Attachment E-1

Waste Characterization Strategy Form
(on CD included with this document)

Waste Characterization Strategy Form

Project Title	**Investigation of TA-49 Sites Inside and Outside the NES Boundary**
Solid Waste Management Unit or Area of Concern #	**Inside the NES Boundary: SWMUs 49-001(a-g), 49-003 and AOCs 49-008(c) and 49-008(d)** **Outside the NES Boundary: SWMUs 49-001(a-g), 49-005(a), 49-006, and AOCs 49-002, 49-005(b), 49-008(a), 49-008(b), 49-008(d)**
Activity Type	**Nature and extent of contamination**
Field Team Leader	**Pattie Baucom**
Field Waste Management Coordinator	**Selene Martinez**
Completed by	**Gordon Jio**
Date	**07/13/2009, updated 09/17/2009**

Description of Activity: The purpose of this investigation is to determine the nature and extent of potential contamination at solid waste management units (SWMUs) and areas of concern (AOCs) located within TA-49; these are collectively referred to as potential release sites (PRSs). The work includes installing boreholes, sampling (surface, hand auger, and pore gas) and conducting geodetic and geophysical surveys. The work will be performed in accordance the New Mexico Environment Department (NMED)-approved work plans and deviations. The TA-49 Sites Inside the Nuclear Environmental Site (NES) Boundary Investigation Work Plan (LANL, 2007a, 098522), and the TA-49 Sites Outside the NES Boundary Investigation Work Plan (LANL 2007b, 098491) describe investigation and cleanup activities to be implemented. The NMED-approved deviations from the work plans (NMED, 2009) have resulted in elimination of a 900-ft borehole and elimination of test pits in four trenches located west of Technical Area (TA) 49, Area 6. Note this second deviation eliminated the excavated soil waste stream.

This waste characteristic strategy form (WCSF) describes the management of investigation-derived waste (IDW) that is expected to be generated during the TA-49 investigation. The IDW may include, but is not limited to, drill cuttings; contact waste, decontamination fluids, and all other waste that has potentially come into contact with contaminants.

Relevant Site History and Description:

Inside the NES Boundary: The area inside the NES at TA-49 was used for hydronuclear and related experiments which deposited significant amounts of plutonium, uranium, lead and beryllium in underground shafts. Thirty-five hydronuclear experiments and nine related calibration, equation of state and criticality experiments, all involving some fissile material, were conducted in 3-ft of 6-ft diameter shafts at depths ranging from 31 ft to 108 ft. Active facilities include firing sites, storage areas, administrative offices, workshops, sewage disposal facilities, and supporting infrastructure. Inactive facilities include firing sites, storage areas, waste disposal areas, and sewage and chemical disposal facilities. The PRSs inside the NES which will be characterized are: SWMUs 49-001(a-g) (Areas 1 through 4) and 49-003 and AOCs 49-008(c) (Area 11) and 49-008(d) (Area 12).

Outside the NES Boundary: Between 1959 and 1961, auxiliary areas located outside the NES were operated to support the experiments conducted at TA-49. The PRSs to be investigated by area are:

- Area 5 served as the central control area for the hydronuclear and related experiments conducted at MDA AB and contains a sump which may have received radioactive or photographic wastes (SWMU 49-006), a landfill containing uncontaminated debris from site cleanup (AOC 49-005(b)), and an area of soils contamination where (AOC 49-008(a)).

- Area 6 contains an inactive landfill and open burning area used for the disposal of solid material generated from activities conducted elsewhere at TA-49 (SWMU 49-004) and an area of radioactive soil contamination (AOC 49-008(b)).

- Area 10 contains a calibration chamber used to perform tests related to the hydronuclear tests performed at TA-49 (AOC 49-002). WMU 49-005(a) is a landfill located north of area 10.

CHARACTERIZATION STRATEGY

This WCSF identifies the types of wastes expected, based on the data from previous investigations; however, other types of wastes may be encountered. An amendment to this strategy form will be prepared and submitted for review and approval if any of the waste streams change in description or characterization approach or a new waste stream is generated. In accordance with the work plans, wastes will be stored in hazardous waste accumulation areas pending receipt of analytical data and final waste determinations. Waste accumulation area postings, regulated storage duration, and inspection requirements will be based on the type waste and its regulatory classification. The selection of waste containers will be based on U.S. Department of Transportation requirements, waste types, and estimated volumes of IDW to be generated. Immediately following containerization, each waste container will be individually labeled with a unique identification number and with information such as waste classification, contents, radioactivity, and date generated, if applicable. Waste streams with the same regulatory classification that are destined for the same receiving facility may be combined in a single container for disposal (e.g. contact waste with drill cuttings).

