

DOE “Near Miss” ORPS Reports (Vintage 2007): A Narrative Study

Energy Facility Contractors Group
Presented to the ORPS Task Group

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a passion for discovery





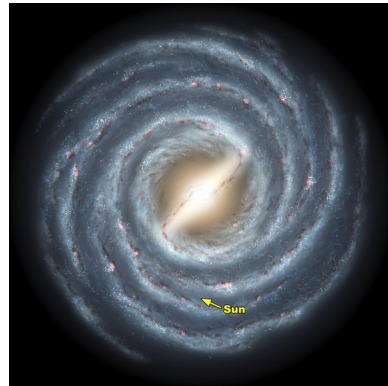
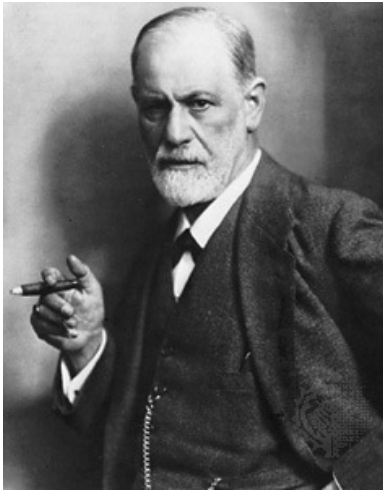
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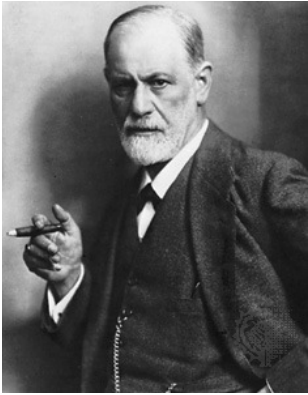
Near-Misses

- **“Near-Misses are the best leading indicators of accident potential. By having a comprehensive near-miss system, where near-misses are not only recognized but also resolved properly, a facility can expect to both reduce the number of accidents and improve the quality/productivity of its operations.”**

<http://opim.wharton.upenn.edu/risk/downloads/03-03-UO.pdf>

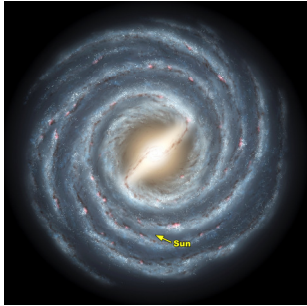
Agenda





Research Questions

- 1. Who is reporting the Near Miss?**
- 2. What are the near miss report topical areas?**
- 3. Are near miss reports predictive?**
- 4. How often are we reporting the near miss?**
- 5. Is our near miss reporting in agreement with the safety pyramid?**



Study Big Picture

- **ORPS Reports: Near Miss Criteria [Group 10(3)]**
- **Time Period: 2007**
- **Number of Reports: 110 (Near Miss Only) out of 1297**
- **Significance Categories: 2s, 3s & 4s**
- **Number of Contractors Reporting: 34/113**

ORPS Near Miss Reporting Criteria [Group 10(3)]:

- **“A near miss, where no barrier or only one barrier prevented an event from having a reportable consequence. One of the four significance categories should be assigned to the near miss, based on an evaluation of the potential risks and the corrective actions taken.”**

- DOE Manuel 231.1-2, OCCURRENCE REPORTING AND PROCESSING OF OPERATIONS INFORMATION, Approved 08-19-03

Why Report the Near Miss?

- **It's a Signal!**
- **It's an Opportunity!**
- **Positive Safety Culture!**
- <http://opim.wharton.upenn.edu/risk/downloads/wp/nearmiss.pdf>

Were These Events Reported as Near Misses in ORPS? You Make the Call!

