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April 1, 2005

Mr. George J. Malosh
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Dear Mr. Malosh:

DE-AC05-00OR22725, Occurrence Reporting and Processing of Operations Information (ORPS) Quarterly Performance Analysis Report for the First Quarter FY 2005

The Occurrence Reporting and Processing of Operations Information Manual requires each contractor to conduct a performance analysis at least quarterly and report the results to DOE line management (DOE M 23.1.1-2, Section 5.8). In fulfillment of this requirement, attached please find the Oak Ridge National Laboratory's ORPS Quarterly Analysis Report for the first quarter of fiscal year 2005.

Please contact Betty Dagley (574-5552), Quality Management System (QMS) Subject Matter Expert, or myself (576-1460), Quality Management System Owner, if you have questions about the report.

Sincerely,



Fay Frederick, Acting Director
Quality Services Division

AFF:cs

Attachment

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April 1, 2005

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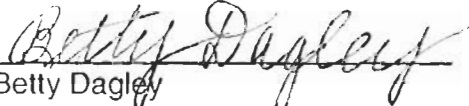
Oak Ridge National Laboratory Occurrence Reporting and Processing System (ORPS) Quarterly Performance Analysis and Summary

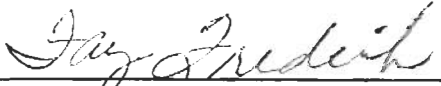
First Quarter, FY 2005

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Approval Page

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1. SUMMARY

This summary report is based on occurrence reports filed by ORNL since the implementation of the Department of Energy (DOE) Occurrence Reporting and Processing System (ORPS) redesign. The redesigned ORPS criteria set was implemented at Oak Ridge National Laboratory (ORNL) during November 2003. This was implemented before we added requirements to contract on 11/06/2003. This is the first report for FY2005, and includes analysis and summary of ORNL Occurrences for January 01, 2004 to December 31, 2004.

As indicated in Fig. 1, Occurrences meeting the reporting criteria of Near Misses represent 3% of the reported occurrences. This criterion is the most encompassing for lower-level issues that, in many cases, have no actual adverse result, yet present situations in which staff discerned a need for additional analysis because of potential impacts. During the twelve-month period, we experienced two personnel radiation protection occurrences, which represent 2% of the reported occurrences. This represents a downward trend compared to previous periods.

The results of the Performance Analysis identified one common element to be monitored for repeat events and the other as a potential recurring problem. The cause code category "Work Organization and Planning LTA" will be monitored for repeat events. Prior to this report there had been an R&D Work Control Management System Maturity Assessment performed. Since the completion of the assessment, an action plan has been provided to improve the overall operations of "Work Organization and Planning". The second element that is suggested as a potential recurring problem includes reporting criterion 3B "Nuclear Safety," documented safety analysis inadequacies involving facility hazard categorization. These events represent 4% of the reported occurrences. There were four recent occurrences (2003 – 2004) involving facility hazard categorizations. These events suggest the prevalence of a systemic issue across divisions. After review of the performance analysis results, the Management Review Board concluded, "Nuclear Safety, documented safety analysis inadequacies involving facility hazard categorization," would be submitted as a recurring event. Acting on this concern in late 2004, ORNL began a programmatic review of potentially related events since 2001 and filed an NTS report. This resulted in the following activities: (1) Conduct programmatic Causal Analysis and Extent of Condition review, (2) Develop a comprehensive corrective action plan to address these issues, and (3) As ongoing review efforts are completed, additional actions will be added to the plan as needed. An independent follow-up assessment of the effectiveness of the ORNL facility hazard categorization process will be performed after the implementation of the corrective actions.

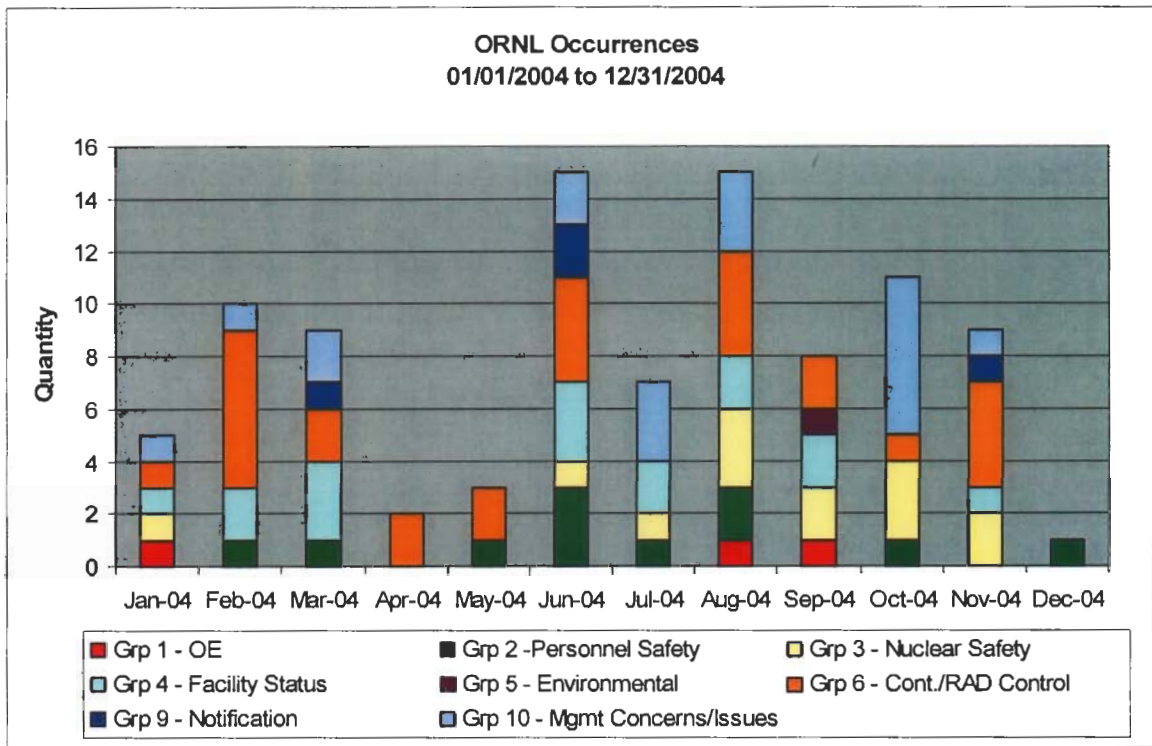


Fig. 1: ORNL occurrences for CY 2004.