IDW characterization will be completed using environmental sampling data or by direct sampling of the IDW. If the waste is directly sampled, it will be sampled within 10 days of generation, and a 21 day turn around time for analyses will be requested. A waste determination will be made within 45 days of the generation date of waste. A Waste Acceptance Criteria (WAC) exception form (WEF) can be used if the generator does not meet the 45 day deadline. The generation of no path forward wastes must be approved by Department of Energy (DOE) prior to generation of the waste; however, no such wastes are anticipated for this project.

If analyses indicate the presence of listed contaminants, a due diligence document review may be performed to identify whether the contaminants are from a known listed process. If no documentation of a listed source exists, the waste will not carry the listed hazardous waste number(s). If documentation exists that the contaminant(s) originated from a listed source, but the levels are below residential screening levels and Land Disposal Restriction treatment standards, a "contained-In request" may be submitted to NMED. NMED may approve dropping the listing(s) from the waste stream. A copy of either the Environmental Protection Division Water Quality & Resource Conservation Recovery Act (ENV-RCRA) approved due diligence or

the NMED "contained-in" approval letter must accompany all waste profiles prepared for the subject waste(s).

Investigation activities will be conducted in a manner that minimizes the generation of waste. Waste minimization will be accomplished by implementing the most recent version of the "Los Alamos National Laboratory Hazardous Waste Minimization Report" (LANL, 2007). Waste streams will be recycled/reused, as appropriate.

Waste # 1: Drill Cuttings (IDW) - This waste stream consists of soil and rock cuttings generated from the drilling of boreholes. If air rotary drilling is used, this waste stream will also include the empty filter bags used to collect the cuttings. Drill cuttings will be managed in accordance with Quality Procedure QP-011, Land Application of Drill Cuttings. The approximate volume of waste generated is expected to be 40 yd^3. Estimated volumes from each of the Areas are as follows: Area 1 (9 yd^3); Area 2 (9 yd^3); Area 3 (3 yd^3); Area 4 (3 yd^3); Area 5 (2 yd^3); Area 6 (4 yd^3); Area 10 (2 yd^3); Area 11 (4 yd^3); and Area 12 (4 yd^3).

Anticipated Regulatory Status: Low-level radioactive waste (LLW), hazardous waste, mixed low-level waste (MLLW), PCB-contaminated waste, New Mexico Special Waste (NMSW), industrial waste

Characterization Approach: The drill cuttings will be characterized by direct sampling of the containerized cuttings. Samples will be collected in accordance with SOP-06.10, Hand Auger and Thin-Wall Tube Sampler. A hand auger or thin-wall tube sampler will be used to collect an integrated sample from the surface to the bottom of each waste container. The samples from a single SWMU or Area may be composited to obtain a representative sample of the waste from that SWMU or Area. To meet the requirements of QP-011 and the investigation work plans, drill cuttings will be analyzed for high explosives (HE), isotopic radionuclides, volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and target analyte list (TAL) metals. If the concentrations of metals exceed 20 times the regulatory level, the drill cuttings will be sampled and analyzed by toxicity characteristic (TC) metals to determine whether the cuttings are a toxicity characteristic hazardous (or mixed) waste. If process knowledge, odors, or staining indicate that the cuttings may be contaminated with petroleum products, the materials will also be analyzed for total petroleum hydrocarbons (TPH). Acceptable knowledge will be used to characterize herbicides, pesticides, cyanide, nitrates, perchlorates, and PCBs. If waste is destined for Energy Solutions for treatment, prior authorization that AK is acceptable will be required, otherwise pesticides and herbicide analysis is required.