- While climbing an extension ladder out of the elevator shaft a worker fell two to three feet and injured his wrist while trying to break his fall.
 - **No**

- A truck driver was in the process of delivering empty waste boxes when one of the boxes fell from the flatbed when he turned a corner. The event occurred in a little-traveled section of the site, and there were no injuries and no people were in the vicinity when the event happened.
 - **Yes**

- During a generator test a backfire occurred causing a rain cap to become dislodged from the exhaust stack.
 - **Yes**

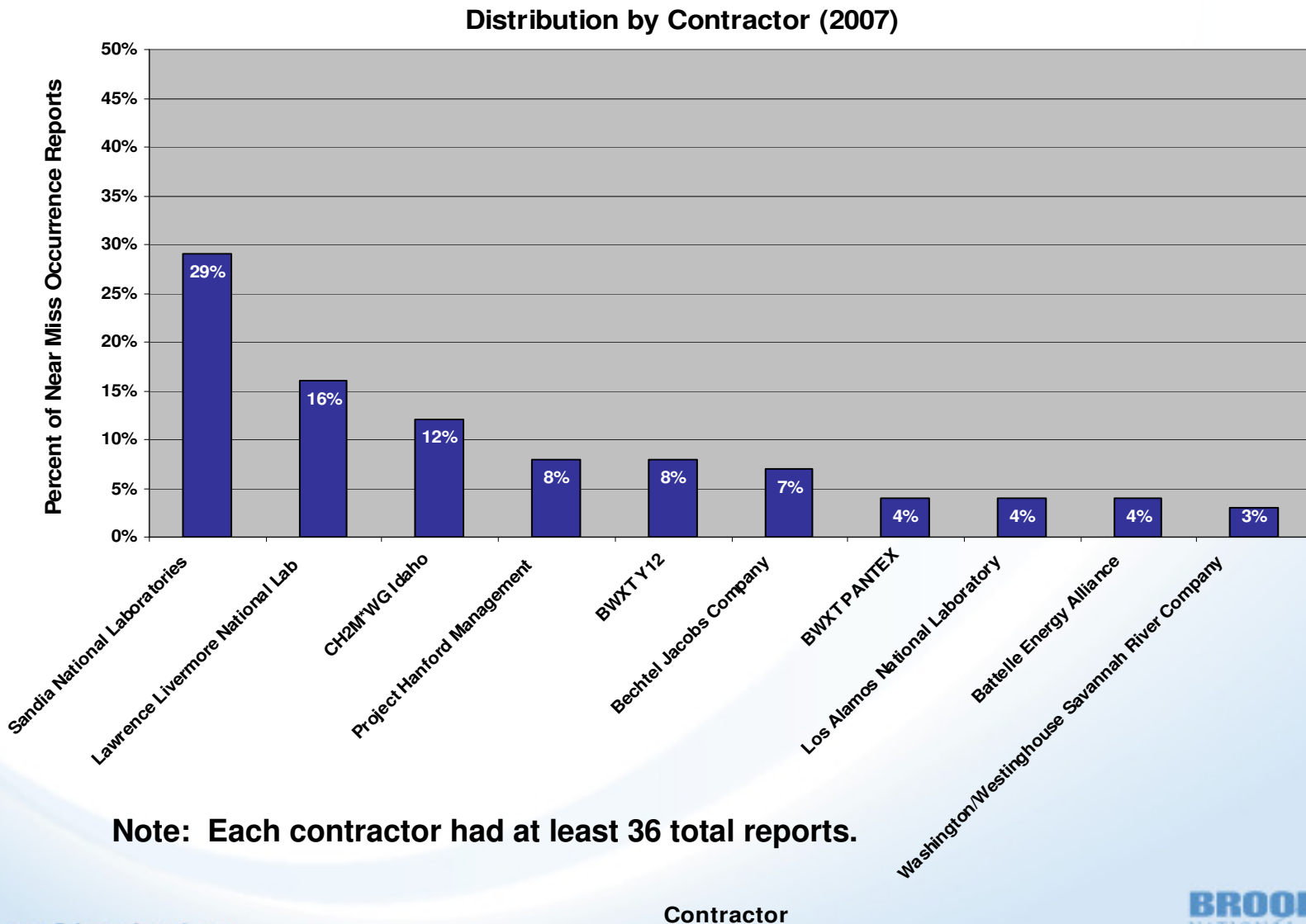
- An employee was walking over the grass area when the ground unexpectedly collapsed. The employee's right leg entered the ground to above the knee.
 - **Yes**



What's The Problem?