Based upon the Occurrence Reporting Categories most of our reports during CY 2004 were at the bottom end of DOE's significance scale. Taken together, the two lowest occurrence categories (3 and 4) comprise 85% of the total reports. Category 4 represents 63% of all occurrence reports. This fact, along with other information provided in the balance of this report, indicates that the training and support provided to Laboratory personnel, associated with the occurrence reporting function has been effective in conveying the need to report at the lowest levels of the established ORPS criteria thresholds.

2. INTRODUCTION

The following analysis provides a summary of the issues reviewed for CY 2004, as required by DOE M 231.1-2. The ORPS Program is intended to ensure the timely collection, reporting, analysis, and dissemination of information on environment, safety, and health issues. The purpose is to inform DOE is informed of events that could adversely affect the health and safety of the public or workers, the environment, the intended purpose of DOE facilities, or the credibility of DOE. The ORPS Quarterly Performance Analysis and Summary provides an analysis of issues to identify possible recurring program deficiencies and describes ORPS program activities.

This Performance Analysis includes a review of the data in the Occurrence Reporting database. The Performance Analysis process is used to identify recurring site-wide problems using event-based data each quarter to meet the requirements of the DOE ORPS. The purpose is to identify significant distributions or clusters of common elements to determine whether a problem is recurring (for example, one apparent cause code may be more predominant than another apparent cause code within the time period under analysis).

3. PERFORMANCE ANALYSIS

3.1 TOTAL ORNL REPORTED OCCURRENCES

A number of factors have coalesced to demonstrate the strong emphasis and endorsement by UT-Battelle management for an open problem-reporting environment. Positive results have included a strengthening of Laboratory-wide self-assessment efforts, increased participation by staff at all levels in the problem identification and causal analysis processes, a reduction in the number of issues discovered through self-disclosed events, and a commensurate increase in those found through assessment activities. Figure 2 shows the total number of occurrences per month since January 2004 (eight occurrences per month). The significant increase of occurrences in June 2004 was due to legacy contamination and notices of violation (NOVs). The significant increase in occurrences in August 2004 was due to legacy contamination and determination of a positive unreviewed safety question (USQ).

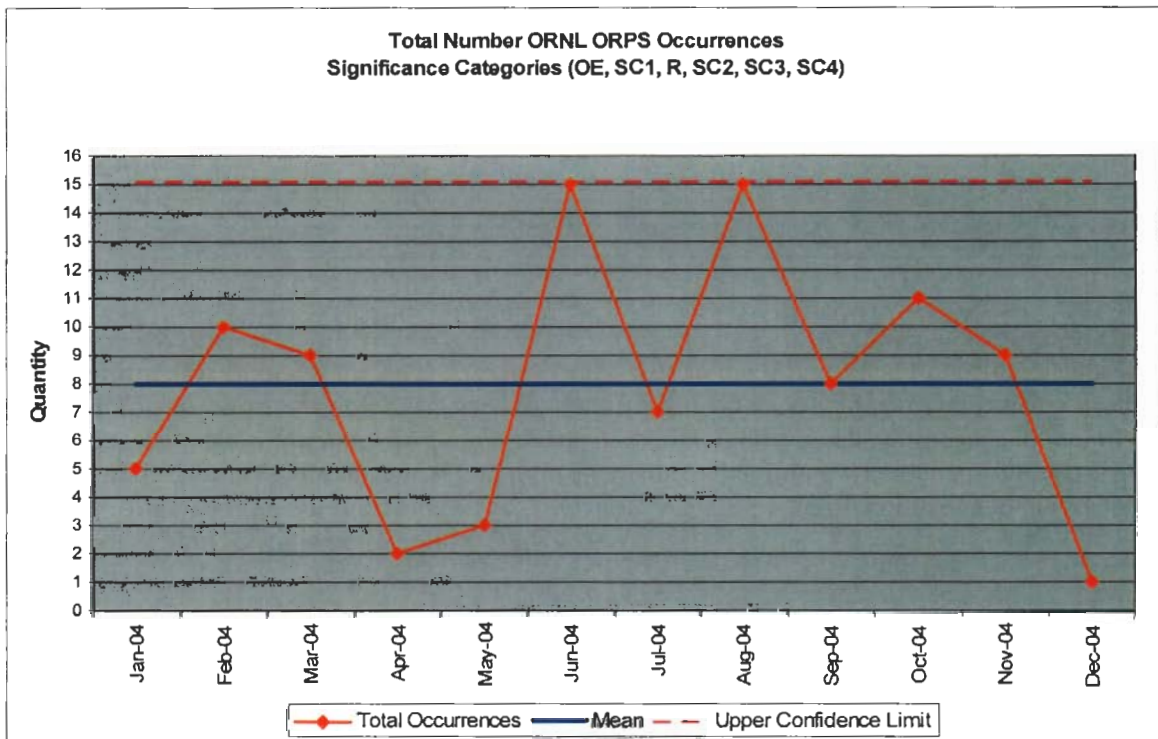


Fig. 2: Total number of ORNL occurrences.

3.2 ORPS OCCURRENCE SIGNIFICANCE CATEGORIES

The categorization information is pertinent because it indicates that the overwhelming majority of ORNL's occurrences during CY 2004 were identified at the bottom end of DOE's significance scale. Taken together, the two lowest occurrence categories (3 and 4) comprise 85% of the total reports. Category 4 represents 63% of all occurrence reports (See Table 1). This indicates that the training and support provided to Laboratory personnel associated with the occurrence reporting function have been effective in conveying the need to report at the lowest levels of the established ORPS criteria thresholds. Figure 3 displays the significance categories by month. Most reportable issues or events (categories 3 and 4) occurred during June, August, and October 2004.

