Performance Analysis
of
Price Anderson Amendment Act (PAAA) Non-Compliance Tracking System (NTS) and Occurrence Reporting and Processing System (ORPS) Reportable Incidents
Fiscal Year (FY) 2008 2nd Quarter
(April 1, 2007 – March 31, 2008)

Report No. 18

Ernest Orlando Lawrence
Berkeley National Laboratory

Office of Contract Assurance
LBNL Directorate

INTRODUCTION

Consistent with the requirements outlined in the UC Assurance Plan for LBNL, LBNL identifies operational events, accidents and injuries in order to analyze and trend incidents to determine areas of needed improvement and to ensure the effectiveness of corrective actions to mitigate events and identify recurring events. The Occurrence Reporting Process System (ORPS) performance analysis satisfies the quarterly analysis and trending requirement in DOE Order 231.1A, *Environment, Safety, and Health Reporting*.

This analysis report addresses PAAA NTS- and ORPS-reportable incidents that were identified through the FY08 1st Quarter reporting period, which is defined as April 1, 2007 through March 31, 2008. Hereafter, any reference to the "FY08 2nd Quarter reporting period" or "current reporting period" means April 1, 2007 through March 31, 2008.

ANALYSIS METHODOLOGY

The methodology for data analysis of Price Anderson Amendment Act (PAAA) Non-Compliance Tracking System (NTS) - and ORPS-reportable incidents based on the requirements outlined in LBNL/PUB-5519 (3), *Data Monitoring and Analysis Program Manual*, which is part of the institutional Issues Management Program. The Issues Management Program satisfies the data analysis requirements to identify recurring events and prevent more serious events from occurring, which are outlined in LBNL/PUB-5520, *UC Assurance Plan for LBNL*, DOE O 226.1A, *Implementation of Department of Energy Oversight Policy*, and DOE O 231.1A, *Environment, Safety and Health Reporting*.

Data analysis reports will be in graphical format, typically runs charts, controls charts and/or Pareto charts in accordance with LBNL/PUB-5519 (3) and will include the analysis of the data for the specified reporting period. This methodology is consistent with the guidance outlined in DOE G 231.1-1, *Occurrence Reporting and Performance Analysis Guide*, Attachment 6, *ORPS Performance Analysis Analytical Techniques*.

Statistical industry standards will be used to identify trends, adverse or otherwise, when analyzing ORPS and PAAA NTS reportable incidents. Based on an existing or potential trend, additional data will be monitored and analyzed to determine the cause of the trend, identify recurring events, and identify adverse conditions that require corrective actions, as applicable.

A statistical trend is defined as:

- One point outside the control limits;
- Two out of three points two standard deviations above or below the baseline average;
- Four out of five points one standard deviation above or below the baseline average;
- Seven points in a row above or below the baseline average; or
- Seven points in a row that are increasing or decreasing

The control chart is used to determine if the number of ORPS- and PAAA NTS-reportable incidents is within an acceptable statistical threshold and if statistical trends are present.

Pareto charts further break down the data by looking at various combinations of source data to determine the major contributions, the distribution of the contributors, and recurring issues. The cumulative data are reviewed, as appropriate, by:

- Trend Code, identified in Attachment 2, which will reveal common causes in dissimilar events
- Division, the organization that contributed to the event/incident
- Report type, ORPS or PAAA NTS
- Subject matter, the primary focus of the event/incident

- Circumstances surrounding the event/incident

Pareto charts will be included, if warranted. If a potential issue is identified during analysis of the data, the appropriate management and Subject Matter Experts (SMEs) will be contacted. Similarly if statistical analysis and distribution analysis indicate the possibility of a recurrent event, the Office of Contract Assurance (OCA) reviews the subject events with the SMEs.

Where incidents are required to be reported to more than one reporting system, they are counted as only one incident. For example, an incident that is PAAA NTS- and ORPS- reportable is considered only one incident even though it was required to be reported to two systems.