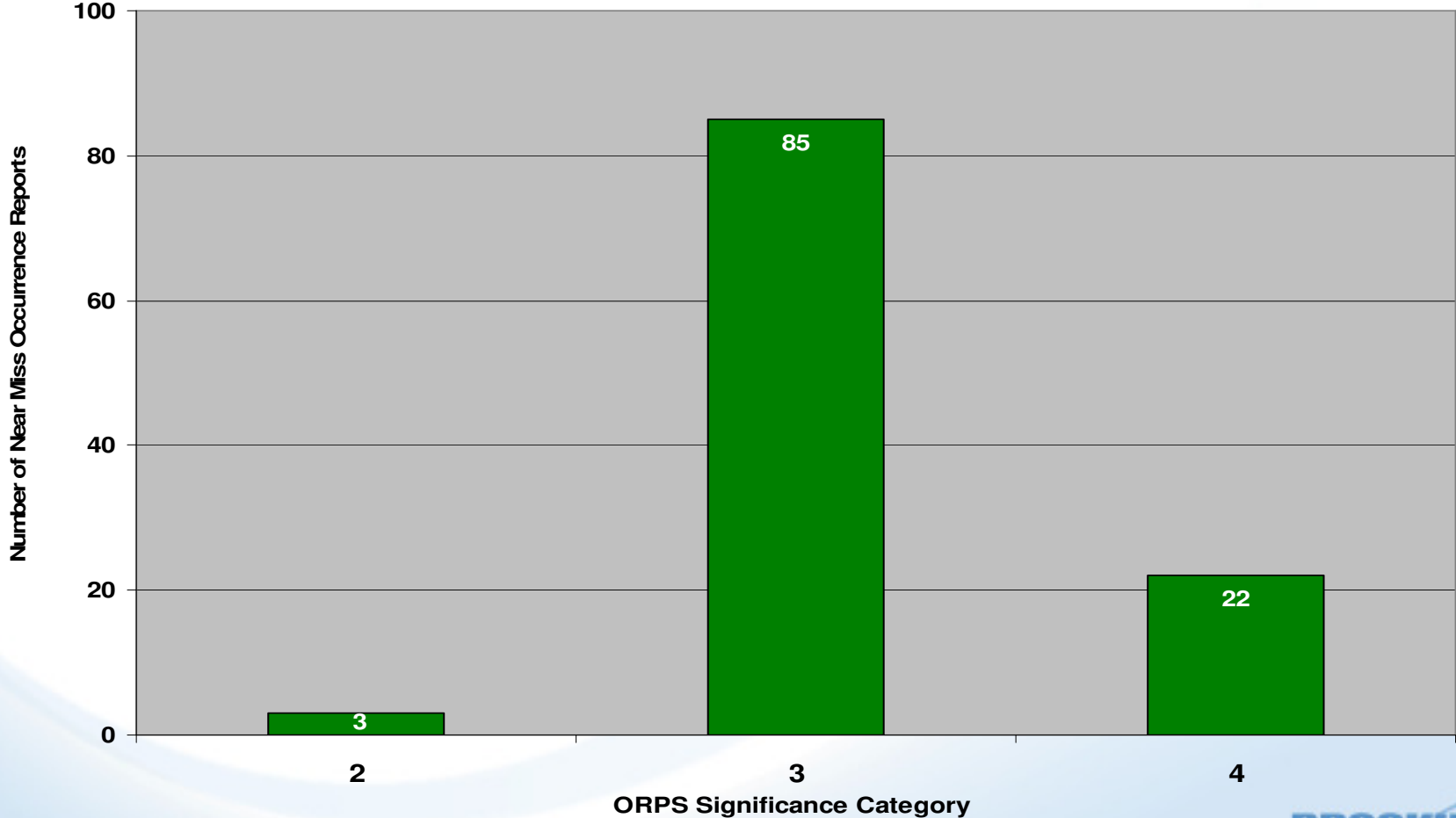
- **Near miss reporting is inconsistent throughout the DOE complex.**
 - **Our conversation on the previous slide makes the point.**
- **DOE Near miss criteria is not well defined.**

Who Reports Near Misses?



