

LA-UR- 12-00851

Approved for public release;  
distribution is unlimited.

*Title:* A Journey From Sandia To Los Alamos

*Author(s):* K. K. Goyal, Los Alamos National Laboratory  
B.J. Humphrey, Weston Solutions Inc.  
J.W. Gluth, Sandia National Laboratory/NM  
T.J. Krause, Weston Solutions Inc.  
M.L. Kiefer, Sandia National Laboratory/NM  
S. Haynes, Sandia National Laboratory/NM

*Intended for:* Waste Management Symposia 2012  
Phoenix, Arizona  
February 26, 2012



Los Alamos National Laboratory, an affirmative action/equal opportunity employer, is operated by the Los Alamos National Security, LLC for the National Nuclear Security Administration of the U.S. Department of Energy under contract DE-AC52-06NA25396. By acceptance of this article, the publisher recognizes that the U.S. Government retains a nonexclusive, royalty-free license to publish or reproduce the published form of this contribution, or to allow others to do so, for U.S. Government purposes. Los Alamos National Laboratory requests that the publisher identify this article as work performed under the auspices of the U.S. Department of Energy. Los Alamos National Laboratory strongly supports academic freedom and a researcher's right to publish; as an institution, however, the Laboratory does not endorse the viewpoint of a publication or guarantee its technical correctness.



# **A Journey From Sandia to Los Alamos**

**K.K. Goyal**

**Los Alamos National Laboratory**

**B.J. Humphrey, T.J. Krause**

**Weston Solutions, Inc.**

**J.W. Gluth, M.L. Kiefer, S. Haynes**

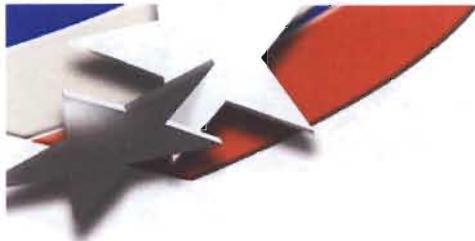
**Sandia National Laboratories/New Mexico**



