Los Alamos National Laboratory
TRU Waste Update

Northern New Mexico Citizens' Advisory Board Meeting

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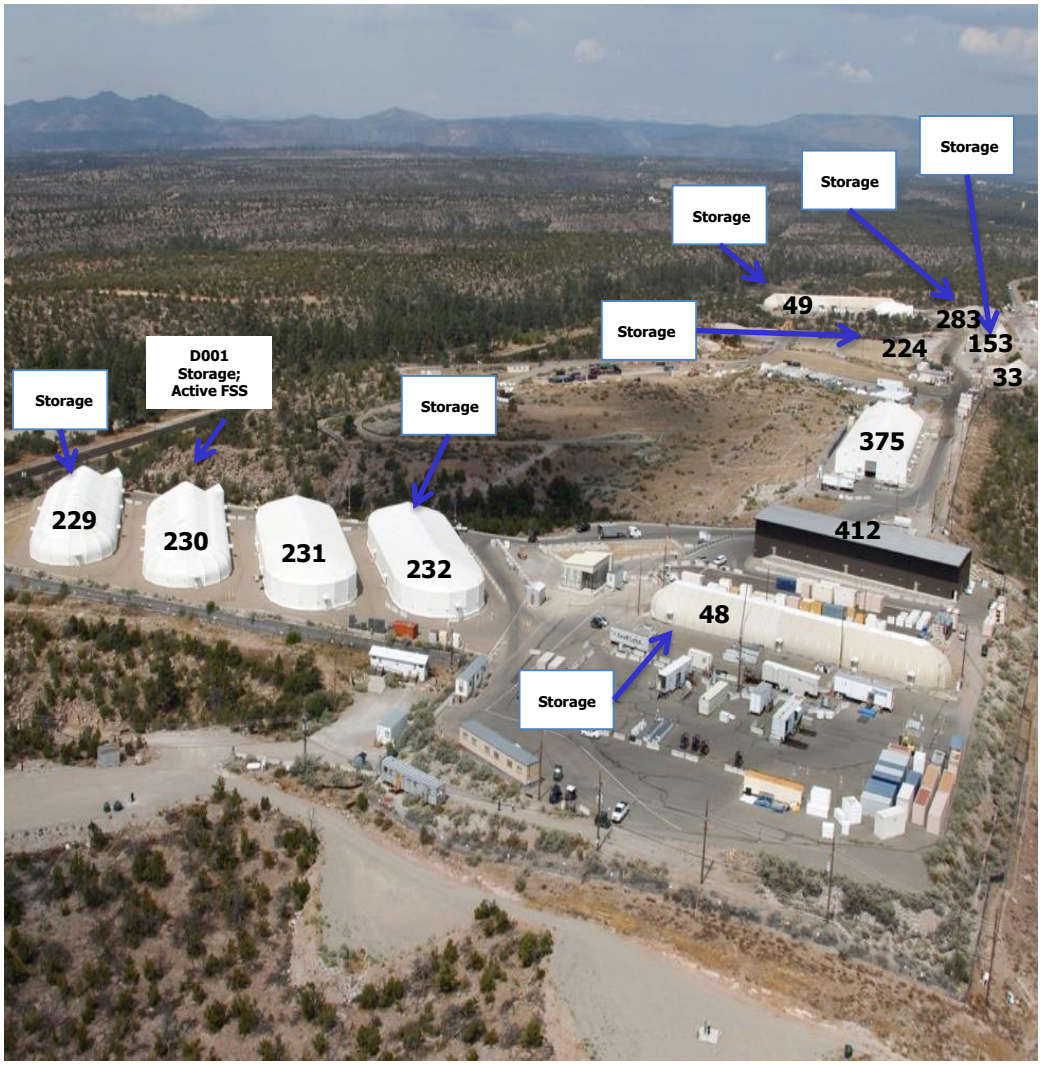
July 29, 2015

EM Environmental Management
safety ❖ performance ❖ cleanup ❖ closure

Outline

- Legacy TRU Waste Priorities
- Supplemental Cooling
- AIB Report
- WIPP Events Settlement
- Transition Update



