

# ***Improving the Lessons Learned System at Los Alamos National Laboratory***

***presented to the***

***EFCOG ISM&QA and Contractor Assurance Working Group  
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# Topics

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- **Improvement Results**
- **Improvement Approach**
- **Current Process**
- **Process Improvements Underway**
- **Nine Lessons We Have Learned**

# Bottom Line: Results of LANL Improvements

## FY2006

- **163 processed per year**
  - Nearly all DOE/HSS
  - Safety
  - 10 internal per year
- **200 web users/month**
- **250 in searchable archive**
- **Trend Occurrences**
- **Track Communications**
- **2 FTEs**



## FY2009

- **650 processed per year**
  - Multiple sources
  - All program/function areas
  - 150 internal per year
- **1500-3000 web users/month**
- **1700 in searchable archive**
- **Analyze Occurrences**
- **Track Actions (risk-based)**
- **2.5 FTEs**

# Improvement Approach: Process Engineering

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## 1. Set up Process Management

- Lean Six Sigma - Champion and Yellow Belt
- Process Team (Weekly - Operations)
- System Team (Quarterly/Annually - Integration and Strategy)

## 2. Benchmarking (inside and outside DOE)

## 3. Defined Product Quality Specifications

- Purpose -> Products -> Customers-> Requirements -> Controlling characteristics
- Clearly defined processes (steps and roles) for each product (mapping)

## 4. Set up Process Controls and Improvement

- Program Description, Procedures, Checklists, Tools
- Use CAS: Goals, Measures, Assessments, Issues Mgt, Process Improvement
- Defined Task Framework (daily, weekly, monthly, quarterly, annual)
- Annual Improvement Plan (effectiveness and efficiency)

## 5. Execute and Innovate

# Lessons Learned ➡ Operating Experience Program

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## Operating Experience Program Purpose

The purpose of the LANL Operating Experience Program is to capture and apply lessons taken from operating experiences internal and external to the Laboratory in order to avoid repeat events, anticipate and mitigate undesirable consequences, and replicate best practices.