Storage and Disposal Method: Drill cuttings will be containerized in 1 yd^3 Wrangler Bags or other appropriate containers at the point of generation. Drill cuttings will initially be stored in registered hazardous waste accumulation areas. If the cuttings are found to be non-hazardous, they will be stored in an appropriate non-hazardous storage area. If the cuttings are listed hazardous waste but meet the criteria for land application, a "contained-in" request will be submitted to NMED. If the cuttings cannot be land applied, they will be transported to an off-site treatment/disposal facility appropriate for the type of waste or used for cover material at TA-54. It is not expected that the HE content of the cuttings will be high enough to create a detonable waste; however, if this occurs, the cuttings will be treated on site to remove the characteristic of reactivity at one of the Laboratory's authorized open burning/open detonation treatment facilities before been sent off-site for further treatment or disposal.

Waste # 2: Contact Waste - This waste stream includes personnel protective equipment (PPE), contaminated sampling supplies, and dry decontamination waste that may have come in

contact with contaminated environmental media and cannot be decontaminated. This includes, but is not limited to, plastic sheeting (e.g., tarps and liners), gloves, coveralls, booties, respirators (if required), paper towels, plastic and glass sample bottles, and disposable sampling supplies. The volume of waste generated is estimated to be less than 5 yd^3.

Anticipated Regulatory Status: LLW, hazardous waste, MLLW, PCB-contaminated waste, NMSW, industrial waste

Characterization Approach: Contact IDW will be inspected before being placed in containers to determine the extent of contamination; the extent of contamination will be recorded in a waste logbook.

- Contact waste generated from drilling activities or sampling of boreholes will be characterized using acceptable knowledge (AK) based on the analyses of the drill cuttings, weighted by the extent of contamination.

- Contact waste that is generated from other activities will be characterized using AK consisting of the data from the environmental media with which they came into contact (e.g., environmental soil samples or decontamination fluid), weighted by the extent of contamination.

Storage and Disposal Method: The contact waste will initially be managed in Satellite Accumulation Areas (SAAs) until a waste determination is made. If the environmental media with which the contact waste was contaminated is found to be non-hazardous, the contact waste will be stored in an appropriate non-hazardous storage area. Wastes will be treated and/or disposed in authorized facilities appropriate for the waste regulatory classification

Waste #3: Decontamination Fluids (potential)- The decontamination fluids waste stream will consist of liquid wastes from decontamination activities (e.g., decontamination solutions and rinse waters). Consistent with waste minimization practices, the Laboratory employs dry decontamination methods to the extent possible. If dry decontamination cannot be performed, liquid decontamination wastes will be collected in containers at the point of generation. Existing data show that cutting fluids on piping may be the source of low levels of VOCs seen in boreholes. Therefore, all piping used to case boreholes will be steam cleaned before use, and the rinsate will be collected and analyzed separately from other decontamination fluids. The volume of waste generated is estimated to be 150 gallons.

Anticipated Regulatory Status: LLW, hazardous waste, MLLW, PCB-contaminated waste, NMSW, industrial waste

Characterization Approach: All drill pipe and casing will be steam-cleaned by the drilling subcontractor prior to arriving onsite. If pipe and/or casing appears unclean or odors are detected, then it may be required to steam-clean pipe and casing onsite. Rinsate from steam cleaning of new piping will be directly characterized. Other decontamination fluids may be characterized using AK of the waste materials and analytical results from the media with which it came in contact, augmented by direct sampling of the containerized waste, if needed. If directly sampled, the decontamination fluids will be analyzed for: volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and total metals. Other constituents may be analyzed as necessary to meet the waste acceptance criteria (WAC) for a receiving facility. Direct sampling from drums will be conducted in accordance with SOP-06.15, Coliwasa Sampler for Liquids and Slurries or other procedures appropriate to the container type based on Chapter 7 and Appendix E of the RCRA Waste Sampling Draft Technical Guidance (EPA 530-

D-02-002, August 2002). The Material Safety Data Sheet (MSDS) for any absorbent used for solidification will be used as AK for waste characterization.

Storage and Disposal Method: Decontamination fluids will be collected in containers at the point of generation and initially managed in hazardous waste accumulation areas, preferably an SAA if the quantity generated at each location is less than 55 gallons. Nonhazardous and radioactive liquid wastes may be treated at on-site Clean Water Act-permitted facilities, provided the waste meets the facility's WAC. Mixed waste and wastes that cannot be treated on-site will be sent to authorized off-site treatment and/or disposal facilities. If solidification of decontamination fluids is required for transportation or disposal, it may be solidified using an approved absorbent such as Waste-Lock 770 within a less than 90-day accumulation area. Solidification activities must be approved by the ENV-RCRA.