Legacy TRU Waste Priorities

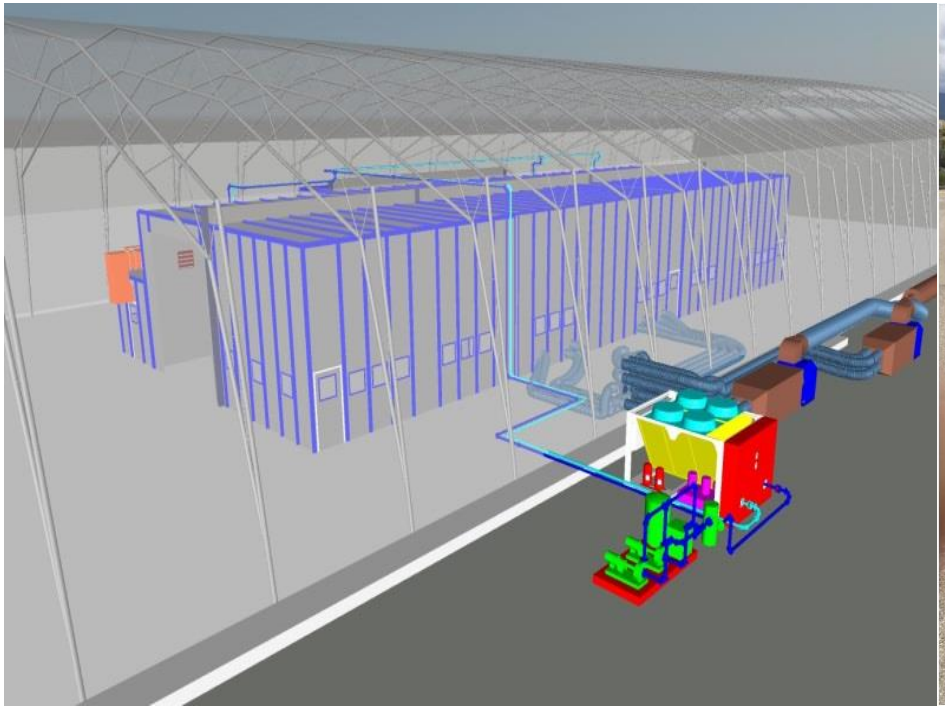
- **#1: Safe Storage of Nitrate Salt Waste Stream**
  - Compliance with the NMED Administrative Order, Issued May 19, 2014
  - Isolation Plan approved and Salts continue to be monitored
  - Key Elements of the Plan
    - Temperature Monitoring
    - Headspace Gas Sampling
    - Climate Control
    - Radiological Containment Structure
    - Drums Over Packed in SWBs
    - Air Monitoring
    - Fire Suppression Controls
- **#2: Re-Process the Population of Improperly Treated Nitrate Salts**
- **#3: Resumption of Processing and Re-Packing TRU Waste**