**Experiences are important to replicate awareness**

**Lessons are important to replicate learning**

# Primary LANL OPEX Program Components

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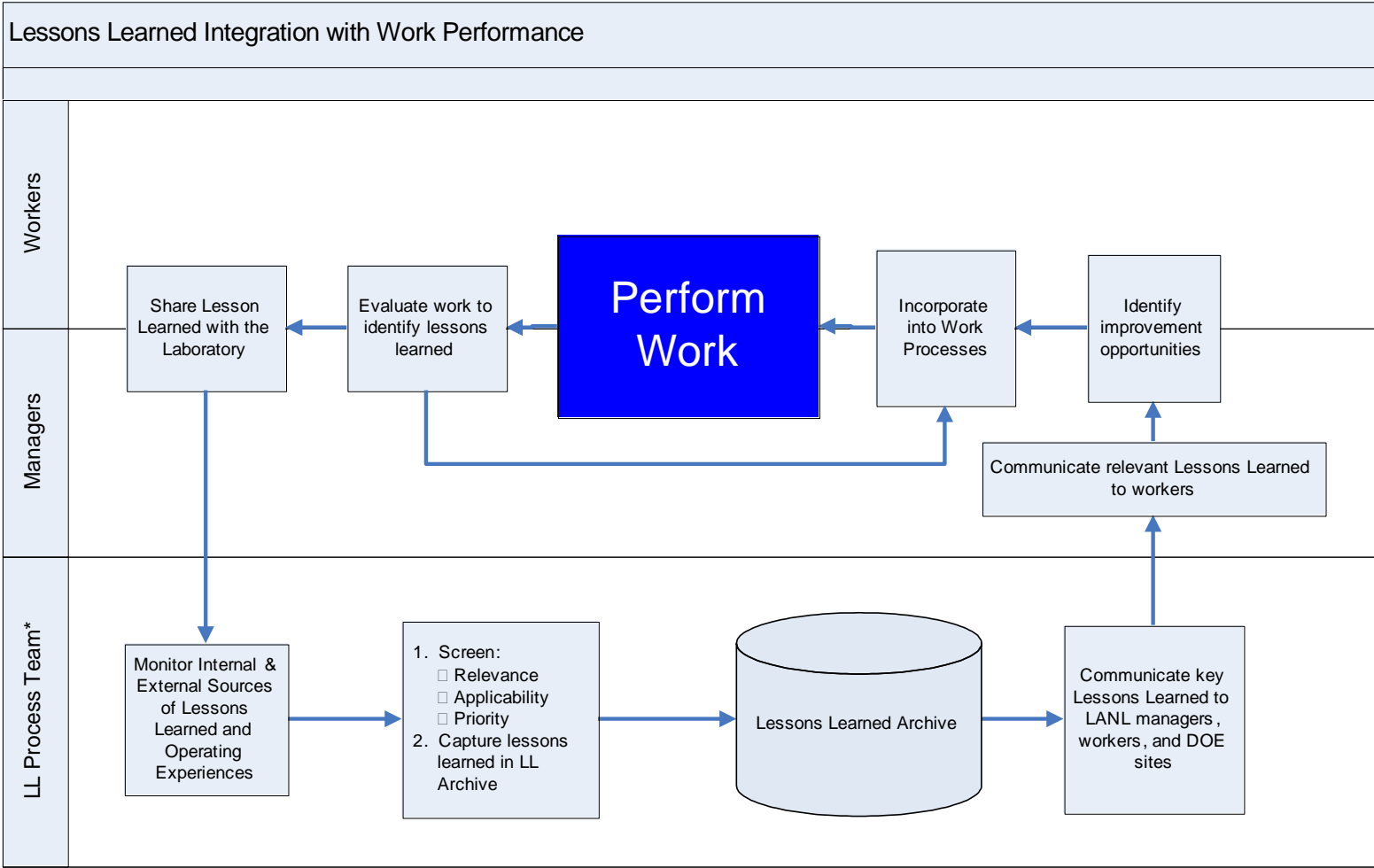
- **Operating Experience and Lessons Learned Process**
  - Collects, screens, risk-prioritizes, and distributes operating experiences and lessons learned from key external and internal sources using timely communications.
  - Three risk-priority levels with different disposition/communication pathways
- **Lessons Learned and Operating Experience Archive**
  - Captures relevant lessons and best practices reported by the Laboratory managers and workers, contractors, subcontractors, and from other DOE sites and external sources.
  - Knowledge base
- **MIRROR: Translating Events into Actionable Information**
  - Communicates high-leverage actions, lessons learned and best practices associated with operating experience patterns and trends.