Waste #4: Municipal Solid Waste (MSW) – This waste stream primarily consists of non contact trash including, but not limited to paper, cardboard, wood, plastic, food and beverage containers, empty solution containers, but may also include commercial solid wastes which are derived from project activities. It is estimated that < 10 yd^3 of MSW will be generated.

Anticipated Regulatory Status: MSW

Characterization Approach: MSW will be characterized based on acceptable knowledge or, if necessary, directly sampled.

Management and Disposal Method: MSW will be segregated from all other waste streams and managed in approved containers. It is anticipated that the waste will be stored in plastic trash bags or other appropriate containers and disposed of at the County of Los Alamos Landfill or other authorized facility.

Waste #5: Petroleum Contaminated Soils (PCS) (potential) - NMSW may be generated from the accidental release of commercial products such as hydraulic fluid, motor oil, unleaded gasoline, or diesel fuel (e.g. from the rupture of hydraulic or fuel hoses, or spills during maintenance or fueling equipment.), onto the ground. Absorbent padding, paper towels, spill pillows or other absorbent material used to contain the released material may be added to the PCS waste for storage and disposal. If the waste is contaminated with radioactive or hazardous constituents, it is not NMSW and must be managed as a hazardous or radioactive waste. If the waste is non-hazardous and non-radioactive and the contaminants are below regulatory levels for PCS, it may be managed as industrial waste. It is estimated that < 1 yd^3 of waste may be generated.

Anticipated Regulatory Status: NMSW, industrial waste, hazardous waste, LLW, MLLW

Characterization Approach: The contaminated soil will be characterized based on acceptable knowledge using the MSDS for the material and direct sampling of the soil while it is in-place or after it has been containerized. Direct sampling will be performed in accordance with SOP-06.10, Hand Auger and Thin-Wall Tube Sampler, or if the spill is shallow, SOP-06.09, Spade and Scoop Method for Collection of Soil Samples, may be used. The analysis of the samples will be dependent on where the spill occurred:

- If the spill occurred on clean soil, samples will be analyzed for VOCs, TPH, gasoline-range and diesel-range (DRO/GRO), and total metals, at a minimum. These analytical suites are required to determine whether the waste is NMSW. Other constituents must be analyzed as needed to meet the receiving disposal facility's WAC.

- If the spill occurs on soils with known hazardous contaminants or soils with no available information, samples will be analyzed, at a minimum, for VOCs, SVOCs, total metals, and TCLP metals, if necessary, as well as analytes needed to meet the WAC of the anticipated receiving treatment or disposal facility.

The contact waste will be characterized based on acceptable knowledge of the material, the extent of contamination, and the sampling data from the soil.

Management and Disposal Method: PCS will be stored in clearly marked and appropriately constructed waste accumulation areas. Waste accumulation area postings, regulated storage duration, and inspection requirements will be based on the waste classification.

If the PCS is not contaminated with hazardous materials, it will be classified as:

- NMSW PCS if the sum of benzene, toluene, ethylbenzene, and xylene isomer concentrations are greater than 50 mg/kg, if benzene individually is greater than 10 mg/kg, or if TPH (DRO+GRO) concentration is greater than 100 mg/kg. NMSW will be managed in a registered NMSW area.
- Industrial waste if the contaminant levels are less than the NMSW and/or PCB regulatory levels.

If the PCS is suspect or known hazardous or mixed waste, it will initially be managed in a registered hazardous waste accumulation area or Area of Contamination, if appropriate, until analytical data are available to make a waste determination.

All PCS will be treated/disposed at an authorized off-site treatment or disposal facility appropriate to the waste classification.

Waste #6: Returned or Excess Samples- This waste stream consists of soil and tuff samples returned from a laboratory or samples collected but not submitted to the analytical laboratory. It is estimated that < 1 yd^3 of material will be generated from this activity.