EXECUTIVE SUMMARY

During the FY08 2nd Quarter reporting period, 20 incidents were analyzed, 6 PAAA NTS-reportable incidents and 20 ORPS-reportable incidents. Six of these incidents were found to be both PAAA NTS- and ORPS-reportable incidents. Therefore, these six incidents were counted only once, resulting in the actual number of incidents totaling 20. No statistical trend or recurring issue was identified during the current reporting period.

During the FY08 1st Quarter reporting period (January 1, 2007 – December 31, 2007) analysis of three waste management ORPS incidents where regulatory agency inspections resulted in notices of violation indicated that a potential waste management issue existed and warranted continued monitoring. One waste management ORPS reports was generated during the FY08 2nd Quarter reporting period but did not share enough common causes with the incidents identified during the FY08 1st Quarter reporting period to indicate a recurring waste management problem.

The FY07 4th Quarter reporting period (October 30, 2006 – September 30, 2007) indicated a potential issue specific to penetration permit violations. In November 2006, an ORPS report was generated to document several instances of penetration permit violations. Corrective actions were developed and implemented to mitigate and/or remove this issue. Since November 2006, six additional penetration permit violations were identified, three of which were serious enough to warrant generation of ORPS reports (SC-BSO--LBL-ENG-2007-0001, SC-BSO--LBL-OPER-2007-0003, and SC-BSO--LBL-OPER-07-08). An effectiveness review was performed in December 2007 to determine if the corrective actions developed and implemented have prevented recurrence of similar issues. The report is in draft and is currently being reviewed by Lab leadership.