Remediated Nitrate Salt Storage Configuration

375 Permacon

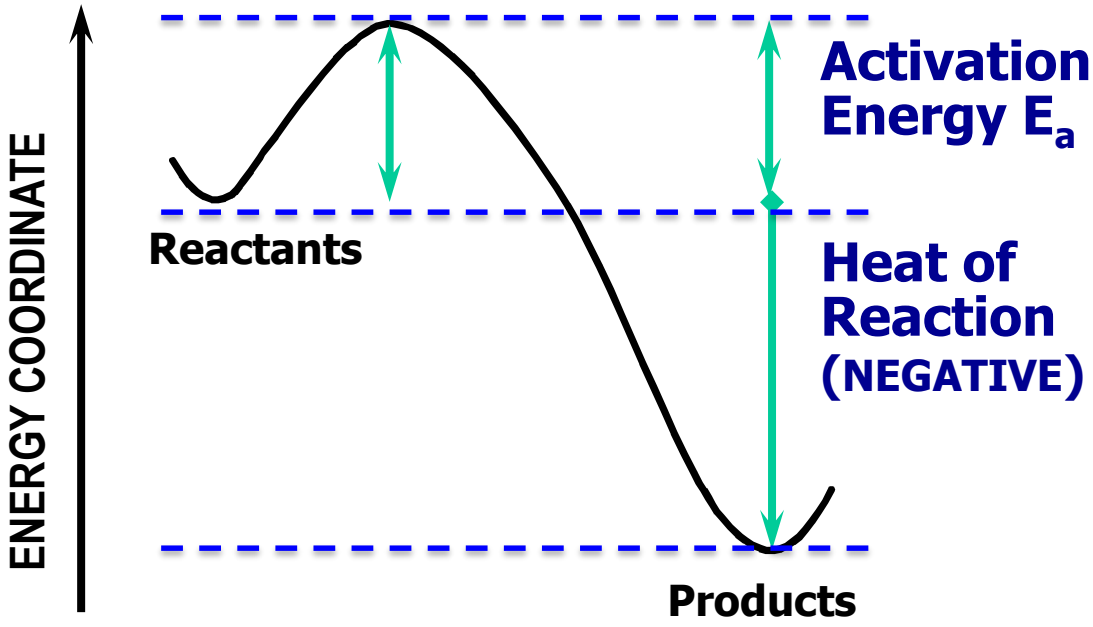
Supplemental Cooling

- Temperature is a key factor in determining the rate of a chemical reaction
- Maintaining the temperature below 90 degrees Fahrenheit is a recognized control in the Container Isolation Plan
- Supplemental cooling will provide "defense-in-depth"



Temperature Control Strategy: Scientific Basis

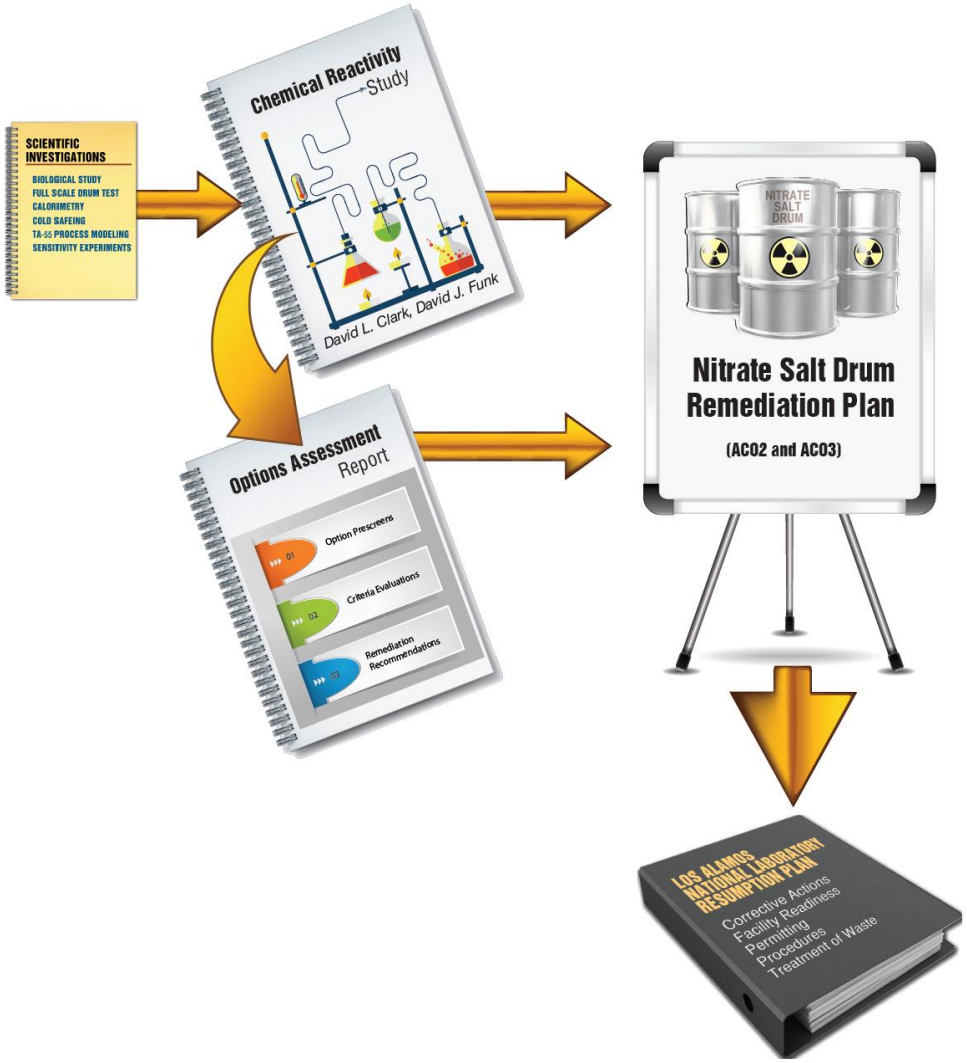
Arrhenius equation – first order kinetics: $k(T) = A\, e^{(-Ea/RT)}$