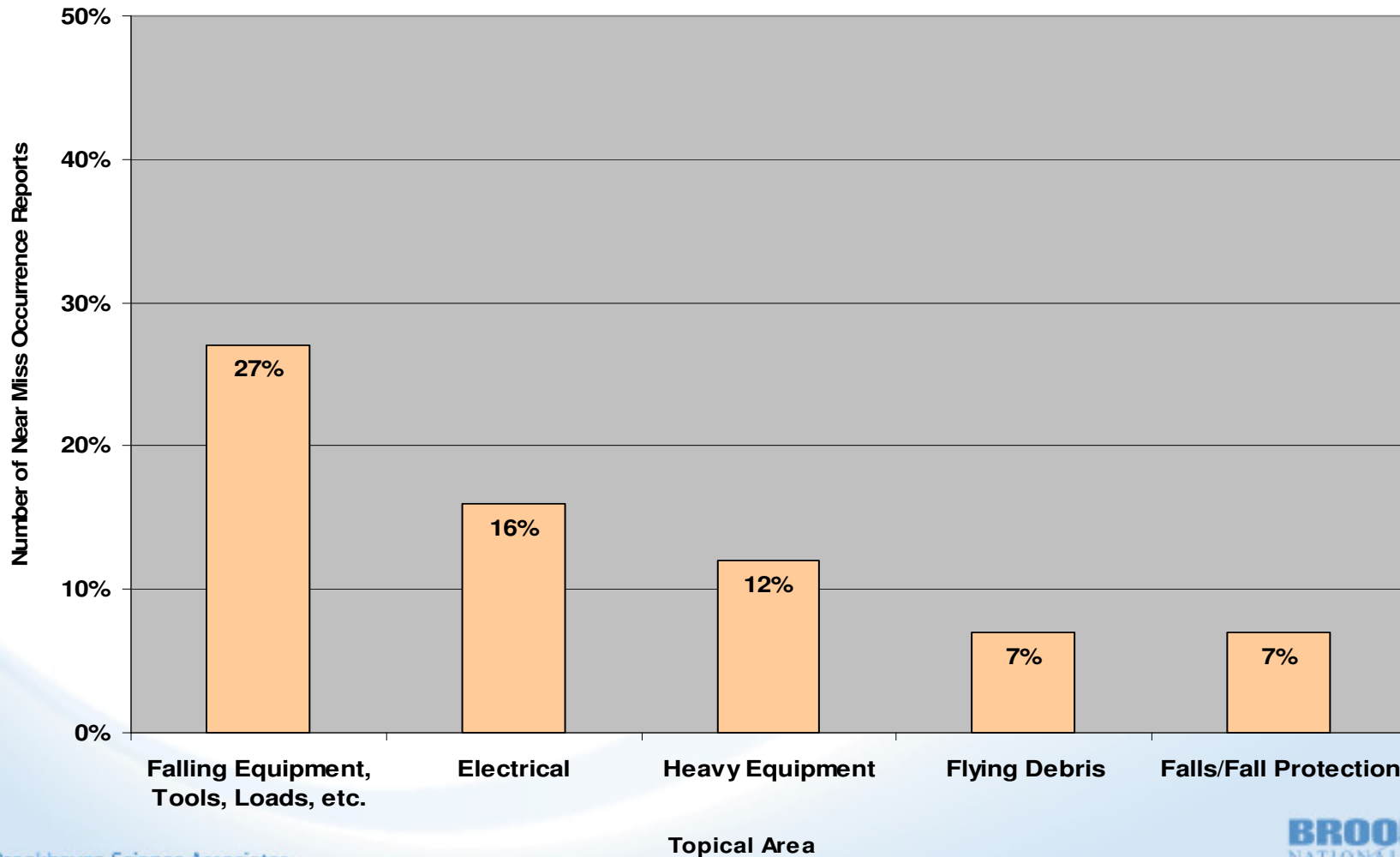
What is the Significance of Near Miss Reports?

Distribution of Near Miss Reports by Significance Category (2007)



What are the Near Miss Report Topical Areas?

Distribution (%) of Near Miss Reports by Topical Area (2007)



Are Near Miss Reports Predictive?

