Occurrence Reporting and the Corporate Operating Experience Programs

2011 Facility Representative/Safety System Oversight Workshop
Las Vegas, NV

May 4, 2011

Eugenia Boyle
Office of Analysis
Office of Health, Safety and Security

Contents

- HSS Directives Review Process
- Occurrence Reporting Directives
- Draft DOE Order 232.2, *Occurrence Reporting and Processing of Operations Information*
  - Status & Changes
  - Model
  - Criteria
  - Areas for Continuous Improvement
- DOE's Corporate Operating Experience Program, Products, Websites & Availability
  - Public Analysis Tool for Occurrence Reporting
  - Nuclear Safety Strategic Outcomes
  - Blogs and Wikis

HSS Directives Review Process

Purpose:

- To streamline and clarify requirements.
- Provides an opportunity to improve the Occurrence Reporting and Processing System (ORPS) process.
- Reinforces the use of ORPS to promote organizational learning in achieving line program mission success consistent with DOE's Integrated Safety Management System goals.

Occurrence Reporting Directives

Directives Format Changes

- Manual changed to an Order, draft DOE O 232.2, *Occurrence Reporting and Processing of Operations Information*
  - Body of the Order significantly reduced
  - Six attachments
    1. Contractor Requirements Document
    2. Reporting Criteria
    3. Occurrence Reporting Preparation
    4. Occurrence Reporting Model
    5. Causal Analysis Tree
    6. Definitions

Occurrence Reporting Directives

Directives Format Changes (continued)

- Occurrence Reporting Guides are cancelled:
  - DOE G 231.1-1, *Occurrence Reporting and Performance Analysis Guide*
    1. List of fields will be posted on the web.
    2. EFCOG Contractor Guide for Performance Analysis can be used.
  - DOE G 231.1-2, *Occurrence Reporting Causal Analysis Guide* - being converted to a Technical Standard. Draft is in Technical Standard RevCom now.

DOE Draft Order 232.2

Office of Health, Safety and Security

Order Objectives:

- To ensure that the Department of Energy (DOE) and National Nuclear Security Administration (NNSA) are informed about events that could adversely affect the health and safety of the public or the workers, the environment, DOE missions, or the credibility of the Department.

- To promote organizational learning consistent with DOE's Integrated Safety Management System goal of enhancing mission safety, and sharing effective practices to support continuous improvement and adaptation to change.

Draft Order Status & Changes

Status:

Draft ORPS Order is currently in RevCom, which closes on May 16.

Past and Continuing Emphasis:

- Complex-wide Notification
- Database for Analysis (i.e., learning)

New Emphasis:

- Encourage Learning Organizations
- Less prescriptive Occurrence Reporting Model
- Incorporate Graded Approach in Investigations and Analysis
- Emphasize the Identification of Recurring Occurrences

Occurrence Reporting Model

Significance Category	Timelines*	Prompt Notification	Final Report Approval
Operational Emergencies (defined by DOE O 151.1C)	**Categorize**: ASAP **Prompt Notification**: NLT 30 min (15 min if further classified) **Written Notification**: COB next business day not to exceed 80 hrs **Final Report**: 45 calendar days	To Facility Representative and DOE Headquarters Operations Center	By Facility Representative and Program Manager
Significance Category 1	**Categorize**: NLT 2 hrs **Prompt Notification**: NLT 2 hrs **Written Notification**: COB next business day not to exceed 80 hrs **Final Report**: 45 calendar days	To Facility Representative and DOE Headquarters Operations Center	By Facility Representative and Program Manager
Significance Category R	**Categorize**: NLT 2 hrs **Written Notification**: COB next business day **Final Report**: 45 calendar days		By Facility Representative
Significance Category 2	**Categorize**: NLT 2 hrs **Prompt Notification**: NLT 2 hrs **Written Notification**: COB next business day **Final Report**: 45 calendar days	To Facility Representative (When required, DOE Headquarters Operations Center)†	By Facility Representative
Significance Category 3	**Categorize**: NLT 2 hrs **Prompt Notification**: NLT 2 hrs **Written Notification**: NLT 2 business days **Final Report**: 45 calendar days	To Facility Representative (When required, DOE Headquarters Operations Center)†	By Facility Manager (local/program option for Facility Representative)
Significance Category 4	**Categorize**: NLT 2 hrs **Prompt Notification**: NLT 2 hrs (as required) **Short Form Report**: NLT 2 business days	When required, to Facility Representative and DOE Headquarters Operations Center†	Per local procedures