1.0 ORPS AND PAAA NTS REPORTABLE INCIDENTS

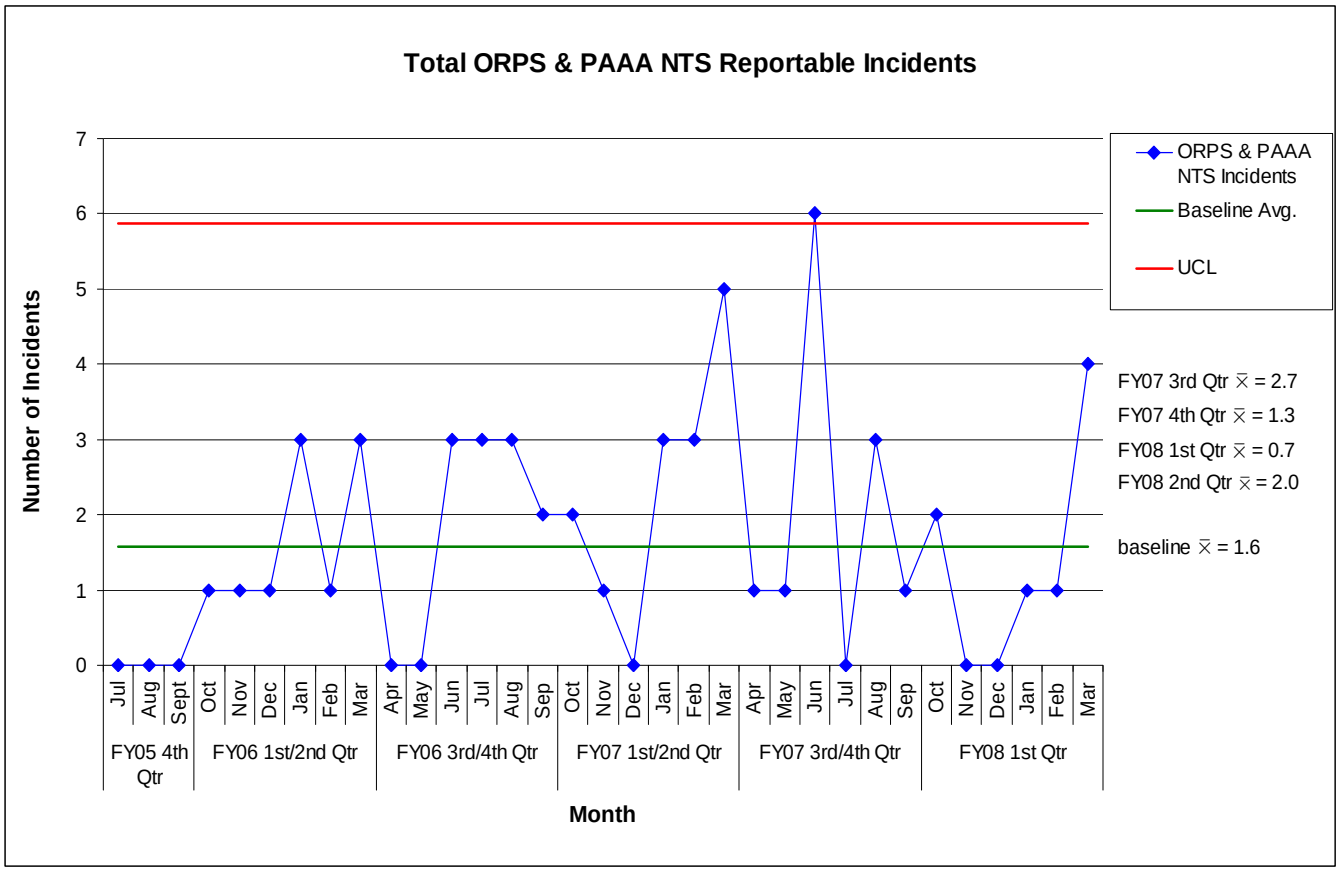