# LANL OPEX Requirements Framework

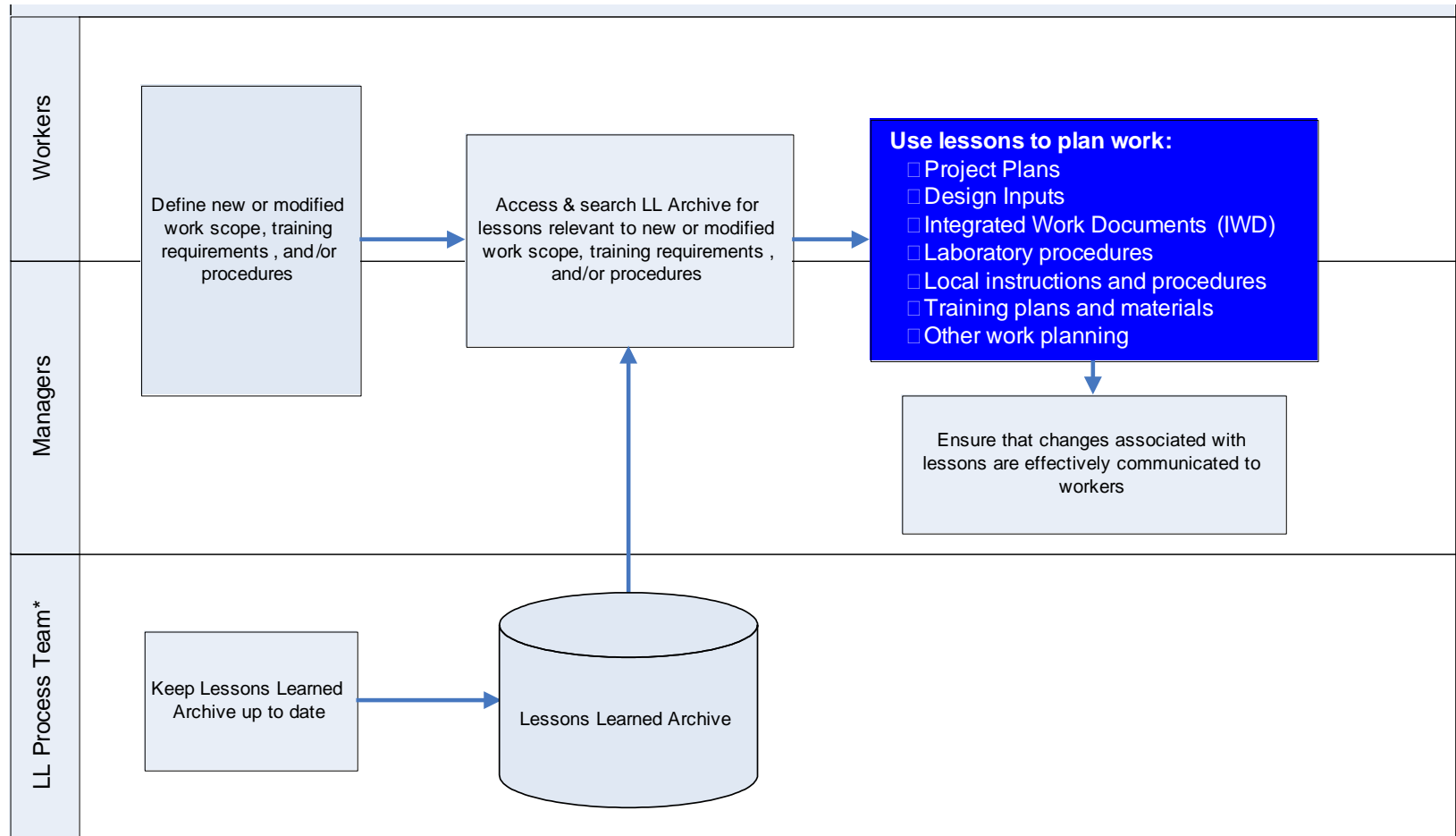
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- **Operating Experience Program Description**
  - Defines components and basic roles for Laboratory organizations
    - System and Process Management
    - Establishes process framework: institutional and local
- **Operating Experience Process Procedure**
  - Defines the institutional process and its interface to local processes
  - Defines risk-based prioritization and associated dispositions
  - Defines sources and frequency
- **Facility and Functional Procedures**
  - Risk-based – not one single approach
  - Define local mechanism and interface to institutional

# Program Goal: Integration with Work Performance



# Program Goal: Integration with Work Planning



# Operating Experience & Lessons Learned Process

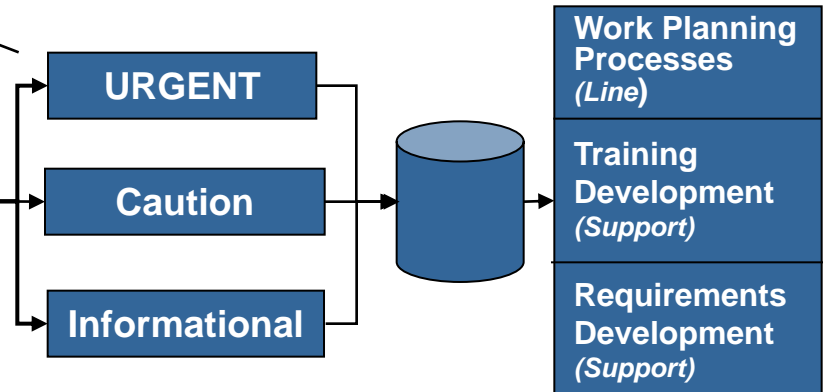
(Risk-based Prioritization derived from O210.2 with addition of Security from IMI levels)

**Urgent** = *Immediate* action is needed to ensure that the Laboratory is in a safe, secure, and environmentally sound mode relative to the information identified in the alert. Active engagement of relevant manager(s). Formal tracking to closure.

Monitor Sources → Screen → Clarify → Communicate

**Caution** = *Timely* action may be needed. Routine notification through Lessons Learned and Operating Experience Weekly Summary emails and LANL Announcements. LANL managers determine relevance and take needed action.