Occurrence Reporting Model

Office of Health, Safety and Security

Draft Model Includes:

- Categorization and Reporting Timelines, including Prompt Notification
  - Reporting times are the same as before, however “or as soon thereafter as reasonably possible” has been added to provide flexibility within reason.
- Causal Analysis
  - Graded approach for considering the actual or potential significance when choosing scope and tools.
  - Investigation and analysis methods and the reason for choosing them must be included in the report.

Occurrence Reporting Model

Draft Model Includes (continued):

- Corrective Actions – Graded approach with the level of corrective actions determined by the reporting organization.
- Lessons Learned – References new DOE O 210.2A, *DOE Corporate Operating Experience Program.*
- Final Report Approvals – FRs continue to approve at the Sig Cat 2 level.
- Recurring Occurrences
  - Still require analysis of reportable and non-reportable occurrences.
  - Still perform quarterly with rolling 12-months of data.

Reporting Criteria

Specific Draft Criteria Changes:

- Occupational injuries and occupational exposures were separated to improve searching.
- New SC-2 criteria on an occupational injury with 5 or more days hospitalization.
- Fires and explosions were separated to improve searching.
- Hazardous Electrical Energy Control was separated from other hazardous energy control and it now uses the DOE/EFCOG Electrical Severity Measurement Tool as its reporting criteria.

Reporting Criteria

Office of Health, Safety and Security

Specific Draft Criteria Changes (continued):

- Criticality was changed (still needs work).
- Added to Group 4, Facility Status, a temporary stop of work directed by DOE.
- Added releases of sulfur hexafluoride to environmental releases (Group 5A).
- Extensive environmental degradation was added to environmental (Group 5B).
- RadCon has some changes

Reporting Criteria

Office of Health, Safety and Security

Specific Draft Criteria Changes (continued):

- Nuclear Explosives Safety criteria have been grouped into 3 criteria.
- Transportation has been revamped.
- Some changes to Noncompliance Notifications, Group 9.
- Group 10 #3, Near Miss, has been changed to require a near miss when something physically happens.
- Group 10 #4 is new and is a hazardous condition without something physically happening.

Occurrence Reporting: Lessons-Learned

Office of Health, Safety and Security

Areas for continuous improvement:

- Metrics – Rote compliance with the Order (e.g., lag time analyses on report submission dates and times) is NOT a good metric, unless noncompliance (e.g., time delays in categorizing and reporting) is constant. Instead, better metrics for meeting the intent of the Order are:
  - Foster an environment of open reporting and accurate categorization ("culture")
  - Ensure effective and timely communication of ORPS events ("process")
  - Conduct high quality causal analysis and develop effective corrective actions ("quality")
  - Reduce severity and frequency of events ("learning")

  A draft EFCOG white paper on ORPS metrics that will build on these critical success factors, plus identify both important outcome measures and actionable leading indicators to monitor performance, is expected in late May.

Occurrence Reporting: Lessons-Learned

Office of Health, Safety and Security

Areas for continuous improvement (continued):

- Reporting criterion 10(2) Management Concern – Is it being used in place of another criterion that applies? If so, it should be recategorized to the proper criterion. 10(2) is to be used when there are NO other reporting criteria that correspond to the event.