Figure 1.1

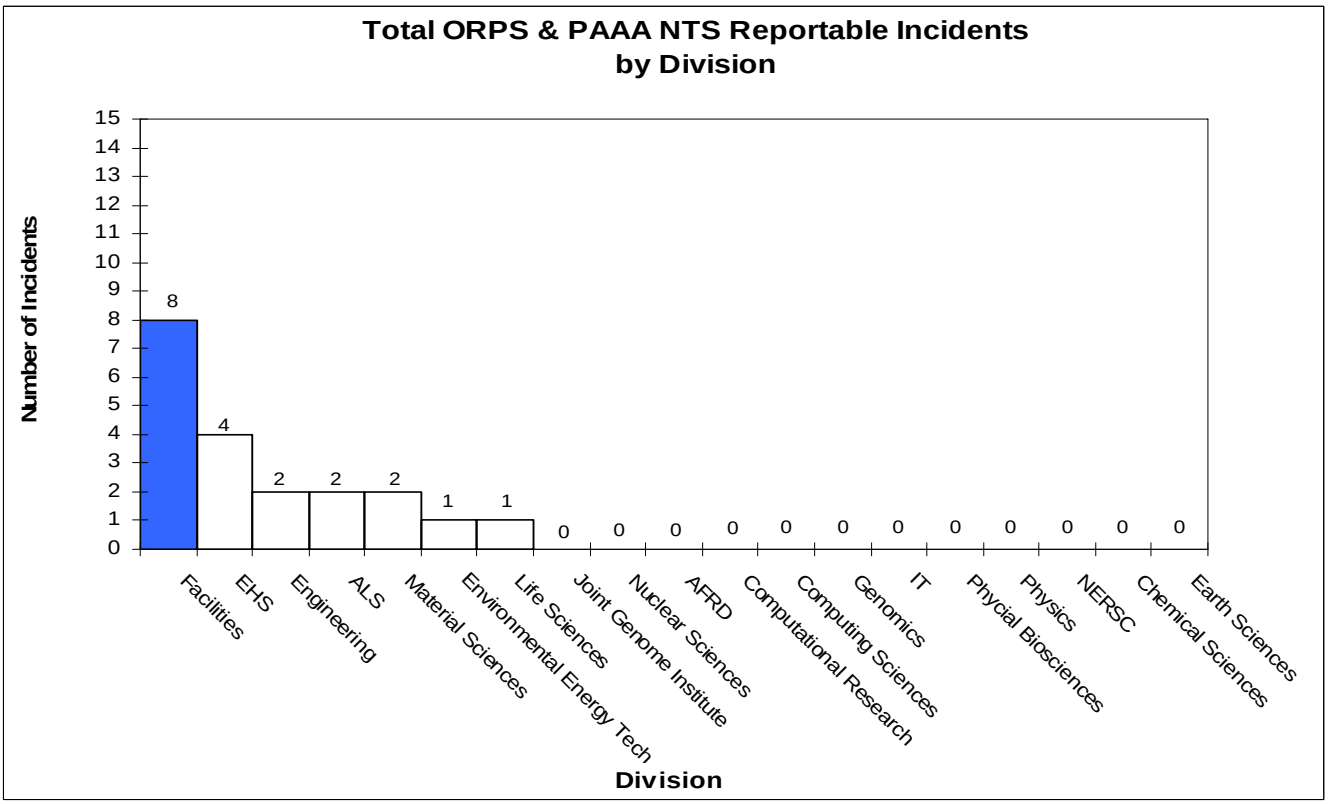
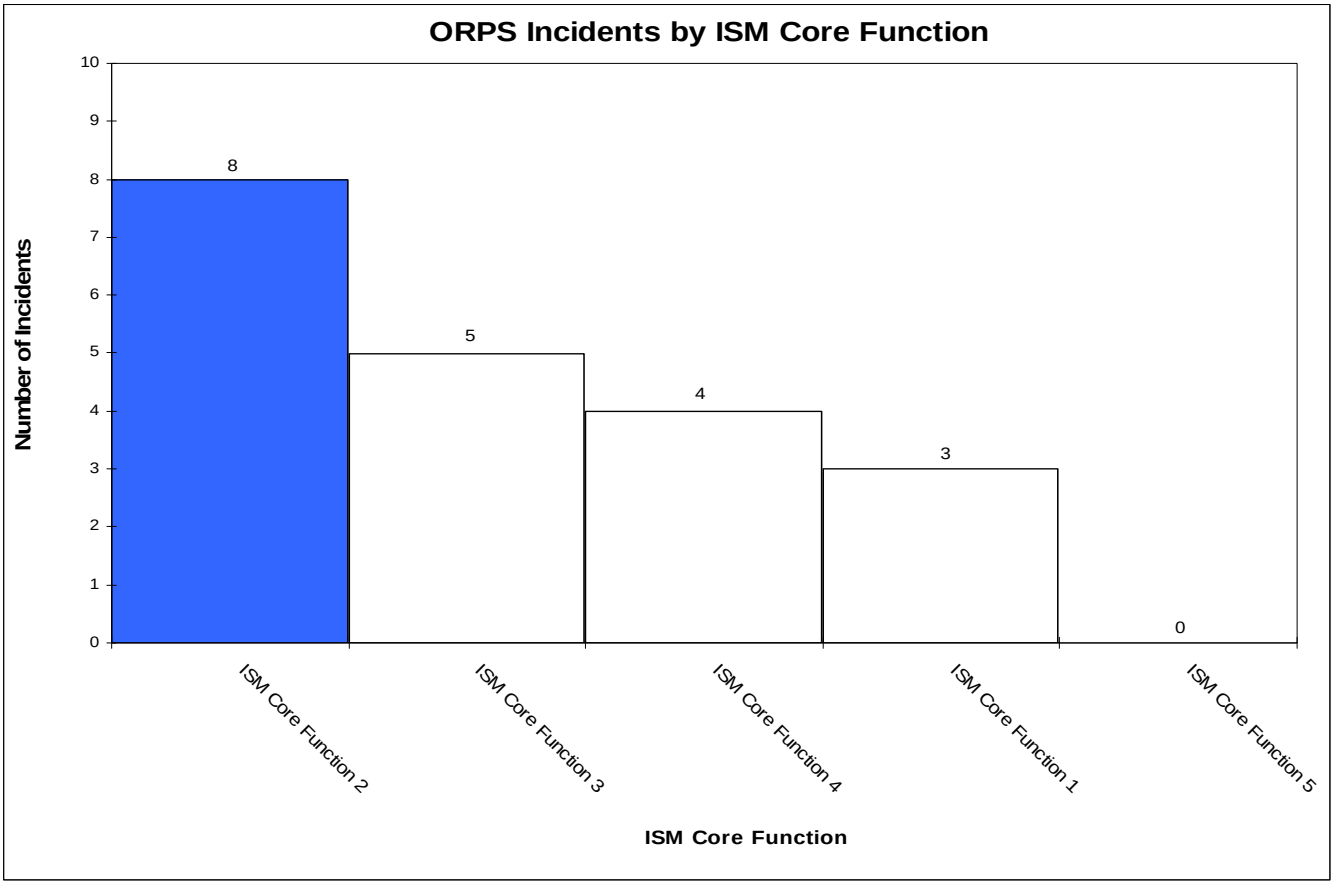


