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Title:	LANL Update David Martin Rio Rancho Rotary Club July 26, 2011
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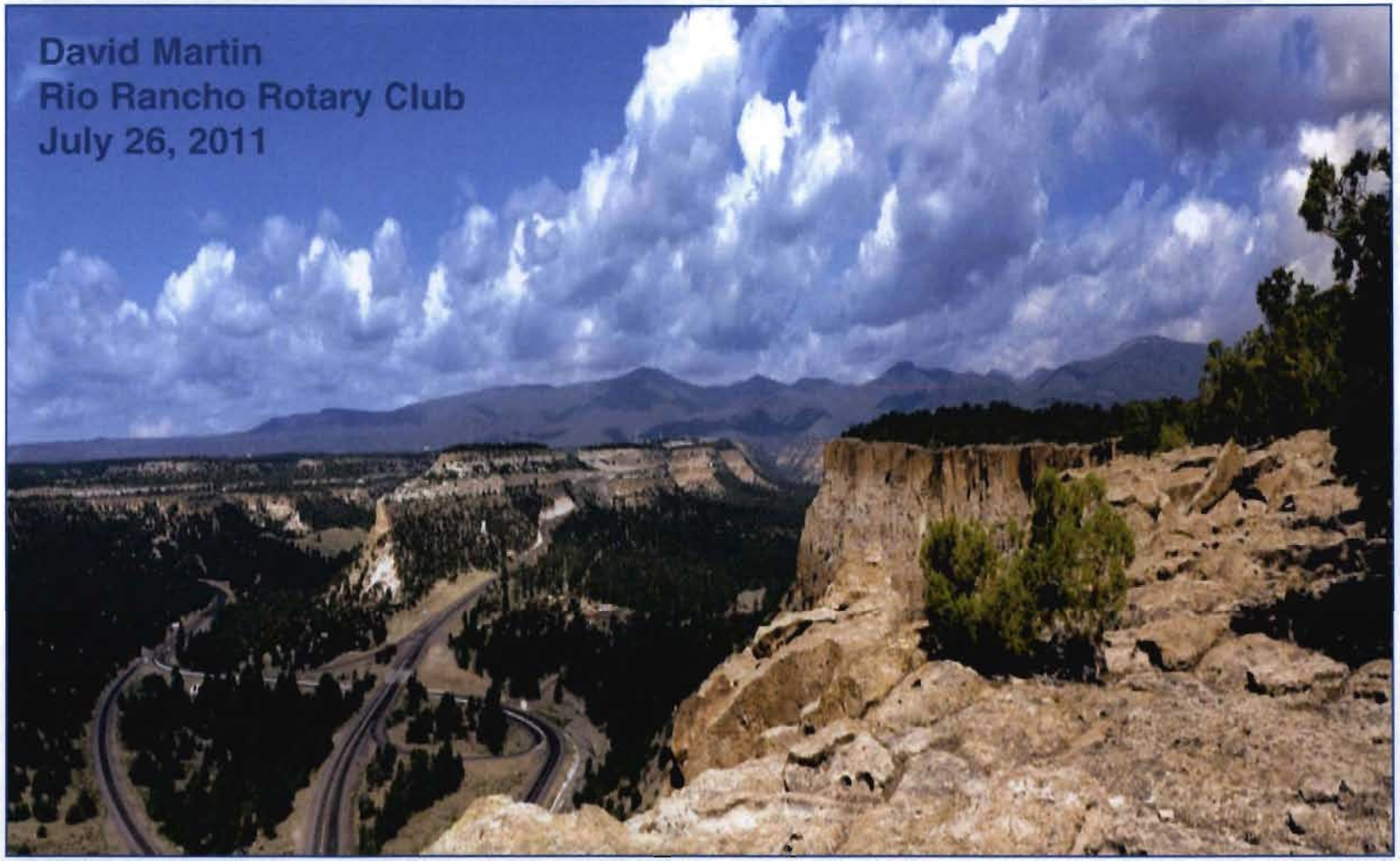
Form 836 (7/06)

LANL Update



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NNSA

Las Conchas Fire Update

- Second time in 10 years
- Lessons learned during Cerro Grande Fire
- Only 1 acre of Lab property burned
- Fire recovery includes flood preparations

Las Conchas Fire Update

BAER (Burned Area Emergency Response) team

Post-fire actions include measures to minimize chance of contaminants uprooted by flood waters