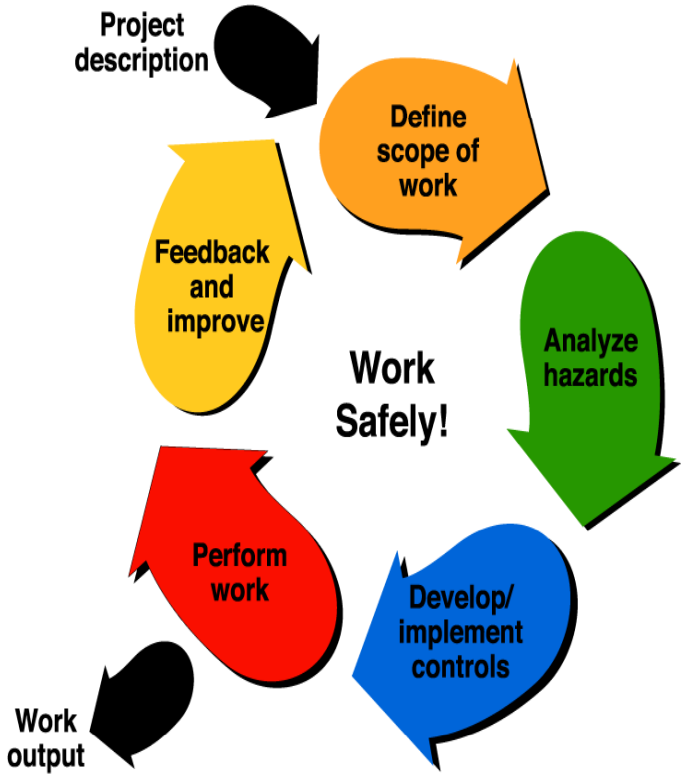
- Report quality – Is the event understandable by readers? Is the appropriate level of analysis being performed? Are the cause codes and corrective actions properly listed in their respective data fields and described in the Cause Description field?

Corporate Operating Experience Program

Office of Health, Safety and Security

Includes:

- Nuclear Safety Strategic Outcomes
- Operating Experience Wiki
  - ORPS Final Reports
  - Accident Investigations
  - Electrical Safety
  - Safety Videos of the Week
  - BP Deepwater Horizon
  - Japanese Earthquake, Tsunami, Reactors
  - Suspect /Counterfeit Items
- Operating Experience Summary Blog
- Highly Reliable Performance Blog
- Corporate Lessons Learned Database



ORPS Final Reports

- **Available at http://operatingexperience.doe-hss.wikispaces.net/Public+Occurrence+Reports.**
  ORPS Final Reports are publicly available.
- **Contents –**
  - Contains reports from 2005 to present
  - Data is updated daily
  - Information is displayed in tables and graphs
  - Searchable by reporting organization and event-oriented keywords
  - Full occurrence report can be viewed and printed
- **Future Enhancements –** Continue to develop this functionality as improvements are identified.

Public Analysis Tool for Occurrence Reporting

Office of Health, Safety and Security

By Organization | By Keyword

ORPS
Health, Safety and Security

U.S. DEPARTMENT OF ENERGY
Occurrence Reporting and Processing System

Final Report Data Published as of: 5/20/2010 7:55:30 AM

Tutorial

Select Year: 2010

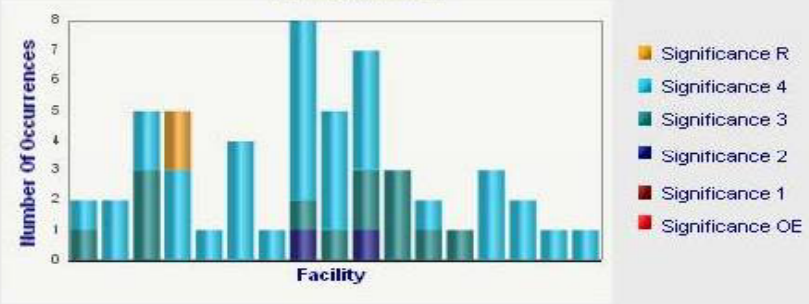
Program Office: All

Year: 2010

Site	Occurrences
EE: National Renewable Energy Laboratory	1
EM: Argonne National Laboratory East	1
EM: Carlsbad Field Office	1
EM: East Tennessee Technology Park	1
EM: Hanford Site	53
EM: Idaho National Laboratory	25
EM: MOAB	1
EM: Mound Plant	1
EM: Nevada Test Site	3
EM: Oak Ridge National Laboratory	2

Click on the Site Name to select and view Facility Chart to the right

EM: Hanford Site



Select a Facility to see Occurrence Reports in the table below
Note: Problem with Y- Axis for values 4 and less to be corrected

Report Number	Subject
EM-RL--CPRC-CENTPLAT-2010-0001	Entrance into U Canyon without Exhaust Fan Operating - ARRA
EM-RL--CPRC-CENTPLAT-2010-0002	272-E Worker Cut into Conduit Prior to Facility Cold & Dark Electrical Validation - ARRA