Figure 1.2


ORPS Incidents by ISM Core Function
Number of Incidents
10
9
8
7
6
5
4
3
2
1
0
8
5
4
3
0
ISM Core Function 2
ISM Core Function 3
ISM Core Function 4
ISM Core Function 1
ISM Core Function 5
ISM Core Function
Figure 1.3

Analysis:

During this reporting period, six ORPS and PAAA NTS-reportable incidents were duplicated. (See Attachment 1 for details on duplicate incidents.) The number of total incidents decreased from 25 to 20 from the FY08 1st Quarter reporting period (January 1, 2007 – December 31, 2007) to the current reporting period.

One incident was generated in January 2008 to address the power outage and building evacuation activities (SC-BSO--LBL-OPER-2008-0001). One incident was generated in February 2008 due to a cut low voltage fire alarm system conduit. This presented a hazard to personnel, but could have damaged the fire alarm system (SC-BSO--LBL-OPER-2008-0002).

Four incidents were identified in March 2008. Three Advanced Light Source (ALS) incidents were identified; one was specific to Superbend magnet components that were damaged during regularly scheduled maintenance activities (SC-BSO--LBL-ALS-2008-0001), one was specific to an injury where an employee struck his knee against a desk and fractured the knee cap (SC-BSO--LBL-ALS-2008-0002), and the other was specific to a maintenance technician sustaining an electrical shock while troubleshooting an opened chassis of a vacuum process controller (SC-BSO--LBL-ALS-2008-0003 and NTS--BSO-LBL-EHS-2008-0001). The fourth incident is specific to the fact that a crate carrying universal waste was improperly labeled resulting in shipping the waste offsite (SC-BSO--LBL-OPER-2008-0003).

Figure 1.1 is a Control Chart that identifies the total number of PAAA NTS- and ORPS-reportable incidents. Based on the statistical analysis, no statistical trend for the FY08 2nd Quarter reporting period exists

Figure 1.2 is a Pareto Chart that breaks down the total data set by Division. 40% of the incidents were contributed to by Facilities. During the current reporting period, Facilities was working on approximately four Capital projects, 190 Small Projects and approximately 10,000 general work requests and maintenance activities. There are no common causes shared among these incidents. Review of the trend code, subject, ISM code and circumstances of the incidents determined that no evidence of a recurring issue exists in this area.

The FY07 3rd Quarter reporting period (June 1, 2006 – July 30, 2007) identified evidence of a recurring electrical issue, which resulted in the generation of ORPS Category R (Recurring Occurrences) report SC-BSO--LBL-EHS-2007-0005 and a Recurrent NTS report (NTS--BSO-LBL-EHS-2007-0010) in August 2007. The electrical safety incident identified in March 2008 did not share any commonalities with the incidents that resulted in the generation of the ORPS Recurring report; therefore is considered a separate issue.

