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Nuclear Weapons Data Management

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Topics

- LANL Retention Requirements for Weapon Data
- LANL Onsite Regulations, DOE Orders & CFR Regulations
- LANL Nuclear Weapon Data Media Types, Location & Storage
- LANL Nuclear Weapon Data Preservation
- LANL Nuclear Weapon Data
- LANL Nuclear Weapon Data Systems
- Progression of Nuclear Weapon Data Management
- Summary

Formal Retention Requirements for LANL Weapon Data

- All weapons related information are kept on **permanent** retention due to historical and research value
http://energy.gov/sites/prod/files/cioprod/documents/Nuclear_Weapons.pdf
- The DOE/NARA schedule is the basis for LANL retention schedules for records
http://energy.gov/sites/prod/files/cioprod/documents/RD_revised.pdf
- Nuclear Weapon records fall under records destruction moratoriums authorized by DOE. Those records under moratoriums cannot be destroyed until the moratoriums are officially rescinded by DOE. Records currently subject to destruction moratoriums include:
 - a. Epidemiological records (effective March 15, 1989);
 - b. Nuclear weapons data records (effective August 26, 1992); and,
 - c. Human, scientific and radiation experiment records (effective January 13, 1994).

Onsite Regulations, DOE Orders & CFR Regulations

Onsite Regulations:

- P1020-1: Laboratory Records Management is a LANL policy mandating adherence to DOE records schedules
- SD 330 Quality Assurance: Los Alamos National Laboratory Quality Assurance Program

DOE Orders & CFR Regulations:

- DOE O 243.1A Compliance with Department of Energy Records Management Program
- QC-1 DOE /NNSA Weapon Quality Policy
- DOE O 243.2 Vital Records
- DOE O 414.1C, 36 CFR 1234, Facility Standard for Records & 36 CFR 12, Subchapter B, Records Management
- ASME-NQA-1-2008, Quality Assurance Requirements for Nuclear Facilities, Addendum 1a-2009

Nuclear Weapon Data Media Types, Location, & Storage

Current Nuclear Data Media Types, Location & Distribution:

- Current weapons systems engineering stockpile product definition is electronic and maintained in WLink which is a commercial off the shelf (COTS) configuration management software capable of Product Lifecycle Management (PLM).
- Weapons physics data is uploaded into the Online Vault (OLV)
- Electronic files are also on share drives and desktop computers, but official weapons data is disseminated through Document Configuration Management teams and via authorized personnel

Legacy Nuclear weapon media types and storage:

- Non electronic legacy data is primarily paper documentation but also consist of a variety of data types including radiographs, photographs, film, microfilm, microfiche, aperture cards, 8 inch floppy disks, and VAX disc packs
- Information Resource Management (IRM) is responsible for controlling legacy weapon data in two main vaults. One vault is environmentally controlled while the other vault is not and leaves legacy data at risk for deterioration and permanent loss. A plan and cost estimate has been developed for migrating at risk data into an environmentally controlled vault

Nuclear Weapon Data Preservation

Planning:

- LANL is participating in NSE assembled team for revision of retention orders and development of procedures for NSE cross complex review of NW records
- LANL DSW Program Director and PADWP are investigating the cost of installing a fire proof vault for relocation of “At Risk” legacy data for permanent storage and secure storage
- LANL continues to translate media into electronic format with metadata

Legacy Nuclear weapon media types and storage:

- LANL continues to migrate electronic data from multiple electronic systems into WLink or OLV including share drives, employee desktops, and incoming data
- LANL continues to pursue a weapons archive project that involves scanning of media previously stored in safes and vaults throughout the directorate
- LANL preservation efforts have provided LANL the ability to add metadata such as document titles, authors, and other keywords which enables employees the ability to search for pertinent weapons data using keywords with proper NTK