Year: 2010 **Significance:** 4
Program Office: Environmental Management
Site: EM: Hanford Site
Contractor: CH2MHILL Plateau Remediation Company
Facility: Central Plateau Remediation Project
Report EM-RL--CPRC-CENTPLAT-2010-0001
Keyword: Conduct of Operations
Subject: Entrance into U Canyon without Exhaust Fan Operating - ARRA

Public Analysis Tool for Occurrence Reporting

(continued)

Office of Health, Safety and Security

By Organization | By Keyword

ORPS Health, Safety and Security

U.S. DEPARTMENT OF ENERGY
Occurrence Reporting and Processing System

Final Report Data Published as of: 5/20/2010 7:55:30 AM

Select Year: 2010 | 2009 | 2008 | 2007 | 2006 | 2005

Keywords	Occurrences
Authorization Basis	25
Conduct of Operations	36
Electrical Safety	13
Environmental Releases/Compliance	29
Equipment Degradation/Failure	25
Fire Protection	17
Industrial Operations	10
Injuries Requiring Medical Treatment Other Than First Aid	35
Lockout/Tagout (Electrical or Mechanical)	12
Near Miss (Could have been a serious injury or fatality)	24
Nuclear Criticality Safety Concern	2
OS/IH	9
Radiological Control (Other)	38
Radiological Skin Contaminations/Uptakes/Overexposures	10
Safeguards and Security	4
Shipping QA	11
Suspect/Counterfeit Items - Defective Items	39
Vehicle Accident	4
Total	**343**

Site	Occurrences
EM: Hanford Site	6
EM: Idaho National Laboratory	2
EM: Nevada Test Site	1
EM: Portsmouth Gaseous Diffusion Plant	2
EM: Savannah River Site	5
NA: Lawrence Livermore National Lab.	3
NA: Los Alamos National Laboratory	4
NA: Pantex Plant	4
NA: Y12 National Security Complex	2
NE: Idaho National Laboratory	1
SC: Brookhaven National Laboratory	2
SC: Lawrence Berkeley Laboratory	1
SC: New Brunswick Laboratory	1
SC: Pacific Northwest National Laboratory	2
Total	**36**

Report Number	Subject
EM-SR--PSC-SWPF-2010-0003	Burk bar fell from rope while being lowered to the ground.
EM-SR--SRNS-CPWM-2010-0002	Low Level Waste Trench Performance Assessment Limits Exceeded
EM-SR--SRNS-HBLINE-2010-0003	Activation of CN-21 Refractometer Alarm (U)
EM-SR--SRNS-HCAN-2010-0005	Activation of 17.8E High Coil Pressure Interlock (U)
EM-SR--SRR-HTANK-2010-0002	25H Evaporator Lifting to Drop Tank

Year: 2010 **Significance:** 3
Program Office: Environmental Management
Site: EM: Savannah River Site
Contractor: Savannah River Nuclear Solutions
Facility: H-Canyon
Report EM-SR--SRNS-HCAN-2010-0005
Keyword: Conduct of Operations
Subject: Activation of 17.8E High Coil Pressure Interlock (U)

Nuclear Safety Strategic Outcomes

- **Beta version available at http://www.hss.doe.gov/beta/nsi/nsibeta.html.** It will be publicly available once pushed to production,
- **Contents –**
  - Nuclear Safety Indicators (NSI) Strategic Outcome Categories
  - NSI Trends by DOE Total, PSO, and Site
  - NSI Dashboard
- **Future Enhancements –** Complete development and push it to production to increase its value to users – DOE, domestic, international.

Nuclear Safety Indicators

Provides a means of quantifying the Nuclear Safety of the complex, based on ORPS information provided by the sites, by using the overall weighting factors of the Performance Measures.

- The indicators are broken down into two Groups (Facility Operations and Fires – Explosions – Evacuations) and seven Indicators.
- Each Indicator consists of two to four Performance Measures which are linked to specific ORPS reporting criteria.
- Each Performance Measure is evaluated using a pair-wise comparison to determine a ranking of each Performance Measure within each Indicator.
- Each Indicator is evaluated in the same manner to determine its ranking within the Group and the Groups were then ranked as to overall importance.

The indices are not normalized, therefore a site with significant nuclear operations will naturally have a higher index than a smaller site.