# Background

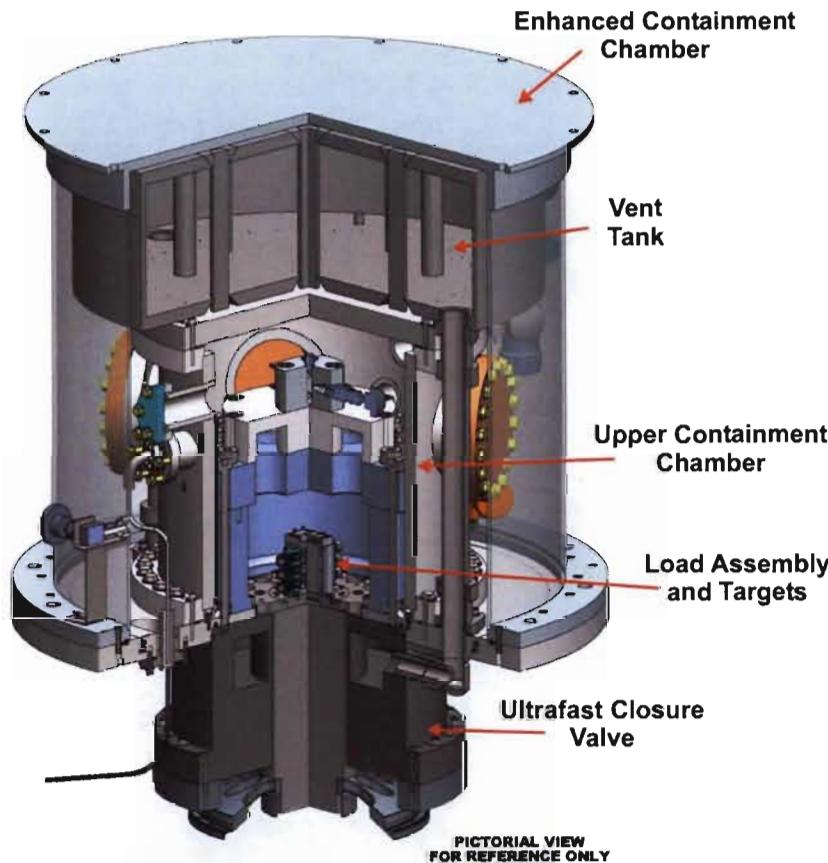
---

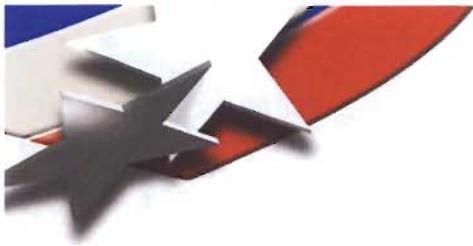
- Memorandum of understanding (MOU), 2006
  - Between LANL and Sandia
  - Verify and validate computer codes used to determine reliability of NNSA's Stockpile Stewardship Program
  - LANL maintains ownership of Pu and waste
- Experiments conducted on Z machine at Sandia
- Targets, Pu-239 prepared by LANL