LANL Nuclear Weapon Data

IRM-RMS

- Original Rocky Flats weapons reports, radiographs, aperture cards & microfilm
- Weapons Radiographs
- Photo Negatives
- J-Division (Weapon Testing Film)
- Bomb Books (film and paper)
- Task Orders (film and paper)
- Corresponds/Memos
- Classified Reports Collection/formal LA reports series reports
- Early Group reports (GMB, GMX, H, T, ESA, and X)
- Formal Reports from other DOE Laboratories (LLNL, SNL, RFP, Y-12, Mounds & EG&G)
- British Reports (ACO/UK)
- Top Secret Collection (LANL, DNA, SNL, History of Joint Chiefs of Staff & Congressional Meetings)
- Weapons drawings (LANL, LLNL, SNL, RFP)
- Technical Manual/Procedures (TP Records)
- Progress Reports (late 40's mid 80's)
- Weapon Committee reports
- Shot Reports
- Other Groups: X-Division Vault-shot information-experiments, NWT, ESA, J-Division (shot information), Atmospheric Detection-Radio nuclides (NIS), P-Div., W-Div.

IMS (SNL-NM)

- LANL sends released 2-D Product Definition Documents (DOE 6 digit specs, drawing images and Engineering Authorization pdfs) to NSE Image Management System (IMS) per TBP-500.
- TBP-500 Record Management:
<https://prp.sandia.gov/TBPs/Forms/AllItems.aspx>



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Weapons Engineering and Experiments

- Administrative Document Management – Day to day correspondence, memos, etc
- Mechanical CAD data management (Pro/E)
- Product Definition Document management (DOE 6 digit specs, drawing images and Engineering Authorization pdfs)
- Archive data management (old databases)
- Weapons Product Configuration Management (Product Structures)
- NNSA milestone tracking and evidence collection
- Group Office Administrative data management
- LANL R&D shop manufacturing data management
- Dynamic Engineering Authorization XML data management (EALink)
- LANL Production Agency work instruction and manufacturing bill of materials management
- Surveillance data tracking and management
- R&D Collaboration

Weapons Physics

The X*Archive Online Vault is the pathway for serving to the weapons physics and engineering communities digitized versions of:

- Weapons Physics "Wellnitz Vault" development, design, test and threat-reduction documents;
- Field-Test (J) Division test document collection;
- P-21 Reaction History analysis reports and data*;
- P-23 Neutron Diagnostics reports and data*;
- WX (formerly DX, M Division) hydro shot diagnostic data and reports*;
- C-NR radiochemistry diagnostic reports and notebooks.*

* These organizations continue to maintain their own archives of data, reports and analyses, in physical and electronic form. We do not get complete collections of data from these organizations for the Online Vault.

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LANL Nuclear Weapon Data Systems

Information Records Management:

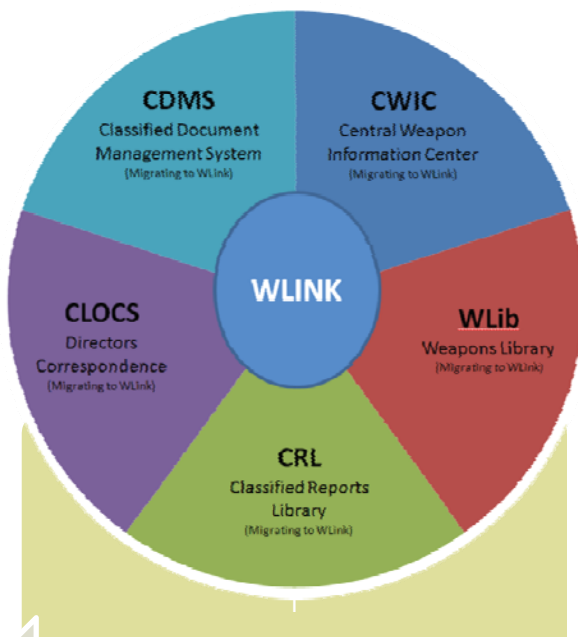
- Report collection, document scanning, indexing, weapons & information vaults
- Distribution & processing of official Lab correspondence, classified mail channels
- Currently consolidating other IRM weapons databases into WLink

Weapons Engineering & Experiments:

- Active & Legacy WR & Experimental Data
- Models, drawings, EA's, specifications, related product realization documents, general document management, EBOM, MBOM, post production data, collaboration, project planning, & archiving

Weapons Physics:

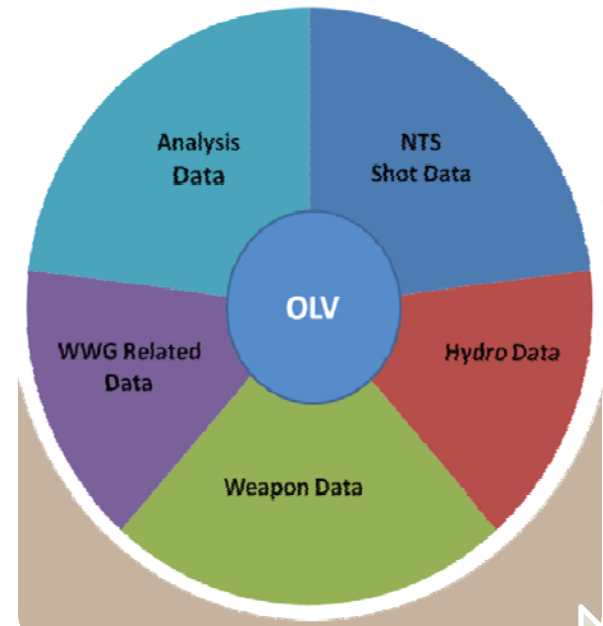
- Legacy WR & Experimental Data
- "Wellnitz Vault", P-21 Reaction History, P-23 Neutron Diagnostics, Hydro Shot data, and C-NR



PDMLink (Weapons Link)



PDMLink (Weapons Link)



Stellent (Online Vault)

Progression of Nuclear Weapon Data Management



- One Vault
- All Records
- One Drawing
- One Bomb Book



- Multiple Media Types & Locations
- Electronic creation/distribution
- Multiple Controls of data
- Multiple systems



- NTK Controls
- Consolidation Effort
- Single Authoritative Source
- Workflows for creation & distribution

35-40 Years Ago

10-15 Years Ago

Today

Summary

- LANL has identified weapons data that is at risk due to permanent deterioration and/or equipment obsolescence
- LANL inherited legacy nuclear weapons data from Rocky Flats, Mound, and Pinellas which is being converted into electronic format
- LANL has an internal policy prohibiting destruction of nuclear weapon data that is irreplaceable and is critical to addressing unforeseen emergent issues
- LANL continues to pursue a weapons archive project which involves scanning of all media previously stored in safes and vaults throughout the engineering directorate but the effort is much too small to address the entire issue, specifically in Weapon Physics and Information Resource Management
- LANL has compiled estimates for the cost of migrating tangible nuclear weapon data into an appropriate environment
- LANL is working on estimates for translating tangible nuclear weapon data into electronic format
- LANL is working on estimates for consolidating nuclear weapon data into a single authoritative source with change control and full text search capability

Definitions for Weapon Systems Management

Weapons Surety:

Materiel, personnel, and procedures that contribute to the security, safety, and reliability of nuclear weapons and to the assurance that there will be no nuclear weapon accidents, incidents, unauthorized weapon detonations, or degradation in performance at the target.

Information Surety:

Infrastructure, personnel, and procedures that ensure the preservation, security, and reliability of nuclear weapons information. Infrastructure that ensures that weapons information is under configuration management, readily available, and protected with proper need to know access controls.

Information Resource Management:

IRM has established a Records Management Program that includes methods for the identification, generation, authentication, maintenance, and disposition of objective evidence (record) of work activities.

Records:

Records are defined as all books, papers, maps, photographs, machine-readable materials, or other documentary materials, regardless of physical form or characteristics, made or received by the agency (Laboratory), and preserved or appropriate for preservation as evidence of the organization, functions, policies, procedures, decisions, operations, or other activities of the agency (Laboratory) or because of the informational value of data in them.