**Informational** = *Future* action may be needed. Posted to LANL Announcements if broadly applicable. Part of standard information flows.



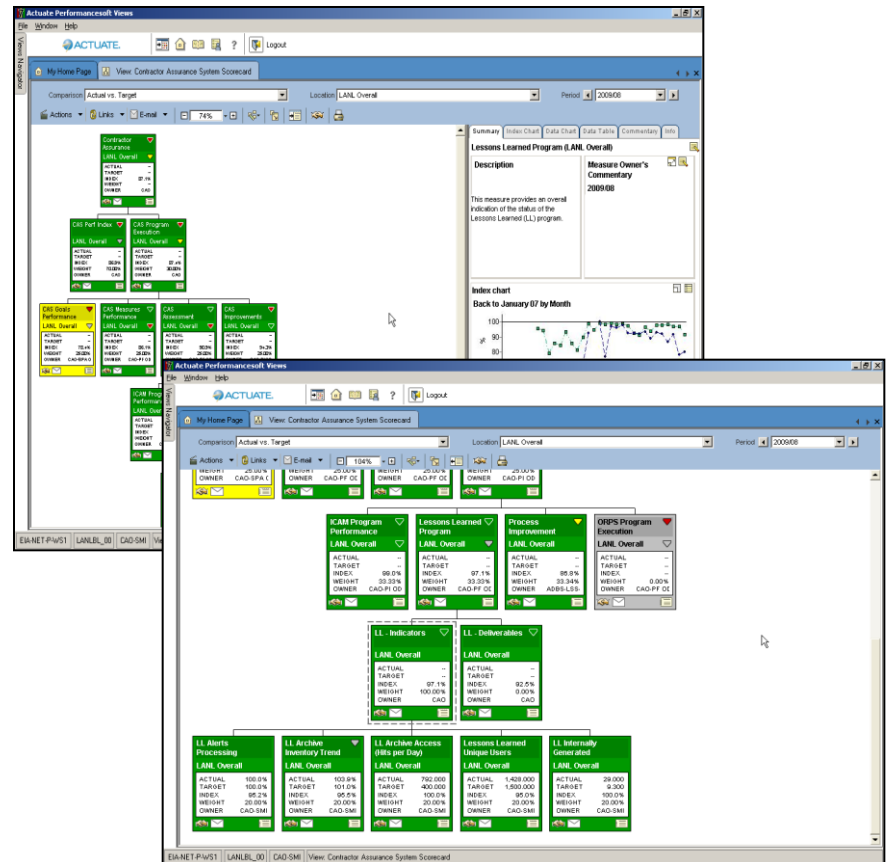
# Main Sources of Information

Source	Monitoring Frequency
<b>External</b>	
DOE HSS Server/Web (LL, Alerts, OE Summaries, Security Lessons Learned Center (SLLC))	Daily
Partner ES&H Alerts (Bechtel, BWXT, etc.)	As Issued
ORPS (from Other Sites)	Daily
Suspect Counterfeit/Defective Items	Daily
Enforcement Actions and GAO Reports	Monthly
Consumer Products (CSPC, FDA)	As Issued
<b>Internal</b>	
Cat 1 and 2 Issues (to potentially share DOE-wide)	Monthly
Assessments (i.e. Management, Independent, Third Party such as ISO 14001 Environmental)	Monthly
LANL Events ( <a href="mailto:event@lanl.gov">event@lanl.gov</a> )	Daily
Non-ORPS Injury/Accident Investigations	Quarterly
Other Internal (Lesson Learned Submission Forms, IWDs, CAPs, EFCOG Best Practice Documents, ad hoc submissions)	As Submitted