Table 1: ORPS Significance Categories

Significance Category	Total Quantity	Percentage
OE, Operational Emergency	3	3.16%
SC-1, Significant Impact on Safety, Facility Operations	1	1.05%
SC-2, Moderate Impact on Safety, Facility Operations	10	10.53%
SC-3, Minor Impact on Safety, Facility Operations	21	22.11%
SC-4, Some Impact on Safety, Facility operations	60	63.16%

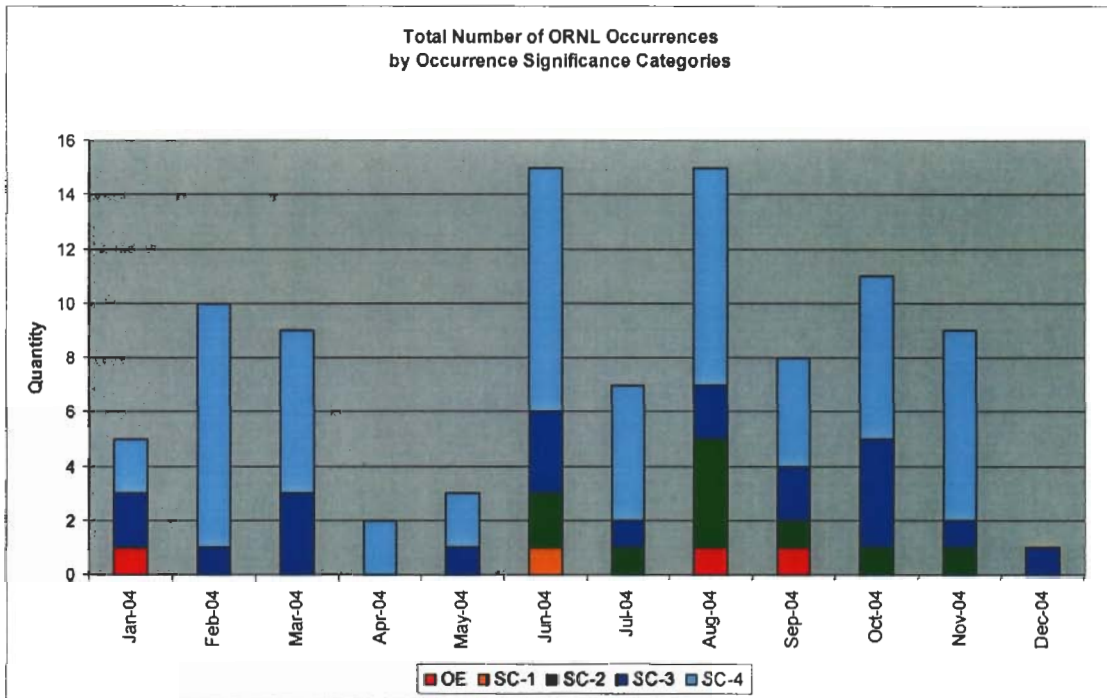


Fig. 3: Total occurrences according to ORPS significance categories.

3.3 SELF-ASSESSMENT AND SELF-DISCLOSED OCCURRENCES

We employ a proactive self-assessment/identification process to identify and categorize occurrences. We continue to see a positive bias in our defined self-assessment/identification processes (see Figure 4, compared with self-disclosed, event-driven origins (see Figure 5). For FY 2002, 39% of occurrences were found through self-assessment. For FY 2003, this figure was 46%, and the last twelve months show that 62% have been found. This finding indicates that our self-assessment activities have the clear potential to allow us to identify problems before they rise to thresholds requiring occurrence reporting. There were eight months during which the numbers of self-assessment occurrences were greater than the self-disclosed occurrences (see Figure 5).

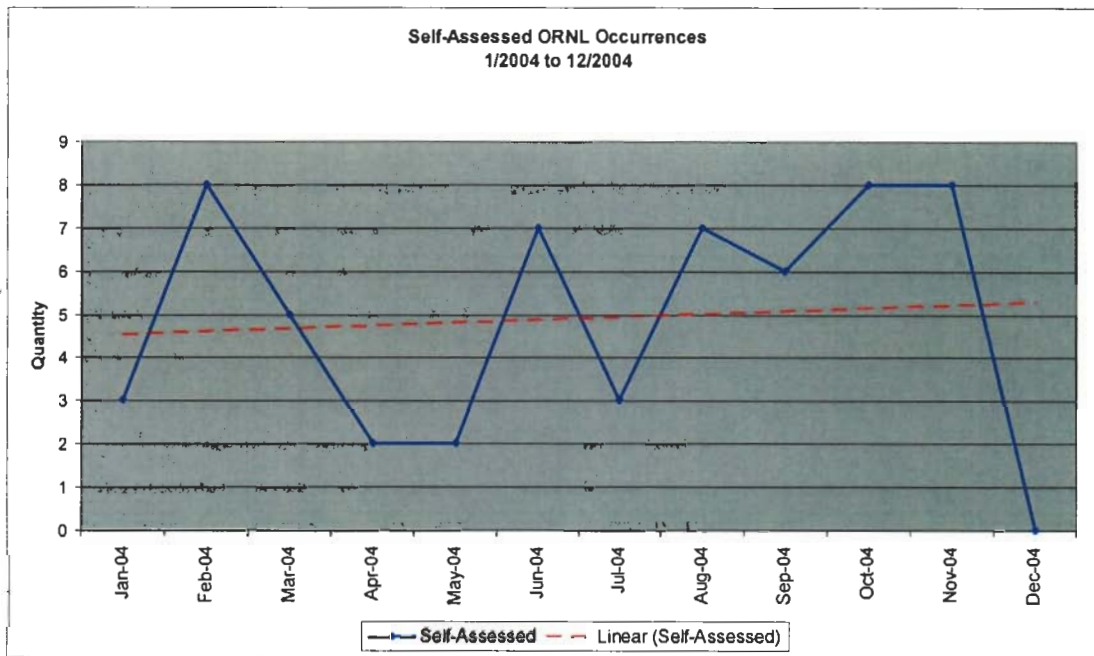


Fig. 4: Self-assessed ORNL occurrences.