# Experimental Setup

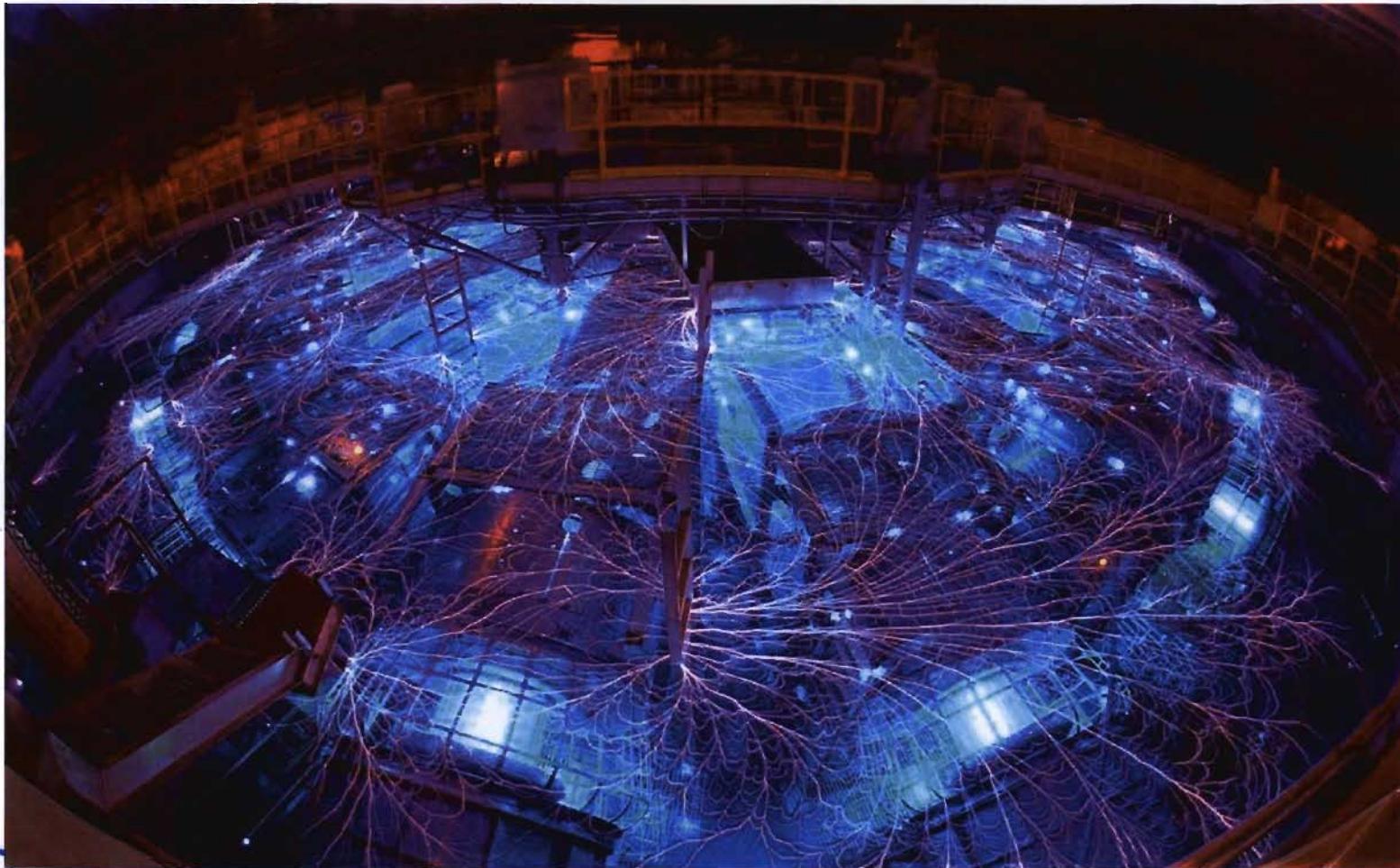
---

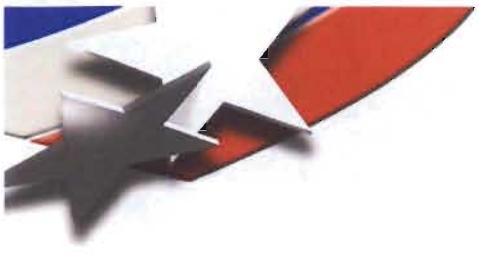




# Z Machine

---





# Background

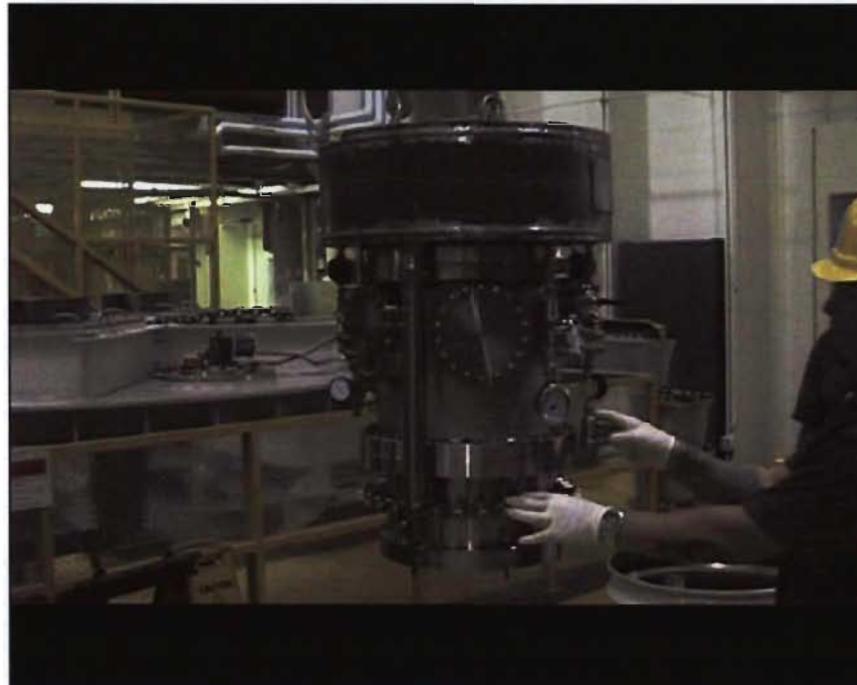
---

- In 2006, three experiments were conducted
- LANL manufactured the Pu targets
- Sandia placed the targets in the experimental vessel and conducted the experiment in the Z machine
- After completion each experimental vessel was placed in a 55-gallon 7A drum with NFT filter
- Sandia stored the loaded 55-gallon drums as material and maintained safeguards