# Lessons Learned Measures

## ■ Use CAS Dashboard

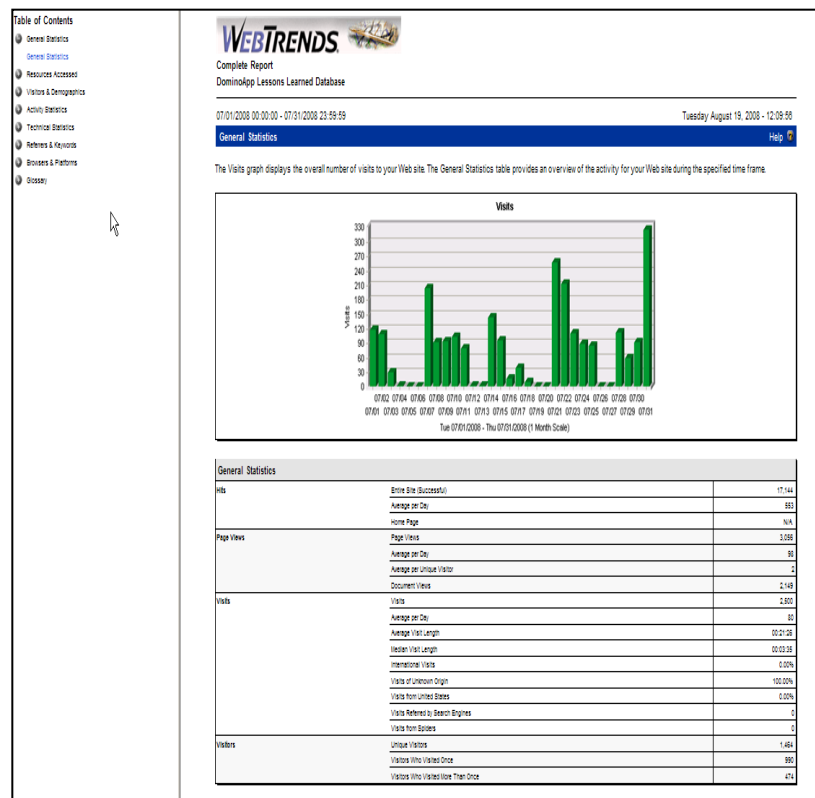
- LL Indicators
  - Processing time performance
    - Urgent within 24 hours
    - Caution within 7 days
  - Users
  - Access Rate
  - Knowledge Inventory
  - Internally Generated
- LL Program Execution
  - Routine Process Milestones
  - Progress on Improvement Plan
  - Corrective Actions



# Supporting the Measures

## ■ Web Instrumentation

- Hits not really useful
- Monthly Unique Users
  - One Time
  - More than Once
- What is being accessed
  - Most accessed lessons
  - By product
- Who is accessing
  - Organizational
  - URLs



# Weekly Summary Email

## Lessons Learned and Operating Experience

### ■ Recipients

- Division Leaders and above
- NNSA
- Upon request
- Augments daily ORPS

### ■ Scan-able

- 6 most important/actionable
- > 6 has lower read rate

### ■ Specific = Relevant

1. Define Most Specific Customer
2. Select Words in Headline
3. Integrity Check
4. Order (First and Last Most Read)

X-Sieve: CMU Sieve 2.3  
X-NE-Z-Virus-Scanner: amavisd-new at esh-mail.lanl.gov  
X-Mailer: QUALCOMM Windows Eudora Version 6.2.5.6  
Date: Fri, 30 Oct 2009 09:37:34 -0600  
To: ll\_network@lanl.gov, event@lanl.gov, wsst@lanl.gov  
From: Linda A Collier <lcollier@lanl.gov>  
Subject: LESSONS LEARNED AND OPERATING EXPERIENCE WEEKLY SUMMARY  
Sender: owner-ll\_network@mailist.lanl.gov

The following have been added to the [LANL Lessons Learned and Operating Experience Archive](#). Please communicate as applicable with appropriate members of your organization and co-workers in order that similar experiences may be avoided for your operations and provide a safer work environment for all.

[CAUTION: Worker sustains broken ribs from bicycle accident @ LANL](#)

[CAUTION: Work crew leaves fluorescent light conductors exposed at shift end @ SWPF](#)

[CAUTION: Heat tape events lead to fires @ Portsmouth](#)

[INFORMATIONAL: Drill rig hoist cable fails when overloaded @ Paducah](#)

[ANATOMY OF AN INCIDENT - Unencrypted E-mail](#)

If you have questions regarding the Operating Experience Program, feel free to call me or email the Lessons Learned Team at [lessonslearned@lanl.gov](mailto:lessonslearned@lanl.gov). If you have a lessons learned or operating experience to share, please use the [Lessons Learned Submission Form](#).