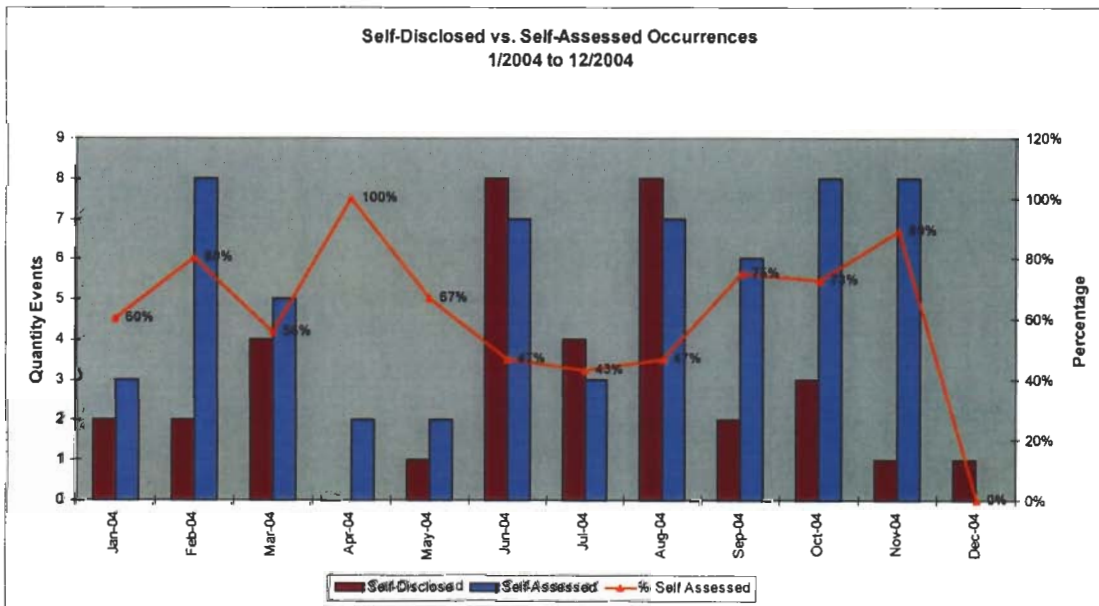


Fig. 5 Self-disclosed occurrences compared with event-driven identification of occurrences.

3.4 HUMAN PERFORMANCE ANALYSIS

One of the enhancements inherent in the redesigned ORPS model is in the relation to the Causal Analysis Tree with the Human Performance A3 Node. This node is directed at determining associated causal factors referred to as “couplets” when any A3 Human Performance causal factor is utilized. During CY 2004, 9 out of 95 occurrence reports had at least one apparent cause code coupled with an A3, Human Performance causal factor. Table 2 displays instances in which the A3 Human Performance causal factor is coupled with an associated causal factor.

Table 2: Associated Human Factor Couplets (1/1/04 to 12/31/04)

Associated Couplet Cause Code		Human Factor A3Bx Node				Total
		B1-Skill	B2-Rule	B3-Knowledge	B4-Work Pract.	
A2-Equip/Mat'l	B2-PM	1				1
	B4-Mat'l Cont	2				2
A4-Mgmt	B1-Mthds				1	1
	B2-Res. Mgmt	2				2
A5-Comm	B1-Method	1				1
	B2-Content	1		2		3
A6-Training	B2-Training LTA	4		1		5
A7-Other	B1-External			1		1
None		2		3	2	7
Total		13	0	7	3	23

The following is a summary of the Associated Human Factor Couplets:

1. Of the 95 Occurrence reports, 9.47% had a causal factor coupled with an “A3” Human Performance causal factor.
2. The most significant cause code couplet is A6B2 – Training Methods LTA, represents 18% of the total couplets.
3. The A3B1 node (Skill Based Error) represents 54% of the total couplets.

3.5 CROSS CUTS REPORTING CRITERIA AND CAUSE CODES

The Cross Cuts of the Reporting Criteria and Apparent Cause Codes in Table 3 provide an opportunity to check for consistency and to identify certain clusters of data.

Table 3: Cross Cuts Reporting Criteria and Apparent Cause Codes

	OE	Mgmt concerns	Near Miss	Occupational illnesses/injuries	Fire	Lockout/Tagout	TSR	USQ/PISA	Potential LTA safety analysis	Performance degradation	Facility evacuation	Loss Rad Material	Onsite Legacy	Onsite Contamination	Total
CAUSE CODES	1(1)	10(2)	10(3)	2A(6)	2B(1)	2C(2)	3A(2)	3B(1)	3B(2)	4A(1)	4B(4)	6A(2)	6B(4)	6D(3)	
A1-Design															
B2-Output	1	1	1					1							4
B3-Doc LTA								1	3						4
B4-Install Verif.								1							1
A2-Equip/Mat'l															
B1-Calib.								1			1				2
B2-Maint.	1	2													3
B3-Insp/Test	1	1													2
B4-Mat'l Control	1			2	1										4
B6-Defect	1	2	1							1			1		6
A3-Human															
B1-Skill	2	2		4			4		1						13
B3-Knowledge	1		1	1			1	1	1						6
B4-Work				2		1									3
A4-Mgmt															
B1-Methods	1	3		1				2			1				8
B2-Resource		2						1							3
B3-Planning		1	2		1	1		1							6
B5-Change Mgmt								1				1			2
A5-Comm.															
B1-Methods									1						1
B2-Content	2	1	2	2	1				2						10
B4-Verbal		1													1
A6-Training															
B1-No Training			1	2				1							4
B2-Methods							5								5
A7-Other															
B1-External				1											1
B2-Rad/Hazardous													2	1	3
Total	11	16	6	15	3	2	10	11	8	1	2	1	3	1	92

The following is a summary of the analysis from Table 3:

1. The reporting criterion 10(2) (Management Concerns) has the largest quantity of apparent cause codes. The largest concentration of the cause codes are A4 (Management Problem) with six events and A2 (Equipment /Material Problem) with five events. Several of the events involved industrial safety hazards or inadequate work practices in different facilities (e.g., ammonia leak, water spill, equipment failures, and contamination release during repackaging).
2. For the near misses criterion 10(3), the largest concentration is to A4B3 (Mgmt Planning) and A5B2 (Written Communication LTA), each with two events. Two occurrences involved near misses for which apparent cause factors were work planning.
3. For the Occupational Illnesses/Injuries criterion 2A(6), the largest concentration is A3Bx (Human Performance LTA) with seven events. Four of the events are apparent cause code A3B1 (Skill Based Error).
4. 50% of the cause codes for the occurrences reported under 3A (Technical Safety Requirement Violations) are tied to A6B2 (Training Methods LTA)

The results of the analysis indicated that the data were consistent with expectations. No unexpected clusters of data were identified.

3.6 ORPS REPORTS BY FACILITY

From January 01, 2004 to December 31, 2004, 22% of the events were reported by the Central complex, 20% by the High flux Isotope Reactor, and 17% by the Nonreactor Nuclear Facilities (see Figure 6). Of the 25 occurrence reports with the reporting criteria of 6B(4), (Onsite Legacy contamination), 8 were associated with the Central Complex and 7 were associated with the West Complex. Since several of the occurrence reporting criteria are directed at conditions that can occur in nuclear and radiological facilities, it can be expected that these types of facilities will have more reportable events than the non-nuclear operations.

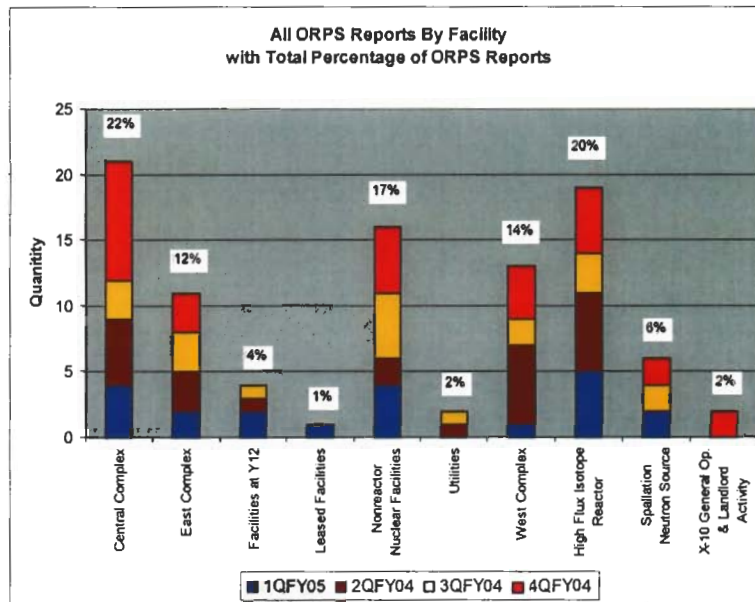


Fig. 6: All ORPS reports by facility.

3.7 OCCURRENCE REPORTING CRITERIA

Contamination/Radiation Control (onsite legacy contamination) issues comprise 27% Figure 1 shows 31% of the total occurrences during the twelve-month period (See Figure 7). The occurrences in Figure 7 can be grouped into three categories (sources): progressively aging facilities, efforts to clean out and/or decommission older facilities; and a strong focus on facility-based self-assessment activities. As we continue our effort to dispose of older facilities, we are identifying legacy issues that are, in some cases, decades old. This fact, coupled with the progressive improvement in the depth and quality our self-assessment efforts, has led to an increase in the identification of contamination and radiation control issues, especially those associated with legacy conditions. Most occurrences are now found through our self-assessment/self-identification processes (See Section 3.3).

We continue to see a remarkable trend toward the near-elimination of personnel radiation protection issues reported through ORPS. During the twelve-month period, we experienced two occurrences in the personnel contamination category, which is 2% of the reported occurrences. This low level of incidence highlights the Laboratory-wide improvements in the consistency and pervasiveness of our radiological controls at the institutional level. The reporting criteria of Near Misses represent 3% of the reported occurrences. This criterion is the most encompassing for lower-level issues that, in many cases, have no actual adverse result, yet present situations where staff discerned a need for additional analysis because of potential impacts. Facility status represents 17%, Personnel Safety is 12% and Management Concerns/Issues is 20% of the total reported occurrences (See Figure 1).