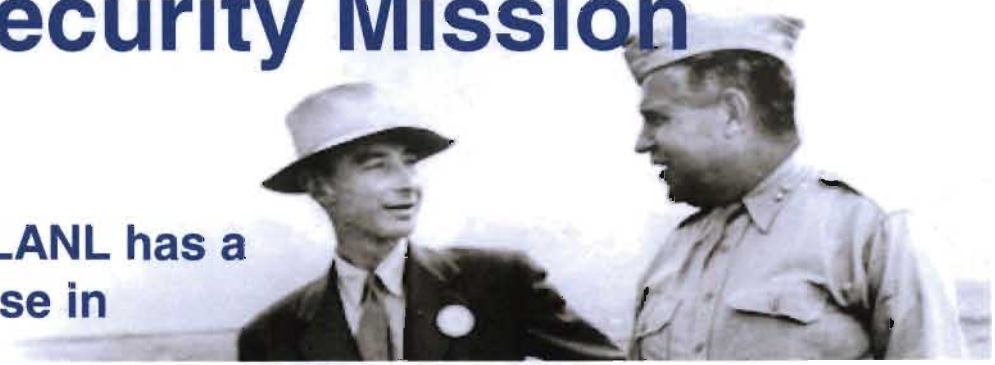
- Installed flood and erosion control measures, including 600 feet of water diversion barriers
- Removed more than 1,200 cubic yards of sediment

BAER team members discuss fire recovery actions

Las Conchas Fire Update

- Installed concrete barriers to protect well heads, utility poles and underground gas lines in canyon bottoms
- Installed additional water sampling gauges on western boundary to compare run-on water with run-off water
- Collected fish samples from Rio Grande and Cochiti Reservoir