Anticipated Regulatory Status: LLW, hazardous waste, MLLW, PCB-contaminated waste, NMSW, industrial waste

Characterization Approach Waste characterization will be based upon AK from analytical results obtained from the direct sampling of containerized waste or from characterization sampling of the environmental media. Direct sampling will be conducted in accordance with SOP-06.10, Hand Auger and Thin-Wall Tube Sampler or SOP-06.09, Spade and Scoop Method for Collection of Soil Samples. If directly sampled, the excess or returned samples will be analyzed as necessary to meet the waste acceptance criteria (WAC) for a receiving facility.

Storage and Disposal Method: These wastes will be initially be managed as hazardous wastes and containerized in 5 gallon buckets, 55 gallon drums, or placed into the same containers as the environmental media from which they were taken. The wastes will be sent to an authorized on-site or off-site treatment or disposal facilities, as appropriate to their waste regulatory classification.

REFERENCES

NMED (New Mexico Environment Department) 2009. "Approval Request for Deviations from the Approval with Modifications for the Investigation Work Plan for Sites at TA-49 Outside the Nuclear Environmental Site (NES) Boundary," (LANL, 2009)

NMED (New Mexico Environment Department) 2009. "Approval Request for Deviations from the Approved Investigation Work Plan for Sites at TA-49 Inside the Nuclear Environmental Site (NES) Boundary," (LANL, 2009)

LANL (Los Alamos National Laboratory) October 2007. "TA-49 Sites Inside the Nuclear Environmental Site (NES) Boundary Investigation Work Plan," Los Alamos, New Mexico, (LANL, 2007a, 098522).

LANL (Los Alamos National Laboratory) October 2007. "TA-49 Sites Outside the NES Boundary Investigation Work Plan," Los Alamos, New Mexico, (LANL 2007b, 098491).

LANL (Los Alamos National Laboratory) 200?. "Los Alamos National Laboratory Hazardous Waste Minimization Report," (LANL,200?).

LANL (Los Alamos National Laboratory) 2009. "Characterization and Management of Environmental Program Waste, Los Alamos, New Mexico. (LANL 2009, SOP-5238)

CHARACTERIZATION TABLE

Waste Description	Waste # 1 Drill Cuttings	Waste #2 Contact Waste	Waste #3 Decontamination Fluids
Volume (estimated)	40 cy	5 cy	150 gallons
Packaging	Waste Wrangler Bags	Waste Wrangler Bags or Drums	Poly Tank
Regulatory classification:			
Radioactive	X	X	X
Municipal			
Hazardous	X	X	X
Mixed (hazardous and radioactive)	X	X	X
Toxic Substances Control Act (TSCA)	X	X	X
New Mexico Special Waste	X	X	X
Industrial	X	X	X
Liquid			X
Characterization Method			
Acceptable knowledge (AK): Existing Data/Documentation		X	X
AK: Site Characterization	X	X	
Direct Sampling of Containerized Waste	X		X(as needed)
Analytical Testing			
Volatile Organic Compounds (EPA 8260-B)	X		X
Semivolatile Organic Compounds (EPA 8270-C)	X		X
Organic Pesticides (EPA 8081-A)	X (if reqd.)		X (if reqd.)
Organic Herbicides (EPA 8151-A)	X (if reqd.)		X (if reqd.)
PCBs (EPA 8082)	X (if reqd.)		X (if reqd.)
Total Metals (EPA 6010-B/7471-A)	X		X
Total Cyanide (EPA 9012-A)	X (if reqd.)		X (if reqd.)
High Explosives Constituents (EPA 8330/8321-A)	X		X
Asbestos			
Total petroleum hydrocarbon (TPH)-GRO (EPA 8015-M)	X (if reqd.)		X (if reqd.)
TPH-DRO (EPA 8015-M)	X (if reqd.)		X (if reqd.)
Toxicity characteristic leaching procedure (TCLP) Metals (EPA 1311/6010-B)	X (if reqd.)		X (if reqd.)
TCLP Organics (EPA 1311/8260-B & 1311/8270-C)	X (if reqd.)		X (if reqd.)
TCLP Pest. & Herb. (EPA 1311/8081-A/1311/8151-A)	X (if reqd.)		X (if reqd.)
Gross Alpha (alpha counting) (EPA 900)	X		X
Gross Beta (beta counting) (EPA 900)	X		X
Tritium (liquid scintillation) (EPA 906.0)	X		
Gamma spectroscopy (EPA 901.1)	X		
Isotopic plutonium (chem. separation/alpha spec.) (HASL-300)	X		X
Isotopic uranium (chem. separation/alpha spec.) (HASL-300)	X		X
Total uranium (6020 inductively coupled plasma mass spectroscopy [ICPMS])	X		X
Strontium-90 (EPA 905)	X		X
Americium-241 (chem. separation/alpha spec.) (HASL-300)	X		X
Perchlorates	X (if reqd.)		X (if reqd.)
Nitrates	X (if reqd.)		X (if reqd.)
WPF	TBD	TBD	TBD