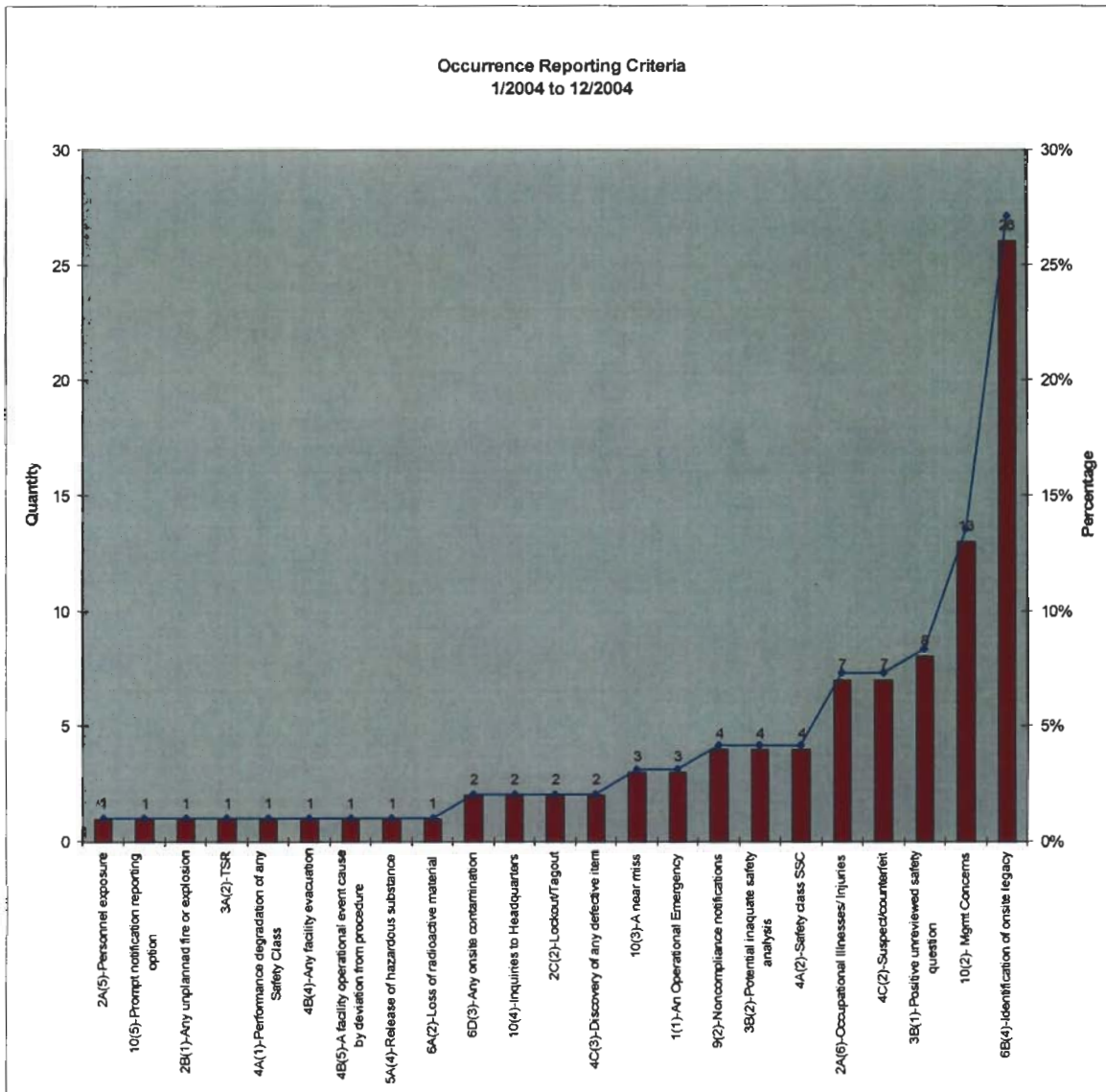


Fig. 7: Occurrence reporting criteria

3.8 ORNL NON-REPORTABLE ISSUES

The ten discrete groups that make up the occurrence reporting criteria set were used to categorize 80 additional issues that were logged by the Laboratory Shift Superintendent's office during CY 2004. Each issue was analyzed at the time of discovery against the applicable criteria and was found to be below reporting thresholds, as shown in Fig. 8.

Environmental issues account for 50% of the non-reportable data set. These issues were primarily concerned with limited spills involving materials (such as oil, hydraulic fluids, and mercury) that did not have any environmental impact because of the limited amount of material involved.

Contamination and radiation control issues were the second-highest non-reportable group (25%). Many were related to legacies that fell lower than occurrence reporting levels and were found during surveying activities associated with building cleanup and decommissioning. Each situation was discovered where the condition could be expected based upon past or current activities within the facilities where they were identified.

Personnel safety and health issues represent 11% of the total non-reportable issues. The comprised primarily minor injuries and fell below all thresholds in Group 2 of the ORPS criteria.

Management concerns and issues round out the significant data set of non-reportable issues at 6%. This category was used to identify a wide range of issues that fall into the criteria dealing with an event, condition, or series of events that do not meet any of the other reporting criteria but that would have been of interest had the issue been of a higher significance. These included such events as the theft of government-furnished computer equipment while Laboratory personnel were traveling and minor automobile accidents involving government-furnished vehicles, both on and off-site.

Facility-related occurrences represent 4% of the non-reportable issues. Most issues were related to non-safety class structures, systems, or components that malfunctioned or were found to be unexpectedly inoperable. A number were found as the result of repeated false-alarm conditions. Examples include secondary air monitoring systems in radiological areas and pressure-sensing devices in non-critical applications.