Nuclear Safety Strategic Outcomes

Office of Health, Safety and Security

Strategic Outcomes | NSI Trend | NSI Dashboard | About NSI

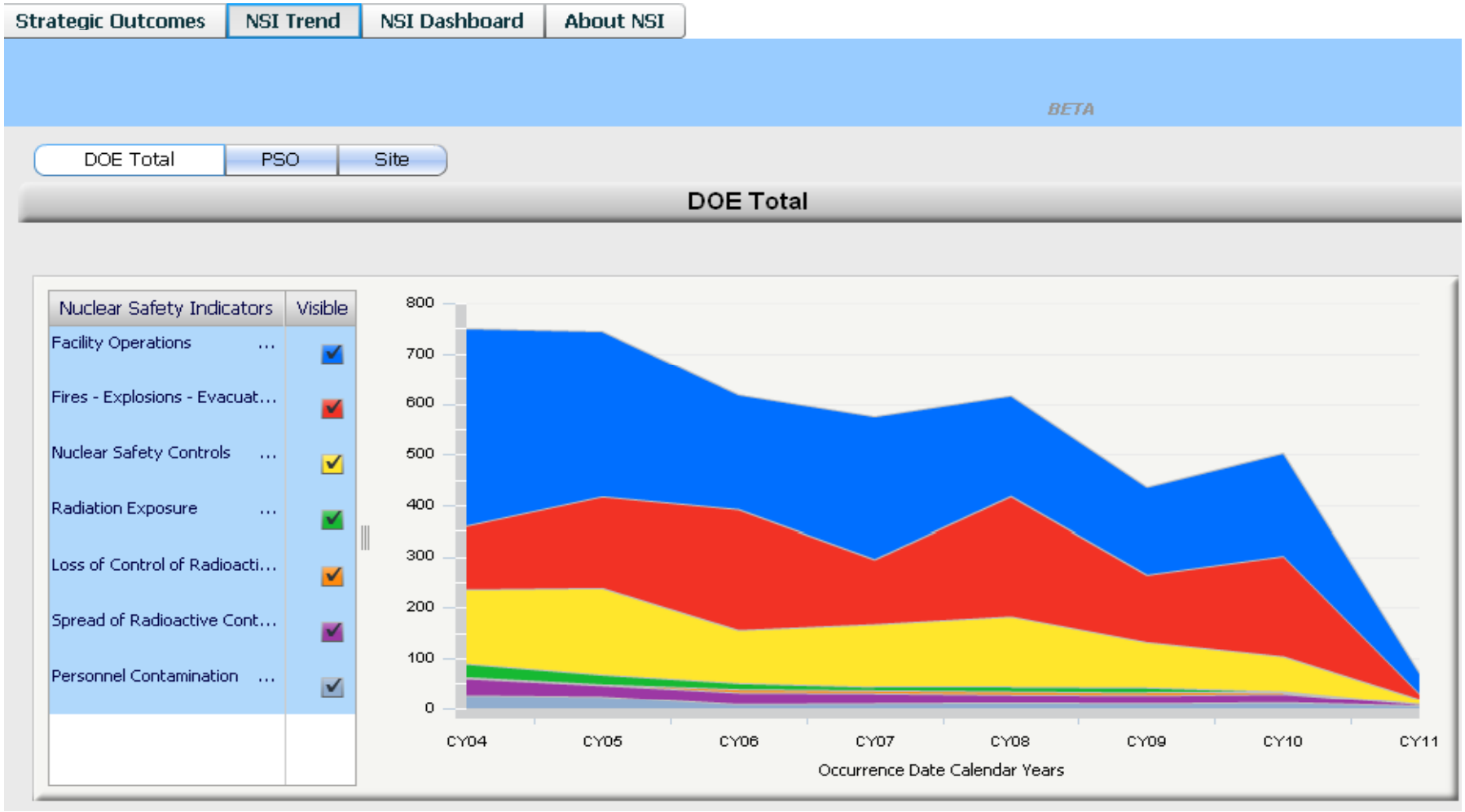
BETA

Nuclear Safety Strategic Outcomes

NSI Strategic Outcome Categories	Reporting Criteria	CY 2004	CY 2005	CY 2006	CY 2007	CY 2008	CY 2009	CY 2010	CY 2011
Technical Safety Requirement Violation	3A(1)	0	0	0	0	0	0	0	0
Nuclear Criticality Safety	3C(1)	0	0	1	0	0	0	0	0
Fires/Explosions within Containment Boundary	2B(1)	1	1	0	0	0	0	0	1
Radiation Overexposure	6C(1)	0	0	0	1	0	0	0	0
Personnel Contamination	6D(1)	0	0	0	2	0	0	1	0
Nuclear Explosive Safety	7(1)	0	0	0	0	0	0	0	0