LANL's National Security Mission

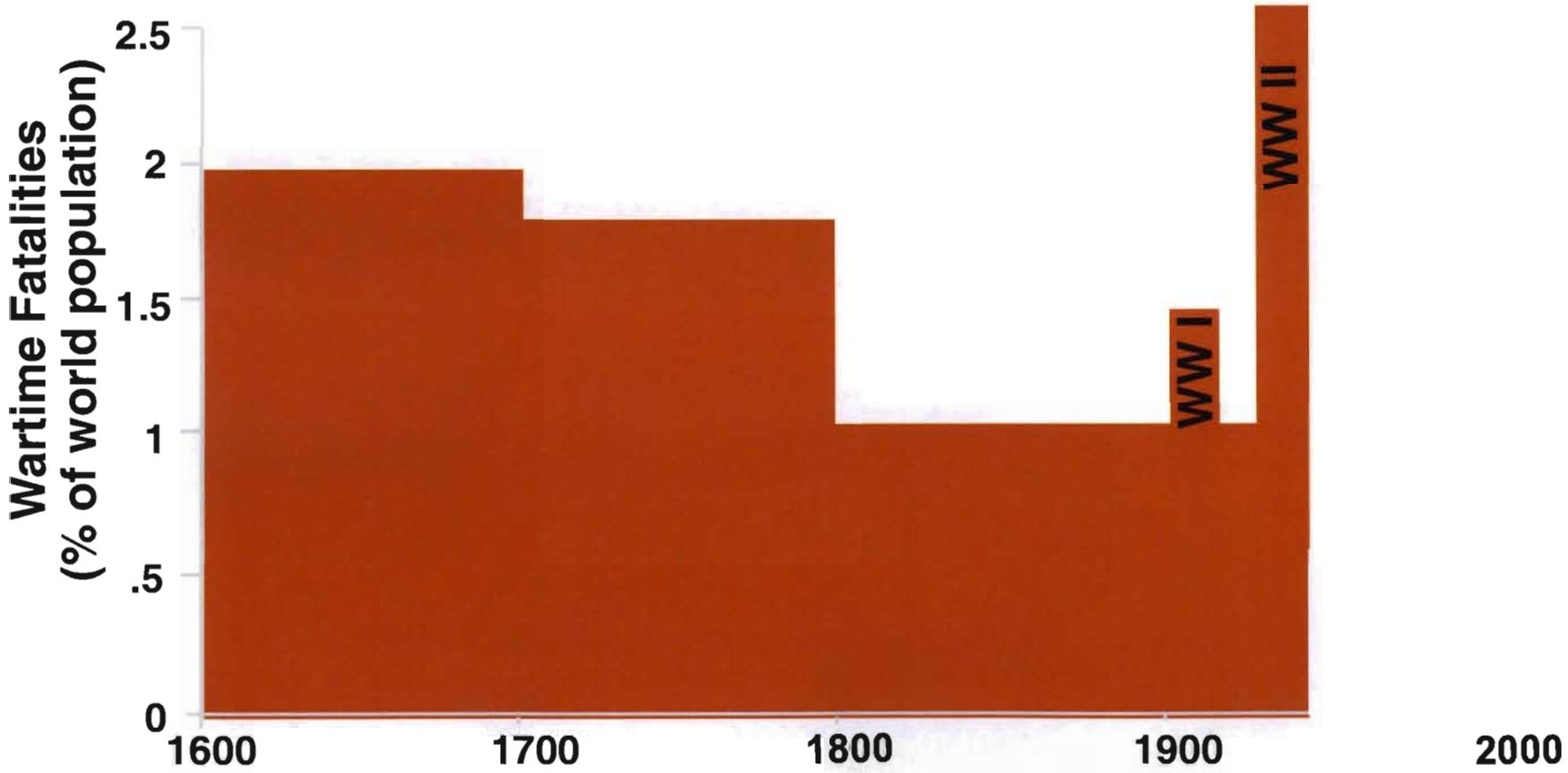


As a national security laboratory, LANL has a long history of world-class expertise in explosives.

The Lab uses this expertise for a number of national security missions, including:

- training troops to detect, investigate, and defeat Improvised Explosive Devices (IEDs);
- detecting explosives at airports;
- developing safer, "insensitive" explosives; and
- stress, impact, and heat testing of aging, conventional and insensitive explosives used in nuclear weapons.

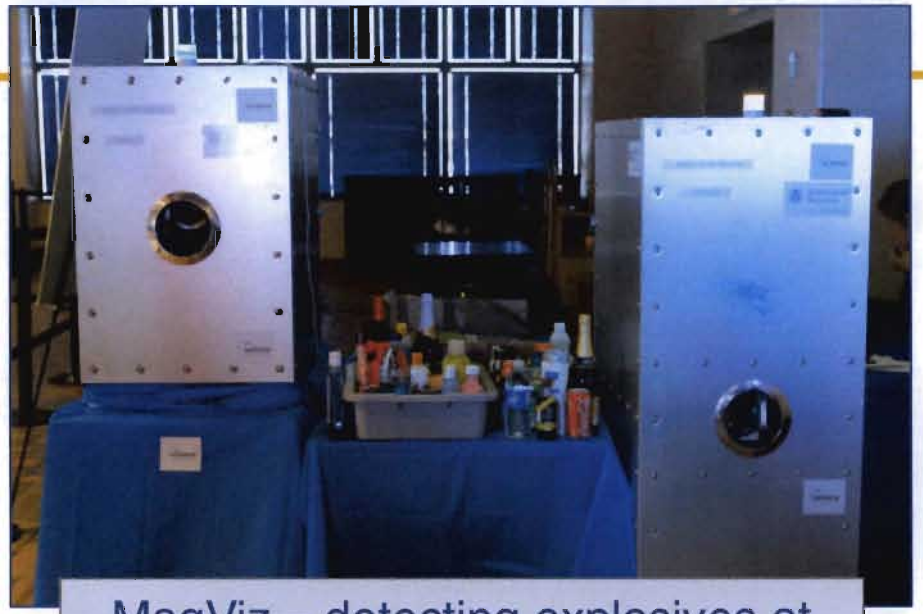
Wartime Fatalities



Source: R.G.Joseph and R.F. Lehman II, "US Nuclear Policy in the 21st Century: A Fresh Look at National Strategy and Requirements" (1998) Diane Publishing
C.A.Murdock, "The Department of Defense and the Nuclear Mission of the 21st Century", CSIS Report, March 2008

We develop detection technologies to keep air travel safe

- **Detection techniques are based on:**
  - Appearance
  - Smells
  - Sounds
  - Chemical signatures
  - Understanding high-explosive formulations and staying "one step ahead" of terrorist bomb-makers



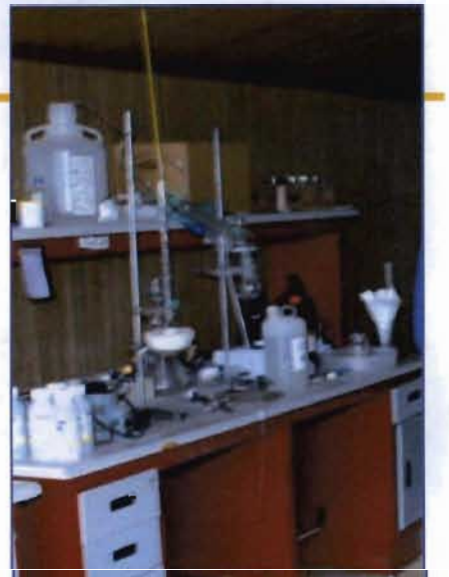
MagViz – detecting explosives at airports

LANL conducts national security mission research in support of our nuclear deterrent and the war fighter

- **The research often involves testing of explosive materials to support:**
  - Basic research
  - Certifying safety and operability of the nuclear stockpile
  - Counter-terrorism
  - Detection technology development
  - Improvised Explosive Device (IED) detection and defeat

Basic explosives research supports innovation and maintains intellectual competence

- **Greening of explosives**
  - Less solvents => less synthesis waste
  - Green starting materials
  - Multiple Pollution Prevention Awards
- **Explosives formulations**
  - New explosives
  - Improvised explosives from household materials
- **Explosives for weapons configurations**
- **Aging of explosives**



How do high explosives become waste?