# LANL Homepage

- **Communication Overlap**
- **Main Users**
  - Workers
- **All applicable lessons and experiences**
  - Includes worker home safety
- **Specific = Relevant**
  - Even shorter headlines
  - Pre-job brief customers

The screenshot shows the LANL Today homepage as of Friday, October 30, 2009. The page features a navigation bar with links for 'About LANL', 'Employees', 'News', 'ES&H', 'Security', 'Science', and 'LANL Outside'. A search bar is located in the top right corner. The main content area includes a 'LANLtoday' header, a featured article titled 'Multibillion-atom molecular dynamics simulations of how extreme shock waves break materials into pieces', and a 'Top News' section with several headlines. A 'National Day of Remembrance' banner is also visible. The 'Announcements' section is circled in red, containing a list of safety-related items such as 'Faulty wiring/vibration shorts causes fire', 'Quantum Office Chairs recalled', and 'Worker exposed to 110V removing recep covers'. A right-hand sidebar contains 'PERSPECTIVES', 'Alerts', and a 'Help Desk' section with various service links.

# Internal Lessons Learned Submission

## ■ Adobe Fill-able Form

- Just the Facts
  - Word Docs too slow, costly, hard to share with DOE
- Field Validation – reduce errors
- Fields support processing
  - Screening and prioritizing
  - Interface to DOE/HSS
- Includes picture objects
- Submit Button linked to LL Archive and Process
- Becoming standard at facility level

The screenshot shows the 'Lessons Learned' submission form from Los Alamos National Laboratory. At the top right, there are buttons for 'Submit by Email' and 'Print Form'. The form includes the following fields:

- Title: [Text input field]
- Current Date: [Text input field] Date that related events occurred if relevant: [Text input field]
- Name: [Text input field] Z Number: [Text input field] Email: [Text input field]
- Directorate: [Text input field] Organization: [Text input field] Phone: [Text input field] TA-Bldg/Rm: [Text input field]
- Authorized Derivative Classifier (if relevant): [Text input field]

Below the fields, there are two large text areas for descriptions:

Describe what lesson was learned in a manner that helps others take effective action (if additional space is needed or photos are to be included, sheets are available at the back)

Describe the experience(s) that led to learning the lesson in a manner that helps others understand if it might be relevant to them (if additional space is needed or photos are to be included, sheets are available at the back)

# LANL Mirror (Quarterly Publication)

- **Translating Events into Actionable Information**
  - Was ORPS Categories
  - Now systems and processes
  - Causes and HPI coming
- **Analyses of patterns and trends in incidents and reportable occurrences**
  - Two-Year Reflection
- **Communication of high-leverage lessons and actions**
- **Recognition for developing and sharing lessons learned**



# Underway: Archive a Collaboration Site

- **MS Sharepoint**
- **Reduced Cost**
  - IT Costs
  - Process Costs
- **Increased Focus**
  - Topical Libraries
  - Photo Libraries
  - Communities
  - Discussion Groups
  - Alerts
  - RSS

The screenshot shows the 'Lessons Learned and Operating Experience Archive' website. The page title is 'Lessons Learned and Operating Experience Archive' and the URL is 'This Site: Lessons Learned and...'. The page content includes a navigation menu on the left with categories like 'Lessons Learned Libraries', 'Lessons Learned Action Tracking', 'Discussion Boards', 'Sites', 'People and Groups', and 'Pictures'. The main content area features a note about PII, OOU, or Confidential Information, a description of the LANL Operating Experience Program, and sections for 'Lessons Learned Links', 'Announcements', 'Navigation Links', and 'This Week in Pictures'. The 'Lessons Learned Links' section lists various resources such as 'Share a Lessons Learned with LANL or DOE using this fillable form', 'The LANL MIRROR - Translating Events into Actionable Information', 'DOE Operating Experience Summaries', 'DOE ORPS Weekly Summary of Significant Occurrences', 'DOE Corporate Lessons Learned Collection', 'U.S. Consumer Product Safety Commission (Recalls and Product Safety News)', and 'U.S. FDA Recalls, Market Withdrawals, & Safety Alerts'. The 'Announcements' section states 'There are currently no active announcements.' The 'Navigation Links' section lists links like 'LANL Inside Home Page', 'LANL Organization Listings', 'LANL Lessons Learned Home Page', 'LANL Performance Communication Center', 'LANL Dashboard', 'LANL Integrated Assessment Schedule', and 'LIMITS'. The 'This Week in Pictures' section shows a photo of a yellow banana with a 'View slide show' link below it.