Reporting Criteria	
3C(1)	A loss of multiple nuclear criticality process-condition controls, where processes include operation, transport, and storage of fissionable materials, such that no valid controls are available to prevent a criticality accident.

Nuclear Safety Indicators Trends



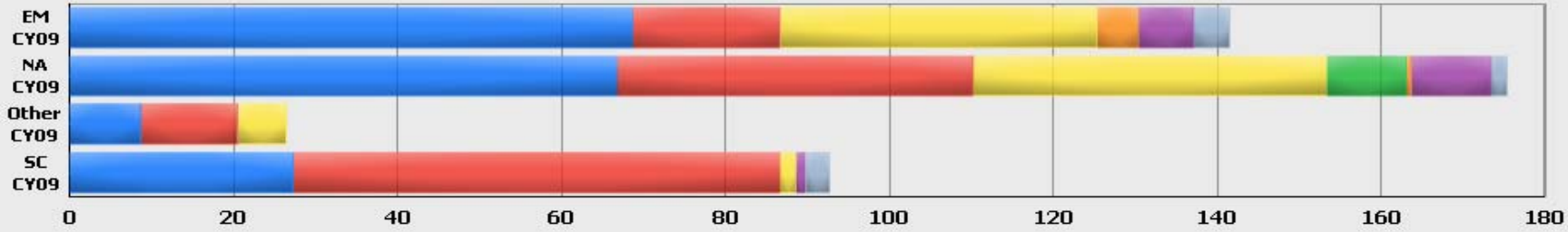
Nuclear Safety Dashboard

HSS
Office of Health, Safety and Security

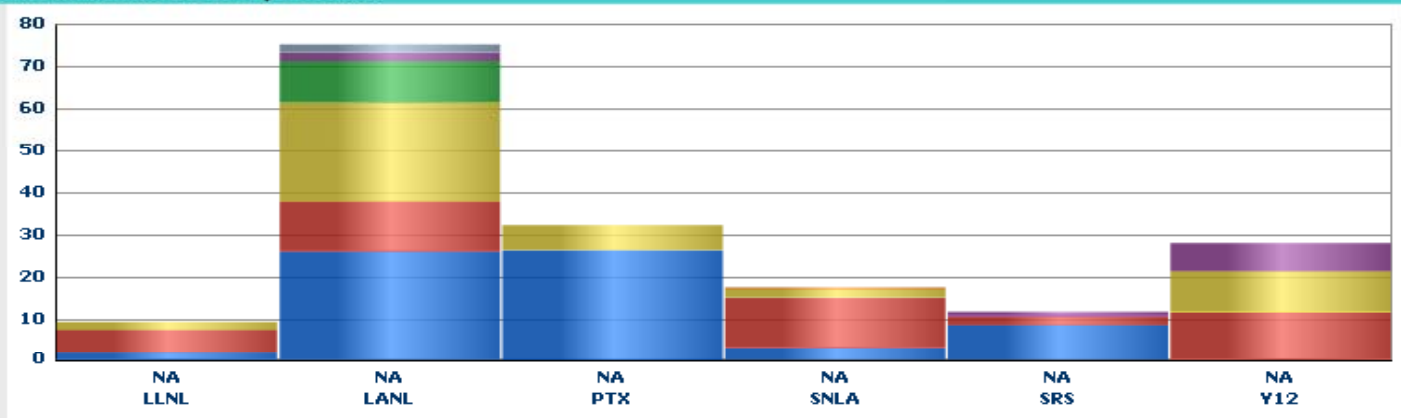
Nuclear Safety Index Information

Select Year CY09

PSO Nuclear Safety Index



Site Nuclear Safety Index



Site Legend

Sites	
LLNL	Lawrence Livermore
LANL	Los Alamos
PTX	Pantex
SNLA	Sandia NM
SRS	Savannah
Y12	Y12 Site