# Loading Experimental Vessel

---





## 2006 through 2009

- Z machine was being refurbished
- Sandia continued to store the three loaded drums
- Sandia prepared a pre-AK report under the informal direction of WIPP/CCP
  - Documented the information required for shipment to LANL
- In 2009, LANL and Sandia met to discuss how to ship back to LANL



## 2006 through 2009 (cont)

- Review of LANL and Sandia environmental permit requirements
  - NMED permits
  - NEPA documents
- LANL can accept non-hazardous waste
- Hazardous TRU waste receipt prohibited
- How to terminate safeguards



# Path Forward

---

- Assembled a large team of stakeholders
- Presented the facts about the waste
- Mitigation of potential roadblocks
  - Safeguard concerns
  - TRUPACT-II shipments
  - Acceptance of non-hazardous status of waste
- Documented, credible, scientific evidence of all constituents with precise mass measurements



# Waste Stream

---

- Waste stream is newly generated, non-mixed, > 99% metals
- Prepared a Generator Knowledge (GK) Report
  - Documents mission and purpose of experiments
  - Provides material inputs/outputs, MSDSs
  - Documents all radioisotopic and RCRA calculations, packaging, and absence of prohibited items



# Waste Stream (continued)

- **GK Report (continued)**
  - Interviewed and documented SME information
  - Demonstrated compliance with LANL permit
  - Demonstrated compliance with WIPP WAC and TRAMPAC requirements
  - Safeguards terminated at time of shipment



# 2010

---

- **September 2010**
  - CBFO agreed to send a TRUPACT-II for December shipment
  - CBFO authorized Washington TRU Solutions to prepare a waste specific TRAMPAC
- **December 2010**
  - Waste stream approved
  - Three waste drums shipped to LANL



# Waste Packaging

---





# TRUPACT II Loading





# Current Status

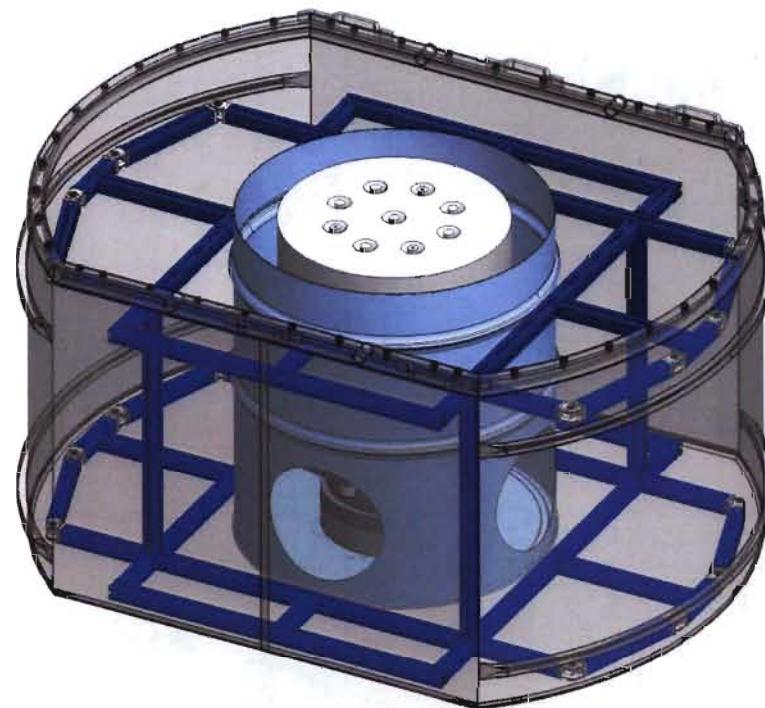
---

- Five more experiments have been completed
- Four experiments/year scheduled through 2016
- Data for each waste package is an attachment to the GK Report
- Future experiments may exceed weight limits for a 55-gallon drum



# Future Packaging

---





# Going Forward

- Continued cooperation between LANL and Sandia
- Regular conference calls to discuss status and issues
- Responsible parties automatically send necessary data
- Regular updates and coordination with LASO, SSO, CBFO, and CCP