waste would be managed in keeping with Corporate Procedures ESH100.2.ENV.26, "Manage Non-Hazardous Solid Waste at SNL/NM," and ESH100.2.IS.11, "Implement Housekeeping Safety."

2.6 Hazardous waste

The chemical activities performed would generate liquid and solid hazardous waste. Waste minimization, including source reduction, recycling, and substitution would be employed and pursued where possible, consistent with programmatic requirements. The majority of waste would be in the form of dilute acids, and used or spent solvents.

A total of approximately 75 pounds of hazardous waste per year would be generated by the five bays in the

Integration Laboratory.

Waste would be collected at the generation point, then transported and disposed of, in accordance with Corporate Procedure ESH100.2.IH.4, "Evaluate and Control Chemical Hazards," ESH100.2.ENV.22, "Manage Hazardous Waste at SNL/NM," and laboratory and specific operating procedures.

Nanomaterial waste would be managed as hazardous waste if it is in the bound state. Any nanomaterial waste that is an unbound state would be treated as UNP-bearing waste.

Hazardous waste containing nanoparticulates or nanoparticulate material would be handled in keeping with ES&H guidance and requirements as identified in Corporate Procedures ESH100.2.ENV.22, "Manage Hazardous Waste at SNL/NM," ESH100.2.IH.4, "Evaluate and Control Chemical Hazards," and ESH100.2.IH.16, "Evaluate and Control Unbound Engineered Nanoscale Particles," and laboratory and specific operating procedures.

2.9 Air emissions

Approximately 25 liters/year of organic solvents (acetone, methanol, isopropanol, ethanol) would be used in laboratory operations. Most, if not all, work involving chemical laboratory processes would be performed in dedicated local exhaust systems, such as fumehoods, that may vent to the atmosphere. Therefore, there may be air emissions of regulated chemicals. Because the volume of chemicals that would be in use in these areas would be small, the potential emissions should also be small. On the basis of previous experience, previous air emission reporting, and expected chemical inventories and processes for these facilities, it is expected that the air emissions resulting from these processes would remain well below volumes regulated by state, federal, county, and city regulations.

The Sitewide Chemical Registration #1901-RV1 covers the use of chemicals throughout SNL/NM. Tracking of chemicals is required through the Chemical Information System (CIS) to assure compliance with the registration requirements.

The boilers and generator for the entire Building 518 (CINT) operations are covered in Permit #1725-M1.

All proposed project activities would be conducted in keeping with SNL Corporate Procedure ESH100.2.IH.15, "Control Hazards Using Local Exhaust Ventilation and High Efficiency Particulate Air Filters."

2.10 Liquid effluents (other than those described in 2.5 - 2.8)

The liquid effluents produced by laboratory operations would consist primarily of sanitary waste, noncontact cooling water, and effluents from the cleaning of glassware. Maintenance activities on this equipment would produce volumes of used, recyclable oils, lubricants, and other petroleum products. The coolants would be recycled in areas where large volumes would be utilized. All other hazardous liquid waste would be disposed of in accordance with the Corporate Procedure ESH100.2.IH.4, "Evaluate and Control Chemical Hazards," ESH100.2.ENV.22, "Manage Hazardous Waste at SNL/NM," and laboratory and specific operating procedures.

The Sandia Water Quality Subject Matter Expert (SME) reviewed the proposal, and reported that the activities would be covered under current internal liquid effluent discharge approval number 14-112.

Wastewater discharges to the sanitary sewer system are authorized by obtaining an annual Discharge Permit as described in Corporate Procedure ESH100.2.ENV.6, "Control Discharges to the Sanitary Sewer System." The project proponents would work with the Sandia Water Quality SME to ensure that all required wastewater discharge approvals are in place.

The current guidance on the handling and discharge of liquid effluent containing unbound nanoparticles (UNP) states that liquid effluent containing UNP shall not be discharged to the sanitary sewer system; therefore, no material containing nanoparticles would be disposed to the sanitary sewer.

2.12 Chemical exposure

The use of protective outer clothing and approved safety eyewear would be required in the laboratories when handling chemicals, or while others are handling chemicals in the laboratory. Nitrile, latex, or vinyl gloves would be worn during all operations. Eye protection, either safety eyewear with side shields or approved chemical goggles, would be worn during all operations. Disposable gloves would not be washed, reused, or used for touching clean surfaces (keyboards, telephones, etc.), and they would not be worn outside the lab. Persons would wash their hands after removing gloves and before leaving the laboratory.