Nuclear Safety Performance Measure Details

Operating Experience (OE) Wiki

- **Available at http://operatingexperience.doe-hss.wikispaces.net/.** Publicly available. There were 8,377 views of the Wiki in March.
- **Contents –**
  - Contains a video of the week
  - Subject-oriented Wiki pages
    - BP Deepwater Horizon
    - Japanese earthquake, tsunami, and nuclear reactor status.
    - Public Occurrence Reports
    - Suspect/counterfeit items
    - External OE Sites
  - Houses all of the Operating Experience Committee (OEC) information on meetings, conference calls, and operating experience
- **Future Enhancements –** Continue to expand this Wiki to include new OE as identified, thus increasing its value to users – DOE, domestic, international.

OE Wiki

Office of Health, Safety and Security

Operating Experience

home | PAGE | DISCUSSION (3) | HISTORY | NOTIFY ME

Join this Wiki
Recent Changes
Manage Wiki
Search

EXTERNAL LINKS
OE Summary Blog
DOE Lessons Learned
External OE Pages
Highly Reliable Performance Blog
Vehicle Safety Awareness Wiki
Electrical Safety Blog
Electrical Safety Wiki

WIKI QUICK LINKS
Home
Help
What's New
Current Issues Forum

OPERATING EXPERIENCE COMMITTEE
OEC Home
Spring 2010 Meeting
OEC Last Call
OEC Next Call
OEC Call Archives

ALL PAGES
Accident Investigations
Communities of Interest
Current Issues Forum
Deepwater Horizon Accident
Disclaimer

Welcome to the Operating Experience Wiki

The HS-30 Operating Experience Program manages and exchanges operating experience data from across and outside the DOE Complex in order to share good work practic
you'll find links to reports and information on a variety of useful safety and operational topics.

What is a Wiki?

A wiki is a website that allows members to easily edit the content of the page. This page is a wiki, and you as a member can edit the content. The primary content of the wiki is text, but yo
share operational experience and enhance safety. Before you start editing this wiki you may want to check out the wiki Help to access some simple information on editing - or you can sim
page and experiment!

To edit this wiki you must be a member, to join, click HERE .

Video of the Week!

"Fire in the Valley"

From The Chemical Safety Board

Operating Experience Summary (OES) Blog

- **Available at http://oesummary.wordpress.com/.** Open to the public.
- **Articles Posted –** First article was posted in November, 2009. There are currently 30 articles published with a few in draft.
- **Sample OES Blog Article Titles -**
  - U.S. Safety Improvements Resulting From the Historic Triangle Fire
  - Nuclear Facility Construction Noncompliances: Parts 1, 2 and 3
  - Battery Explodes While Charging
  - Haste Makes Waste — Procurement Gone Wrong
  - Russian Hydroelectric Plant Accident: Lessons to Be Learned
  - Type A Accident Investigation—Vehicle Fatality
  - Type B Accident Investigation of Hanford Worker Fall from Catwalk

OES Blog

Office of Health, Safety and Security

Operating Experience Summary

Office of Corporate Safety Analysis

Home | About OES | Acronyms and Initialisms | Blog Policy

Nuclear Facility Construction Noncompliances: Part 1—Overview

May 18, 2010

OE Summary 2010-04, Article 1

Over the past 5 years, the HSS Office of Enforcement has been actively involved in investigating nuclear safety regulatory noncompliances associated with several DOE contractors and subcontractors involved in the construction (both new construction and major modifications) of DOE nuclear facilities. Some of these noncompliances have led to the fabrication and installation of safety significant or safety class Structures, Systems, and Components (SSC) that did not meet specifications or requirements. In addition to the safety implications, the efforts to determine the extent of these conditions, and to correct them, were often extensive, causing significant additional costs and delays on some construction projects.

Read the rest of this entry »

EMAIL SUBSCRIPTION

Click to subscribe to this blog and receive notifications of new posts by email.

Sign me up!