Waste Description	Waste #4 Municipal Solid Waste	Waste #5 New Mexico Special Waste	Waste #6 Returned or Excess Samples	
Volume	10 cy	1 cy	1 cy	
Packaging	Plastic-lined Containers	Drums	Containers	
Regulatory classification:				
Radioactive			X	
Municipal	X			
Hazardous			X	
Mixed (hazardous and radioactive)			X	
Toxic Substances Control Act (TSCA)			X	
New Mexico Special Waste		X		
Industrial		X	X	
Liquid				
Characterization Method				
Acceptable knowledge (AK): Existing Data/Documentation	X	X	X	
AK: Site Characterization	X		X	
Direct Sampling of Containerized Waste		X		
Analytical Testing				
Volatile Organic Compounds (EPA 8260-B)		X (if reqd.)		
Semivolatile Organic Compounds (EPA 8270-C)		X (if reqd.)		
Organic Pesticides (EPA 8081-A)				
Organic Herbicides (EPA 8151-A)				
PCBs (EPA 8082)				
Total Metals (EPA 6010-B/7471-A)				
Total Cyanide (EPA 9012-A)				
High Explosives Constituents (EPA 8330/8321-A)				
Asbestos				
Total petroleum hydrocarbon (TPH)-GRO (EPA 8015-M)		X		
TPH-DRO (EPA 8015-M)		X		
Toxicity characteristic leaching procedure (TCLP) Metals (EPA 1311/6010-B)		X (if reqd.)		
TCLP Organics (EPA 1311/8260-B & 1311/8270-C)				
TCLP Pest. & Herb. (EPA 1311/8081-A/1311/8151-A)				
Gross Alpha (alpha counting) (EPA 900)				
Gross Beta (beta counting) (EPA 900)				
Tritium (liquid scintillation) (EPA 906.0)				
Gamma spectroscopy (EPA 901.1)				
Isotopic plutonium (chem. separation/alpha spec.) (HASL-300)				
Isotopic uranium (chem. separation/alpha spec.) (HASL-300)				
Total uranium (6020 inductively coupled plasma mass spectroscopy [ICPMS])				
Strontium-90 (EPA 905)				
Americium-241 (chem. separation/alpha spec.) (HASL-300)				
Perchlorates				
Nitrates				
WPF	TBD	TBD	TBD	

Notes:
[1] *soil waste is not anticipated because trenches will not be excavated*

Section 1.2 of the TCLP method 1311 states "If a total analysis of the waste demonstrates that individual analytes are not present in the waste, or that they are present but at such low concentrations that the appropriate regulatory levels could not possibly be exceeded, the TCLP need not be run." The methodology for using total waste analyses determination for the 40 TC constituents is as follows;

Liquids – Wastes containing less than 0.5% filterable solids do not require extraction and therefore by filtering the waste and measuring the total constituent levels of the filtrate and comparing those levels to regulatory levels is appropriate.

Solids – Constituent concentrations from the extraction fluid of wastes that are 100% physical solids are divided by 20 (reflecting the 20 to 1 ratio of TCLP extraction) and then compared to the regulatory levels. If the theoretical levels do not equal or exceed the regulatory levels, the TCLP need not be run. If the levels do equal or exceed the regulatory levels, the generator may either declare the waste hazardous or run TCLP analyses.

Waste Characterization Strategy Form (continued)

Signatures	Date
Project Leader (Print name and then sign below.) Stephani Fuller	9/24/09
WES Waste Management Coordinator (Print name and then sign below.) Gordon Jio	9/24/09
ENV-RCRA Representative (Print name and then sign below.) Ann Sherrard	9/24/09
Radioactive Waste Certification Program Michelle Coriz	9/24/09
WES-WA Representative (Print name and then sign below.) Andy U. Elicio	09/24/09

	Los Alamos National Laboratory