- **HE must be tested to verify safety and understand its behavior. Tests include:**
  - heating
  - compressing/pulling
  - impacting
  - suite of safety tests
- **Can be granules, plastic-like chunks, or other small pieces**
- **After tests, HE becomes less predictable**

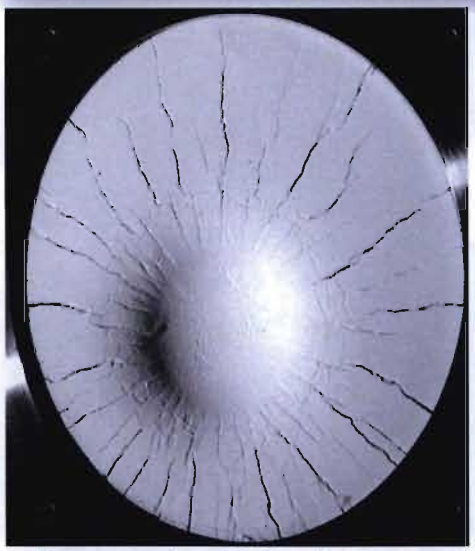
What do we do with high explosives waste?

Pieces are packed in batches that average about 60 pounds...

...and detonated on remote areas on Lab property.

Transportation safety is one reason for conducting treatment on-site

- **Transporting certain HE wastes is dangerous**
  - Forbidden for some substances
  - May be more reactive after heat, impact, etc. tests have occurred
  - Aged materials may also have greater reactivity
- **Open detonation on site is safer than transporting the material on public roads for waste disposition elsewhere**



Damaged sample after impact test

An analysis of alternatives finds that open detonation is the most cost-efficient and safe

- **Detonation in vessels is less efficient, more costly, and potentially less safe**
  - Vessels and associated hardware are in the $750,000 dollar range
  - Limited to 30 lbs. with a lifetime of as few as ten detonations
  - Handling of the materials in vessels complicates the operation
  - No benefit to the environment as evidenced by soil, air, animal sampling (and detonation products are still released into the air)

LANL's goals in managing our waste creation and treatment are broad

- **Continue safe treatment of high explosive waste through detonation at LANL's secure and remote areas (Point 6 and Minie)**
  - Less than 30 shots per year expected, ~60 lbs average
  - Prevent transportation of waste on public roads
- **Continue increase in green processes**
- **Minimize waste**
  - Create/treat smaller amounts of high explosives waste
- **Reduce noise**

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Protecting human health and the environment

- **Once detonated, the waste is no longer dangerous**
  - Carbon dioxide, nitrogen, water
  - Dioxins and furans are not generated in the detonation process
- **No measurable air emissions can be detected off site**
- **Residual contaminants are below EPA standards**
- **We continue to verify through an on-going monitoring program**
  - Storm water, air
- **Site studied for effects on small animals and wildlife: no effect on population identified**

Studies show open detonation does not affect the two nesting pairs of Mexican Spotted Owl who make their homes in LANL's remote areas.

LANL is applying for an open detonation RCRA permit

- **Regulated by the Resource Conservation and Recovery Act (RCRA) and the NM Hazardous Waste Act**
- **RCRA controls hazardous wastes from cradle to grave including:**
  - Waste generation
  - Transportation
  - Treatment
  - Storage
  - Disposal

Permit will help define the rules under which we operate

- **Currently done safely under interim status requirements**
- **In New Mexico, the Environment Department has been authorized by the EPA to administer and enforce the Act**

National security impacts will occur without our ability to treat waste through detonation

- **LANL must be able to certify the safety and operability of the nuclear stockpile**
- **Without a path for waste disposition, important national security missions cannot continue resulting in:**
  - Less able to understand and predict adversaries
  - Less able to predict what new formations will do (or not do)
  - Slower response in time-sensitive situations
- **… all with no appreciable benefit to human health and the environment**

Public Comment Information

- **Send comments to:**

  Mr. John E. Kieling

  New Mexico Environment Department

  Hazardous Waste Bureau

  2905 Rodeo Park Drive East,

  Building 1

  Santa Fe, New Mexico 87505

- **Email: john.kieling@state.nm.us**

Initial public comment period lasts from July 20, 2011 to September 19, 2011