RSS FEEDS

RSS - Posts
RSS - Comments

ARCHIVES

May 2010

Highly Reliable Performance (HRP) Blog

- **Available at http://hsshpi.wordpress.com/.** Open to the public.
- **Articles Posted –** First article was posted in February, 2010. There are currently 31 articles published.
- **Some HRP Blog Article Titles -**
  - DHSG Final Report on Investigation of the Macondo Well Blowout
  - Learning from disaster: Life-long learning for professionals and organizations?
  - Performance and Safety: Convergence toward a Meta Model?
  - The HPI Equation
  - Deviations from Expectations; the Toyota Way?
  - Sustaining a Culture of Safety in the V.A. Health Care System
  - Narrowing the Gap Between the Work as Imagined and Work as Performed at SRS
  - High Reliability; Similar Quests, Many Expressions – a short video

HRP Blog

HSS
Office of Health, Safety and Security

HIGHLY RELIABLE PERFORMANCE
OFFICE OF CORPORATE SAFETY ANALYSIS

Home | About | Blog Policy

ΔW - The Back-Story

May 20, 2010

Over the past few weeks this blog has featured the experiences and insights at three DOE sites where high reliability concepts are being applied to reduce gaps between work as imagined and work as done. In June their stories will be presented at the Probabilistic Safety Analysis and Management Conference. Over several months the authors collaborated with me in their "spare time" to prepare a paper on what they have done, what they are doing, and what they have learned.

This blog entry is to provide a macro context for their work to ground it in high reliability research and historical developments that have led to this point.

Read the rest of this entry »

Leave a Comment » | Uncategorized | Tagged: HRO, DOE, INPO, James Reason, Edgar Schein, Erik Hollnagel, Karl Weick, ISM, Integrated Safety Management, High Reliability, Pantex, Navy, Sidney Dekker, work as imagined, work as done, Hanford, Savannah River Site, Dr. Karlene Roberts, error management, Lewis Carroll, Suparamaniam, John Wreathall, social diffusion, Oak Ridge National Laboratory, Electric Power Research Institute, Ontario Power Generation, EFCOG, Brookhaven National Laboratory, Defense Nuclear Facilities Safety Board, DNFSB, Dr. Bob Bea | Permalink

Posted by wecarnes

SEARCH

Search

RSS FEEDS

RSS - Posts
RSS - Comments

EMAIL SUBSCRIPTION

You are subscribed to this blog (manage).

LINKS

High Reliability Organizing
HSS Operating Experience Summary Blog

Electrical Safety Blog

- **Available at http://hsselectricalsafety.wordpress.com/.** Open to the public.
- **Articles Posted –** First article was posted in November, 2009. There are currently 20 articles published. This blog contains current happenings, monthly summaries, and various other special topics all covering electrical safety. In addition it provides a feedback loop so readers can comment and discuss the information presented here.
- **Some Electrical Safety Blog Articles -**
  - Monthly Electrical Safety Summary: April 2010
  - National Electrical Safety Month

Electrical Safety Blog

Office of Health, Safety and Security

Electrical Safety
Office of Corporate Safety Analysis

Home | About | Blog Policy

Monthly Electrical Safety Summary: April 2010

May 12, 2010

April 2010 Electrical Safety Occurrences

There were 13 electrical safety occurrences for April 2010:

- 2 occurrences resulted in an electrical shock to a worker
- 4 occurrences involved inadequate lockout/tagout (LOTO)
- 7 occurrences involved electrical workers and 6 occurrences involved non-electrical workers
- 7 occurrences involved subcontractors (3 electrical workers and 4 non-electrical workers)
- 2 occurrences involved inadvertent severing of an energized conductor by cutting or drilling into a conduit
- 3 occurrences involved excavation of electrical conduits
- 2 occurrences resulted from inadequate planning

Read the rest of this entry »

SEARCH

Search

RSS FEEDS

RSS - Posts
RSS - Comments

EMAIL SUBSCRIPTION

Click to subscribe to this blog and receive notifications of new posts by email.

Sign me up!

LINKS

Arc Flash Blogs

Contact Information

Eugenia Boyle
Office of Analysis

Occurrence Reporting & Operating Experience Program Manager
Eugenia.Boyle@hq.doe.gov
301-903-3393

Operating Experience Wiki: http://operatingexperience.doe-hss.wikispaces.net/
Operating Experience Summary Blog: http://oesummary.wordpress.com/