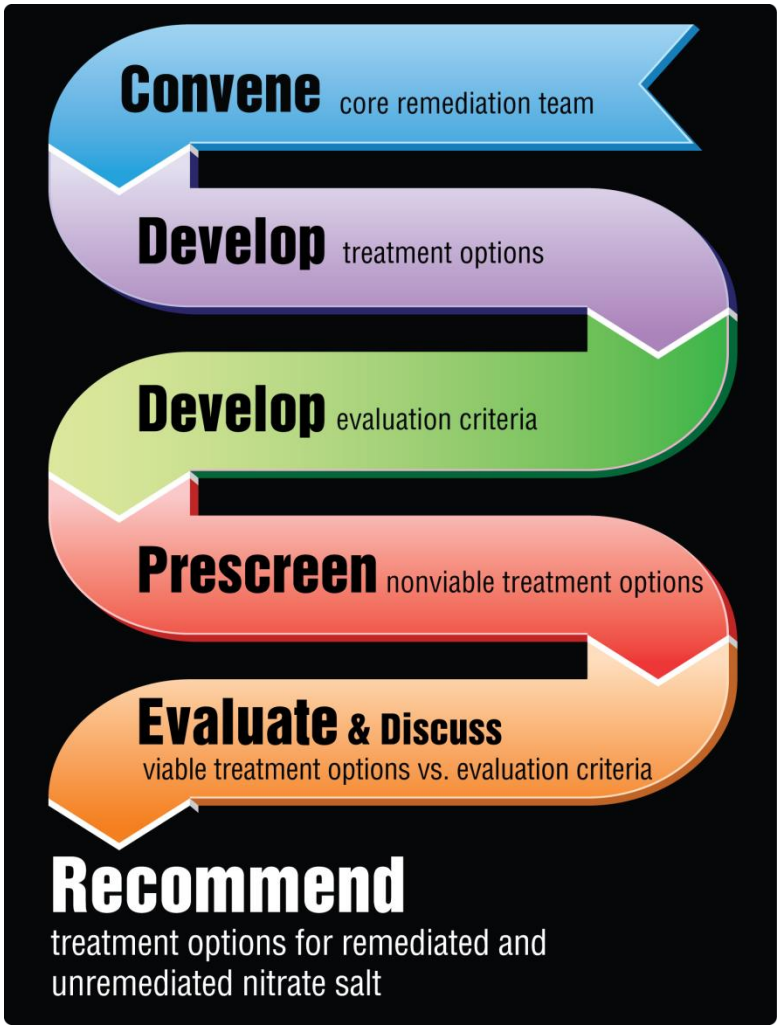
Energy diagram for exothermic reaction

Assessment of Treatment Options for Nitrate Salt Waste

Overview of Planning Process and Documentation



Core Team Process



Core Team Members

Bruce Robinson — Lead

David Clark	**Technical Advisor**
David Funk	**Technical Advisor**

Enrique Torres	Benchmarking
Philip Leonard	Energetic Chemistry
Stephen Yarbro	Actinide Chemistry
Robert Wingo	Cementation
Scotty Miller	Operations
Steve Clemmons	Operations
Gian Bacigalupa	Regulatory
John Hopkins	Regulatory
Faris Badwan	Quality Assurance
Randall Erickson	ADEP
Kapil Goya	TA-55 Waste Expert
Jeff Carmichael	TA-55 Waste Expert
Andrew Baumer	FOD
Charles Conway	FOD
Rick Alexander	FOD
Robert Stokes	ES&H
Ronald Selvage	Safety Basis
Timothy Burns	Carlsbad RSO
Christopher Chancellor	Carlsbad RSO
Patrice Stevens	Project Management