# Underway: Screening Process Improvements

## ■ Submittals in special library

- Internal via email
- Externals manual

## ■ Screening and disposition transparency

- Disposition fields

## ■ Workflow to move to topical libraries

- Triggers notifications

Lessons Learned and Operating Experience Archive

Lessons Learned and Operating Experience Archive

Home

Lessons Learned and Operating Experience Archive > Screening and Tracking

Screening and Tracking

Library used by the Lessons Learned Process Team to screen and dispense lessons learned.

Actions ▼

Type	Name	Title	Date Received	Process Document	Relevant to LANL?	New to LANL?	Event Linkages	Topical Area	Level Description	Modified
	Compact Tractors Recalled by John Deere Due to Injury Hazard	Compact Tractors Recalled by John Deere Due to Injury Hazard	9/28/2009	Completed	Somewhat Relevant	Yes	None of the Above	Facility Management and Ops	Equipment/Material	10/5/2009 9:5
	DOE - Heat Trace Failure after Unit Transportation LATA Parallax Portsmouth LLC		10/23/2009		Somewhat Relevant	Partially	None of the Above	Emergency Mgt; Facility Management and Ops; Safety and Health	Equipment/Material	10/26/2009 10
	LANL - FMC Working Group Initiates Savings	LANL - FMC Working Group Initiates Savings	9/3/2009		Highly Relevant	Yes	None of the Above	Business Systems	Facility/Operation/Functional Area	10/26/2009 9:
	Lessons Learned Regarding Parallel Databases Documenting Institutional Performance	Lessons Learned Regarding Parallel Databases Documenting Institutional Performance	10/1/2009		Somewhat Relevant	Yes	None of the Above	Business Systems; Contractor Assurance	Management System	10/26/2009 10
	YELLOW - Counter Top Falls and Strikes Employee, Resulting in	DOE - Counter Top Falls and Strikes Employee, Resulting in	10/7/2009		Somewhat Relevant	Yes	Don't Know	Safety and Health	Work Activity	10/7/2009 11:

# Underway: Performance Communication Center

## ■ Modernizing Communications

- Chat with an Expert
  - Builds Knowledge Base
- Blog
- Role-based information
  - Relevant Tools
  - Relevant Requirements
- Best Practices
  - Custom version of LL Form
  - Recognition

The image displays two screenshots of the LANL Performance Communication Center website. The top screenshot shows the homepage with a 'Performance Corner' article titled 'LANL Star: Anita Carrasco, works with FARG Arm Coordinate Measuring Machine' and a 'Steps to Success' section. The bottom screenshot shows a 'Lessons Learned' article with a 'Chat with an Expert' button. The website features a navigation bar with icons for LANL Dashboard, Integrated Assessment, Issues Management, Policy, and Performance. The main content area includes sections for 'Performance Message', 'Contractor Assurance System', 'Lessons Learned', 'Related Links', 'LANL Performance Forum', 'Policies', and 'Related Resources'. A 'Chat with an Expert' button is prominently displayed in the bottom right corner of the second screenshot.

# Nine Lessons We have Learned

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- 1. Build continuous improvement into the LL Process**
- 2. Integrate with other key processes (be the flexible one)**
- 3. Lessons Learned is a Knowledge Management Process**
  - Transactional Process only for High Risk
- 4. Conservation of Attention Law applies**
  - Time to “Think” is a precious commodity
- 5. Be Specific to Be Read – Counter-Intuitive**
- 6. Avoid Becoming a Work-Around**
  - LL is not a replacement for effective management and communications
- 7. Manage-By-Fact: Measure, Measure, Measure**
- 8. Efficiency is the Key to Effectiveness**
- 9. Look for Innovations outside of our industry**
  - E-Media, Military AARs, Healthcare Quality and Adverse Outcome

# Improving the Lessons Learned System at Los Alamos National Laboratory

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Questions?