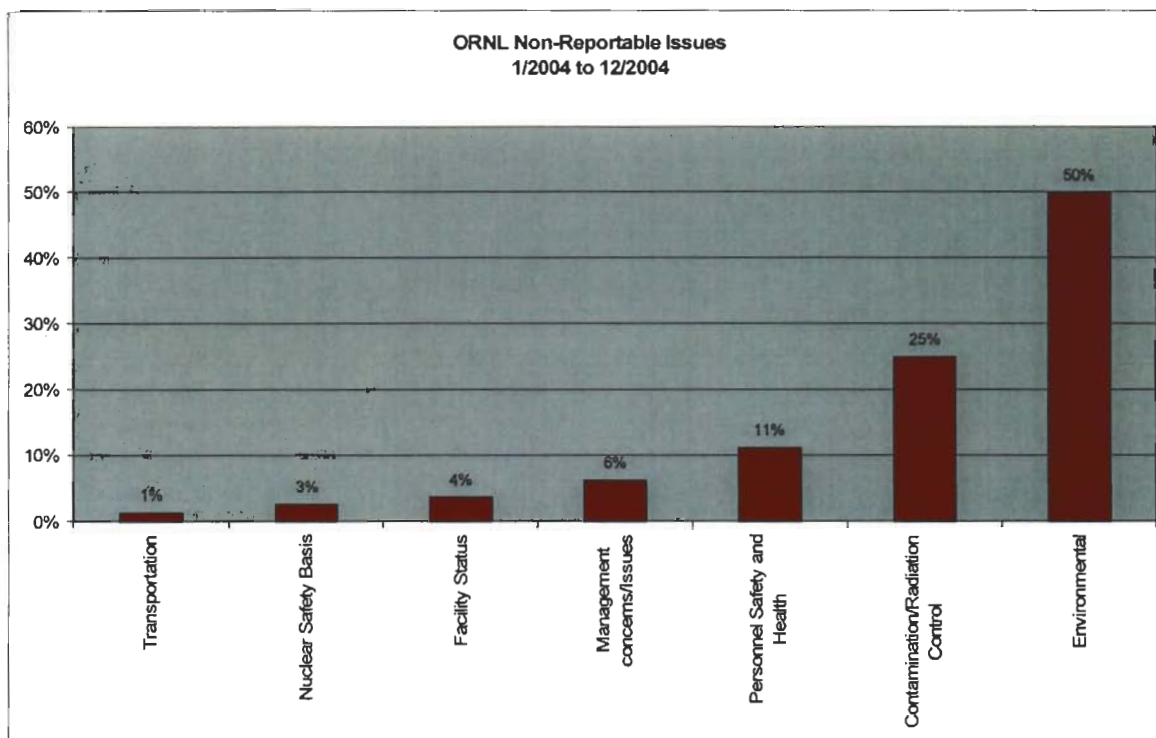


Fig. 8: Non-Reportable issues.

3.9 ORPS OCCURRENCE CAUSE CODES

Some issues that were reviewed and for which apparent cause codes were identified were assigned more than one cause from the ORPS Causal Analysis Tree in the DOE G231.1-2, *Occurrence Reporting System Causal Analysis Guide*. The Causal Analysis Tree is a structure designed to describe apparent causes for problems within operating facilities.

Figure 9 shows the quantity of reported occurrence cause code categories. Most problems fell into “Skill Based Errors,” “Written Communication Content LTA,” “Management Methods LTA,” and “Work Organization & Planning LTA.”

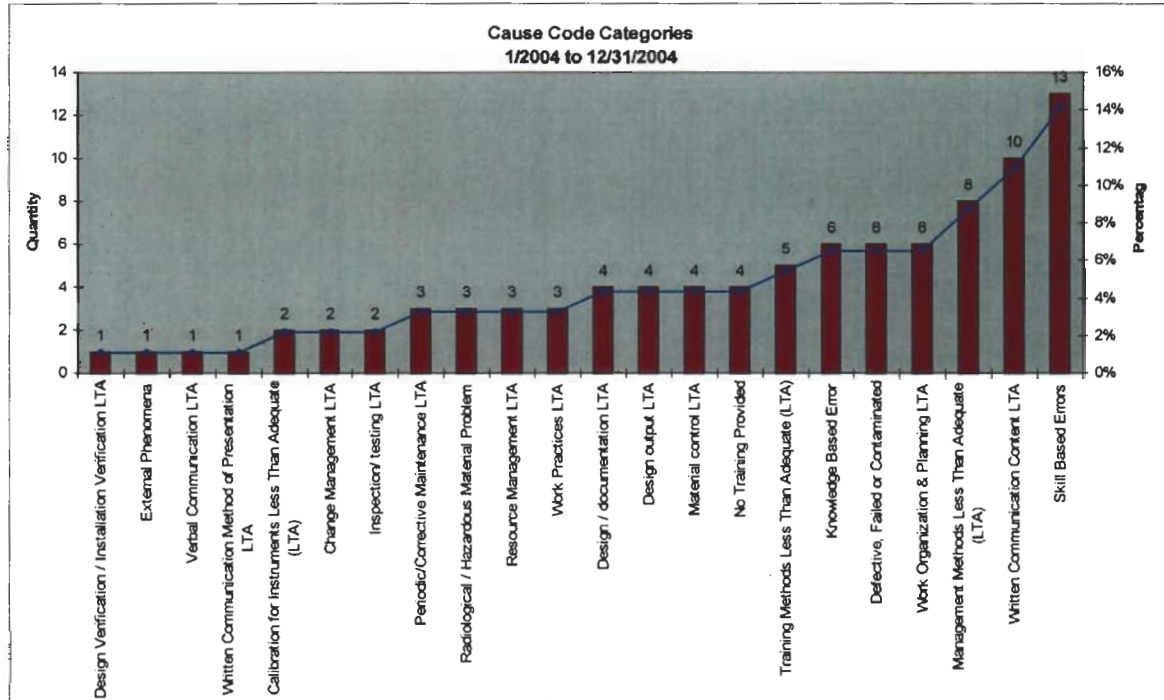


Fig. 9: Occurrences distributed according to cause codes categories.

The following are definitions of the top six categories as defined by the DOE G231.1-2, *Occurrence Reporting System Causal Analysis Guide*:

1. Skill Based Errors – Inattention or over/attention to performance of work affected the event.
2. Work Organization & Planning LTA – Events in how the work to be performed was organized. This would include work scope, planning, assignment and scheduling of a task to be performed.
3. Knowledge Base Error – The Lack of Knowledge Base Error.
4. Written Communication Content LTA – Any written document used to perform work such as procedures, work orders, memos, standing orders, manuals, or surveillance.
5. Management Methods LTA – The processes used to control or direct work-related plant activities, including how staff and material were allocated for a particular object.
6. Defective, Failed, or Contaminated – An event was caused by a failed or defective part.

3.10 CROSS CUTS OF THE REPORTING CRITERIA AND DIVISION

The Cross Cuts of the Reporting Criteria and Division in Table 4 provide an opportunity to check for recurring events across the Laboratory and to identify certain clusters of data.