For most situations, latex, vinyl, or nitrile gloves would be sufficient for routine laboratory work when prolonged contact with chemicals is not anticipated. Authorized Users who use these gloves in this manner would immediately remove and replace them if they come in contact with a chemical. Use of this type of glove should allow for better manual dexterity. If contact with chemicals can reasonably be anticipated, Authorized Users would contact the industrial hygienist on the 1000/2000 Division ES&H Team to determine the appropriate type of glove to be worn.

When working with concentrated acids/bases (corrosives), butyl gloves would be worn instead of latex, vinyl, or nitrile, and would be worn with the other PPE (safety glasses with side shields). When pouring large quantities (>1 liter) of concentrated acids/bases, or any other handling of these materials that may result in a splash, a face shield would be worn over the safety glasses, since corrosives cause irreversible damage to tissue such as eyes.

All project activities involving chemical use and storage would be performed in keeping with SNL Corporate Policy, including the following Procedures: ESH100.2.ENV.2 through .27, "Environmental Hazards and Controls"; ESH100.2.IH.1 through .24, "Industrial Hygiene Hazards and Controls," including ESH100.2.IH.1, "Maintain a Workplace Free from Chemical, Physical, Biological, and Safety Workplace Hazards," and ESH100.2.IH.4, "Evaluate and Control Chemical Hazards"; ESH100.2.IS.1 through .22, "Industrial Safety Hazards and Controls," including ESH100.2.IS.8, "Assess Workplace Hazards and Provide and Maintain Personal Protective Equipment"; and ISS100.6.1, "Prepare for and Manage Emergencies."

2.25 Nanomaterials

All areas within the 1500 Integration Lab will have nanomaterials present in a bound form or contained in an unbound state in solution for transport to and from designated workspaces and storage areas. In rooms/bays 1501, 1504, 1516, 1525, 1530, 1532 bound nanomaterials may be present with low probability of liberation into an unbound state through normal processing or analysis. However in rooms 1511 and 1523, specific activities are performed that involve the synthesis, liberation, and the binding of UNP. Throughout the lab, unbound nanoparticles are commonly stored in secondarily contained storage media.

SNL OP-1100.310 addresses hazards identified in PHS SNL06A00448, SNLA06A0922, and SNL08A00071 (most current revision).

The current guidance on the handling and discharge of liquid effluent containing unbound nanoparticles (UNP) states that liquid effluent containing UNP shall not be discharged to the sanitary sewer system; therefore, no material containing nanoparticles would be disposed to the sanitary sewer.

Nanomaterial waste would be managed as hazardous waste if it is in the bound state. Any nanomaterial waste that is an unbound state would be treated as UNP-bearing waste.

Hazardous waste containing nanoparticulates or nanoparticulate material would be handled in keeping with ES&H guidance and requirements as identified in Corporate Procedures ESH100.2.ENV.22, "Manage Hazardous Waste at SNL/NM," ESH100.2.IH.4, "Evaluate and Control Chemical Hazards," and ESH100.2.IH.16, "Evaluate and Control Unbound Engineered Nanoscale Particles," and laboratory and specific operating procedures.

3.0 Other Regulatory Requirements

Does the proposed project/activity require any local, state, or federal permits, permit modifications, or notifications? (Includes actions requiring regulatory review and approval.)

Yes No

Permits				
Permit Type	Description	Permit Number	Expiration Date	Location
Wastewater	Wastewater Discharge Approval	14-112		

Additional Details:

Permit covers all labs within the CINT complex included all labs associated with this document.

4.0 Attachments

Attachments	
Attachment Name	Description
NONE FOUND	

5.0 Project Summary

Routine Operation of CINT Integration Laboratories (1500 Labs)	
Entered By: Peek,Dennis W.	Entered by Mail Stop: 0729
Entered by Org: 04143	Entered by Phone: 505-844-5885
Owner Name: Nogan,John	Owner Mail Stop: 1304
Owner Org: 01132	Owner Phone: 505-284-8863
Date Created: 01/26/2015	Date Completed: 02/10/2015
Line Manager Review Date Completed: 02/10/2015	Line Manager Reviewer: Shinn,Neal D.
2nd Line Manager Review Date Completed:	2nd Line Manager Reviewer:
Project Status: Checklist Complete by SNL	Completing Reviewer: N/A
NEPA Subject Matter Expert: Peek,Dennis W.	
NEPA Determination and Selected Document(s): SNL cited existing NEPA document EA DOE/EA-1457 Environmental Assessment for the Center for Integrated Nanotechnologies at Sandia National Laboratories/New Mexico - Final Environmental Assessment	
Selected Document Details: DOE/EA-1457: Environmental Assessment for the Center for Integrated Nanotechnologies at Sandia National Laboratories/New Mexico, Section 2.3, "Proposed Action Operations," Pages 8 through 12.	