Figure 1.3 is a Pareto Chart that breaks down the total ORPS data set by ISM Core Function. Eight (40%) of the ORPS incidents were categorized as ISM Core Function 2,"Analyze the Hazards". These incidents do not share common causes. Review of the division, subject matter, and circumstances of each incident determined that no evidence of a recurring issue exists in this area. However, the Lab has recognized this as an opportunity for improvement and is in the process of developing a formal JHA process for both employees and subcontractors.

ATTACHMENT 1 – ORPS AND PAAA NTS REPORTABLE INCIDENTS FOR OCT 06 – SEPT 07

Item	Title	Report #	FY	Disc. Date	PAAA Duplicates
1.	Management concern involving vendor working on electrically energized equipment	ORPS: MSD-07-02	FY07	6-Apr	
2.	Employee broke leg falling off personal transporter (Segway)	ORPS: EHS-07-03	FY07	18-May	
3.	B71 Lead Air Sample Level Exceeds OSHA limit	ORPS: OPER-07-04	FY07	4-Jun	NTS: EHS-07-06
4.	Department of Health Services Notice of Violations	ORPS: EHS-07-04	FY07	14-Jun	
5.	Sanitary sewer overflow (SSO) on site	ORPS: OPER-07-05	FY07	25-Jun	
6.	Sanitary sewer overflow (SSO) on site	ORPS: OPER-07-06	FY07	26-Jun	
7.	Employee slipped and fell on wet floor	ORPS: LSD-07-01	FY07	27-Jun	
8.	Student assistant received electrical shock	ORPS: EETD-07-01	FY07	29-Jun	NTS: EHS-07-07
9.	AA Lithium iron battery exploded	ORPS: OPER-07-07	FY07	3-Aug	
10.	Recurrent Electrical Safety Issues	ORPS: EHS-07-05	FY07	9-Aug	NTS: EHS-07-10
11.	Mercury Spill at Molecular Foundry	ORPS: MSD-07-03	FY07	20-Aug	NTS: EHS-07-08
12.	Underground Pipe Plug Broken by Excavator During Demolition Operation	ORPS: OPER-07-08	FY07	7-Sept	
13.	City Inspection Cites Violation	ORPS: ENG-07-03	FY08	11-Oct	
14.	Recurring Subcontractor Safety Problems	ORPS: EHS-07-06	FY08	19-Oct	NTS:EHS-07-09
15.	Power Outage & Building Excavation	ORPS: OPER-08-01	FY08	1-Jan	
16.	Fire Alarm Conduit Cut in B-81	ORPS: OPER-08-02	FY08	25-Feb	
17.	Superbend Magnet Components Damaged During Repair	ORPS: ALS-08-1	FY08	4-Mar	
18.	Employee Hit Desk and Fractured Knee Cap	ORPS: ALS-08-2	FY08	10-Mar	
19.	Mercury Filled Tubes Transported to Off-Site Warehouse	ORPS: OPER-08-03	FY08	11-Mar	
20.	Maintenance Technician Sustained Electric Shock at ALS	ORPS: ENG-08-01	FY08	12-Mar	NTS: EHS-08-01

ATTACHMENT 2 – TREND CODES

Trend Code
A. Policies/Procedures/Instructions Not Used
B. Policies/Procedures/Instructions Used Incorrectly
C. Policies/Procedures/Instructions Need Improvement
D. Communication Needs Improvement /Less Than Adequate
E. Equipment/Software Design Needs Improvement /Less Than Adequate
F. Maintenance Needs Improvement /Less Than Adequate
G. Training Needs Improvement /Less Than Adequate
H. Work Planning Needs Improvement /Less Than Adequate
I. Work Processes/Packages Need Improvement /Less Than Adequate
J. Material/Equipment/Software Deficiency
K. Vendor Deficiency
L. Data/Information Needs Improvement /Less Than Adequate
M. Technical Proficiency Deficiency
N. Process/Task Design Deficiency
O. Broke/Fix