Table 4: Cross Cuts Reporting Criteria and Division

Reporting Criteria	Chemical Sciences	Computer Science and Mathematics	Condensed Matter Sciences Division	Engineering Science and Technology Division	Engineering, Science, and Technology	Engineering, Science, and Technology	Environmental Protection and Waste Services	Environmental Sciences Division	EP&WS/Laboratory Waste Services Group	Fabrication Division	Facilities Development Division	Facilities Management Division	Fusion Energy Division	Laboratory Protection Division	Life Sciences Division	Metals and Ceramics Division	NNFDREDC	Nonreactor Nuclear Facilities Division	Nonreactor Nuclear Facility Division	Nuclear Science and Technology Division	Physics	Quality Services Division	Research Reactors Division	Spallation Neutron Source	Nonreactor Nuclear Facilities Division Nuclear Comp	Total
Group 1-OE								1						1	1											3
Group 2-Personnel Safety	1				1				1	3						1								4		11
Group 3-Nuclear Safety																	4		1			8				13
Group 4-Facility Status									6	1	1						1			1		5	1			16
Group 5-Environmental																		1								1
Group 5-Cont./Rad Control	4		1	1	1	1	2		1	1	3		1				5			3	2	2		1		29
Group 9-Notification						1					2													1		4
Group 10-Mgmt Concerns/Issues	1						1	1	1		1	1	1			3	1	1		1	1		5			19
Total	5	1	1	1	1	2	4	2	1	8	6	7	1	1	1	4	2	11	1	2	5	2	20	6	1	96

The following is a summary of the Occurrence reports by Reporting Criteria:

3.10.1 Group 1 – Operational Emergencies

There were three events involving different facilities and work activities. The oven fire in January was due to the lack of adequate temperature controls used in the waste curing process. The second event was the carbon dioxide tank release where the fail/safe design of the vaporizer/controller was not ensured. The third event was a building evacuation due to a small odoriferous chemical spill.

Conclusion: No actions beyond those taken for the specific events are warranted from this Quarterly Performance analysis.

3.10.2 Group 2 – Personnel Safety

For reporting criterion 2A, there was one event involving exposure to hazardous materials (Lead dust spots) while using a radial arm saw to cut a sheet of lead. The use of the Radial Arm Saw has been discontinued and the Lead Shop has been closed until the result of the investigation of this event is completed in January 2005. There were seven events (injury to wrists, knees and fractured heels) that occurred from 1/1/04 to 12/31/04. Through the dedication of safety (awareness) programs, we have observed a reduction of these types of injuries within the last 5 months.

For reporting criterion 2B, there was one event reported in June where a piece of cheese/cloth in a glove box was ignited momentarily and was quickly extinguished with no release of material. The direct cause is material handling LTA to prevent the cheese/cloth from igniting.

For reporting criteria 2C, there was one electrical near-miss which occurred as a subcontractor was attempting to perform a “zero energy” check. The cause of the failure is (A4B3C06), planning not coordinated with inputs from walkdowns/task analysis. The second event was the discovery of an uncontrolled energy source where a line (electrical circuit) has been inadvertently run.

Conclusion: No actions beyond those taken for the specific events are warranted.

3.10.3 Group 3 – Nuclear Safety

For reporting criterion 3B, there have been 12 PISA/USQ discovery events of which 8 were USQs. There were four recent occurrences (2003 – 2004) involving facility hazard categorization. For reporting criteria 3A, there was one TSR event. The one event involved noncompliance with TSR Surveillance.

Conclusion: There were four recent occurrences (2003 – 2004) involving facility hazard categorizations. Acting on this concern in late 2004, ORNL began a programmatic review of potentially related events since 2001 and filed an NTS report (NTS-ORO-X10BOPLANT-2004-0004). This resulted in the following activities: (1) Conduct programmatic Causal Analysis and Extent of Condition review, (2) Develop a comprehensive corrective action plan to address these issues, and (3) As ongoing review efforts are completed, additional actions will be added to the plan as needed. An independent follow-up assessment of the effectiveness of the ORNL facility hazard categorization process will be performed after the implementation of the corrective actions.

3.10.4 Group 4 - Facility Status

For reporting criterion 4A, there was one event where the HEPA filter failed to meet the minimum requirements criteria and four events involving Safety Structure, and Component degradation.

For reporting criterion 4C, there were seven suspect/counterfeit events. Six of the events were from legacy purchases.

For reporting criteria 4B, there were two events: (1) an employee was injured due to an inadequate procedure, resulting in an adverse effect on safety and (2) a facility was evacuated due to equipment found outside the acceptance criteria.

Conclusion: No actions beyond those taken for the specific events are warranted.

3.10.5 Group 5 – Environmental

For reporting criterion 5A, U. S. Environmental Protection Agency (EPA) was notified of one event, in which a hazardous substance from an appliance (refrigerant) was leaking.

Conclusion: No actions beyond those taken for the specific events are warranted from this Quarterly Performance analysis.

3.10.6 Group 6 - Contamination/Radiation Control

This reporting group involves a wide variety of events related to Contamination/Radiation Control. A breakdown of the 28 events is as follows.

- One 6A event involved legacy inventory discrepancy. The contents of a container showed a discrepancy in the historical records.
- Two 6D events involved one personnel contamination and one personnel clothing (shoe) contamination.
- Twenty-five 6B events involved a various types of work activities and facilities. The 6B events were primarily legacy contamination discovered during OAP walkthroughs, Surveys, Pre-job and Post-job Surveys, Characterization Surveys and Material Clearance Surveys.

Conclusion: No actions beyond those taken for the specific events are warranted.

3.10.7 Group 9 – Noncompliance Notifications

For reporting Criterion 9(2), there were four NOVs that involved failure to make hazardous waste determination, obtaining construction permit, total suspended solids and daily/monthly limit for copper and iron (milligrams per liter) in water.

Conclusion: No actions beyond those taken for the specific events are warranted.

3.10.8 Group 10 - Management Concerns/Issues.

There were a total of 19 events covering a wide variety of management concern events. The following is a breakdown of the 19 events.

- Thirteen 10(2) events involved a several types of work activities:
 - one event involved unauthorized drum relocation;
 - one event involved a ruptured water line due to aging infrastructure;
 - one event involved improper tool use causing personnel injuries;
 - one event involved the discovery of lithium from a retort inside a hood;
 - one event involved unexpected chemical reaction during Waste Management activities;
 - eight events involved industrial safety hazards or inadequate work practices in different facilities. (e.g., ammonia leak, water spill, equipment failures, and contamination release during repacking).
- Three 10(3) events involved inadequate work organization and planning and inadequate work practices.
- Two 10(4) events involved inadequate control in an excess property sale and inadequate documentation to transport hazardous material.
- One 10(5) event involved contaminated equipment on loan offsite.

Conclusion: No actions beyond those taken for the specific events are warranted.