Independent peer review is important for credibility

AIB Report

- **Phase 1 Report Issued on April 22, 2014 - How the radiological material was released into the Atmosphere**
- **Phase 2 Report Issued April 16, 2015 - Included 24 Conclusions and 40 Judgments of Need (JONs)**
  - Direct cause - exothermic reaction of incompatible materials in LANL waste drum 68660
  - Local root cause was failure of LANS to understand and effectively implement the LANL Hazardous Waste Facility Permit and Carlsbad Field Office directed controls
  - Release from the container was preventable
  - Systemic root cause was failure of Los Alamos Field Office (NA-LA) and National Transuranic Program/Carlsbad Field Office (CBFO) to ensure that LANL had adequately developed and implemented repackaging and treatment procedures
  - Twelve contributing causes to the radiological release; largely process, procedures, training, and oversight related. DOE and Contractors at WIPP and LANL were included in the contributing causes
- **22 JONs are related or directed to LANL**
- **DOE HQs, CBFO, NWP, LANS, NA-LA, and EM-LA are working on a set of integrated corrective action plans**

AIB Report

- **DOE LANL Corrective Action Development Approach**
  - Established Senior Management Team to develop corrective actions
  - Senior DOE EM and NNSA Management actively engaged in the development and review of the corrective actions
  - Coordinated with the Carlsbad Field Office (CBFO), Department of Energy Office of Environmental Management (EM), EM appointed Technical and Management Teams, and LANS
  - Final draft of Corrective Action Plan (CAP) submitted to DOE-EM for review

- **LANS Corrective Action Development Approach**
  - Established Integrated Corrective Actions Team (ICAT) and a LANS Institutional Management Review Board (IMRB)
    - ICAT and IMRB have been very active in the review and development of corrective actions
  - Considerable pre-work on many of the corrective actions based on earlier investigation reports
  - Federal counterparts engaged throughout the CAP development process
  - CAP submitted to DOE LANL and DOE-EM for review

AIB Report

Types of Corrective Actions

Addressing Systematic Issues	JON 14: Process Engineering/Change Control JON 32: Procedure Development JON 39: Safety Culture
Improving Requirements Definition	JON 9, 10: RCRA Requirements JON 13, 18: Remediated Nitrate Salt Technical Basis JON 19, 20, 21: Safety Basis
Implementing Improvements	JON 15, 16, 17: WCRRF Glovebox Procedure JON 38: Training and Qualification JON 38: Safety Basis
Ensuring Compliance and Improving Oversight	JON 22, 23, 24: Unreviewed Safety Question Process JON 38, 39: Contractor Assurance System and Quality Assurance JON 38: Safety Basis JON 3, 26, 27, 29: Oversight

WIPP Events Settlement

- **On April 30, 2015, DOE, LANS, and the State of New Mexico signed a document containing general principles of agreement to settle all of the State's claims related to the February 2014 incidents at WIPP, including associated activities at LANL.**

- **Instead of paying fines, DOE will support mutually beneficial and critical projects that will protect local communities and better safeguard transportation routes in New Mexico and around DOE sites, which will improve the safety and security of nuclear materials and the designated roads on which they travel.**

- **These projects include approximately:**
  - $34M to improve roads and transportation routes around WIPP in Southeastern NM
  - $12M to improve TRU waste transportation routes in and around Los Alamos
  - $10M to upgrade critical water infrastructure in and around Los Alamos
  - $9.5M to build engineered structures and increase monitoring capabilities around LANL to better manage storm water flows
  - $5M to construct an emergency operations center in Carlsbad and provide enhanced training for emergency responders and mine rescue teams
  - $2.75M to fund an independent triennial compliance and operational review

Transition Update

- **Organization**
  - EM-LA Field Office operational as of March 22, 2015
  - Permanent manager – Selection expected soon
  - Several staff recruitments underway (Fill ~ 8 Positions in FY15)
- **Contracts/Acquisition**
  - FY 15 cleanup activities continue to be implemented through the NNSA M&O contract
  - Discussions continue between EM and LANS to establish a “bridge contract” for EM funded cleanup scope with goal for October 1, 2015 effective date
  - Acquisition planning for future competitive cleanup contract(s) continues
- **Program Offices Integration**
  - EM and NNSA are collaborating closely –both locally and at Headquarters
  - MOU to formalize delineation of authorities, responsibilities and coordination is in final approval review – incudes vital waste management coordination
- **Oversight**
  - NA-LA currently retains nuclear safety oversight for legacy cleanup activities
  - EM-LA and EM HQs safety officials actively involved in safety reviews and approvals
  - EM-LA Developing Oversight Procedures that will require more rigorous “field inspections/walkthroughs”

Thank you

Questions