Rationale:

CINT laboratory operations have been evaluated in DOE/EA-1457, "Environmental Assessment (EA) for the CINT at Sandia National Laboratories/New Mexico (SNL/NM)", dated March 2003. The EA includes an assessment of the operations that would be performed in the CINT Core Facility. This NEPA review focuses on the Integration Laboratories: the Electron Beam Lithography Room, the High Resolution Laboratory, the Lithography Bay, the Metal Deposition Laboratory, and the Etch Laboratory.

The proposed continuing work in the Integration Laboratories would primarily fall under "Complex Functional Nanomaterials," one of the five primary research areas analyzed in the EA, in Section 2.3, "Proposed Action Operations," Pages 8 - 12. On Page 9, under "Complex Functional Nanomaterials," the EA states: "This research area focuses on the integration of multiple materials and structures across nano- to macro-length scales to promote complex and collective interactions and develop improved properties. Efforts would include research in synthetic chemistry and self- and directed-assembly. Research at the SNL/NM CINT facilities would include exploration of self-assembled porous and composite nanostructures; films; quantum dots and arrays; magnetic field structured solids; micromachining; advanced lithography; and simulations of a variety of substances."

Specifically, for example, on Page 9, under "Operations related to these focus areas at the CINT Core Facility would be based on the following activities," the fifth bullet is: "Research into the integration of materials to discover interactions that lead to the development of new devices and concepts," the sixth bullet is: "Research providing the tools for nanotechnology through measurement and characterization, computation and simulation, and fabrication of nanomaterials," and the eighth bullet is: "Research using a variety of techniques for observing nanomechanical response such as electron, xray, photon, neutron, and ion analysis techniques, and advanced diagnostics and microscale test devices to understand how materials interact at this level."

These laboratories were previously reviewed in NEPA checklist NM13-0117, "Routine Operation of CINT Integration Laboratories (1501, 1504, 1523, 1525, and 1527)." All of these laboratories were included in the group of labs that were initially planned for the CINT. The equipment that would be used was included in the analysis of the CINT for the Environmental Assessment, and the air emissions, liquid effluents, and other waste streams were evaluated and planned for, and included in applicable permits. The startup of the Thermal Laboratory in Room 1532 was previously reviewed in SNA10-0201, "CINT Bldg. 518/1532 Installation and Operation of Low Pressure Chemical Vapor Deposition Furnace." This furnace system was included in the original tools that were planned for the CINT Core Facility, and was included in the analysis of the "Environmental Assessment for the Center for Integrated Nanotechnologies at Sandia National Laboratories/New Mexico-Final Environmental Assessment," DOE/EA-1457.

No new environmental concerns or impacts would be anticipated from this proposal. Therefore, the proposed continuing operation of these laboratories would be within the scope of existing NEPA documentation.

Funding Source: DOE
Funding Source Number:

6.0 NEPA Checklist Distribution

Other Interested Parties				
Role	Name	Organization	Phone	Edit Privileges (Y or N)
NONE FOUND				

Routine Operation of CINT Integration Laboratories (1500 Labs)

7.0 Project Comment Log

Event Type	Comment	Name (Role)	Date/Time
STATUS CHANGE	NEPA Record status changed to Checklist Complete by SNL	Shinn, Neal D. (ISMS_Manager)	2015-02-10 13:21:07.0
STATUS CHANGE	NEPA Record status changed to LM Review	Peek, Dennis W. (ISMS_NEPA_SME)	2015-02-09 14:46:19.0
STATUS CHANGE	NEPA Record status changed to SME Review	Nogan, John (OWNER)	2015-01-26 18:13:31.0
SYSTEM	ISMS_NEPA_SME Eckstein, Joanna L Changed to: Peek, Dennis W.	Peek, Dennis W. (ISMS_NEPA_SME)	2015-01-26 17:03:25.0
REPLACE	NEPA Record see also: NM13-0117	Peek, Dennis W. (ISMS_NEPA_SME)	2015-01-26 17:03:12.0