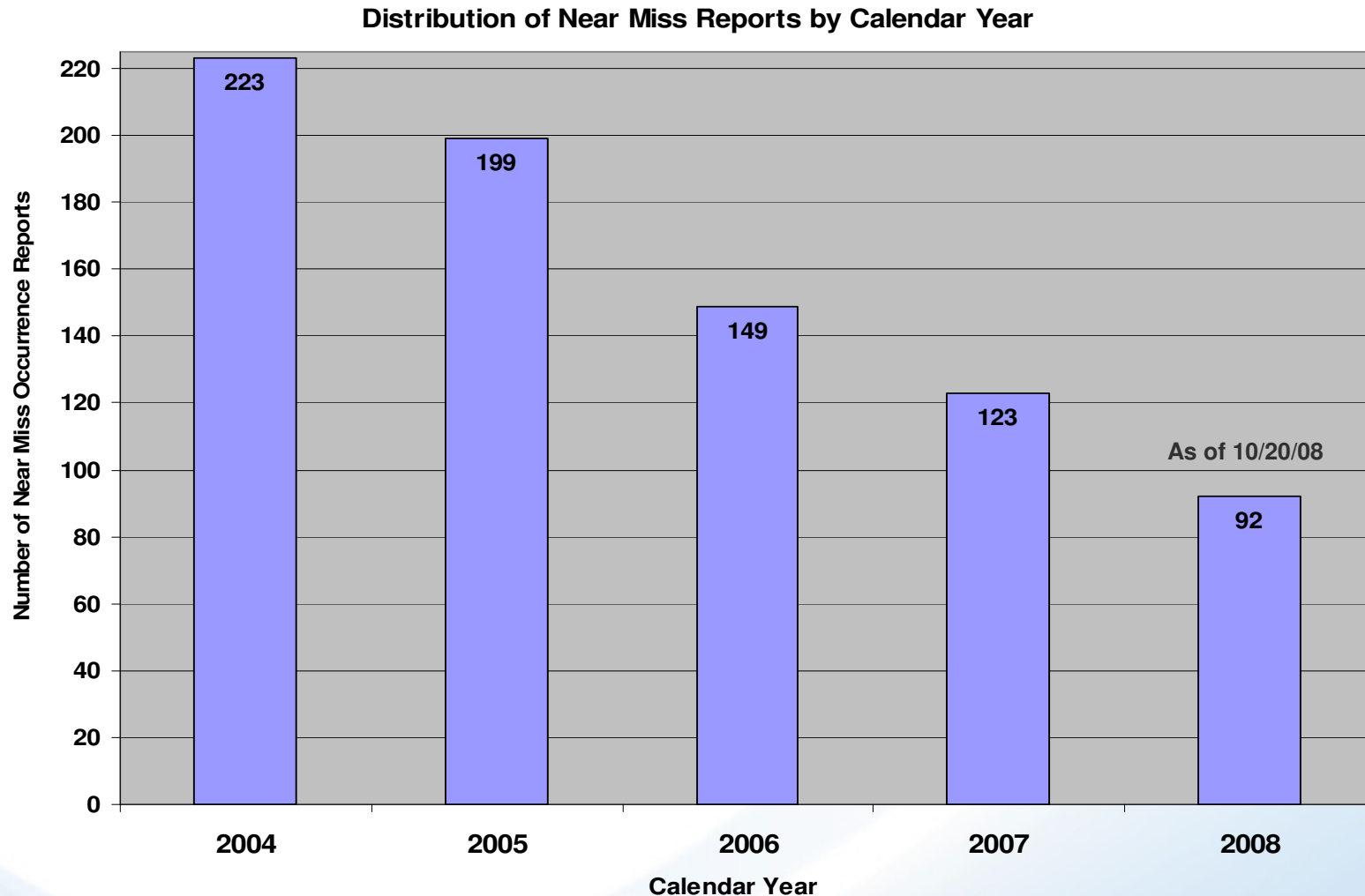
Near Miss ORPS Reports (2007)

1. Falling Equipment, Tools, Loads, etc.
2. Electrical
3. Heavy Equipment
4. Flying Debris
5. Falls/Fall Protection

Recurring “R” type ORPS Reports (2003 – 2007)

1. Hazardous Energy Control
2. Radiation/Contamination Control
3. Heavy Equipment/Material Handling
4. Technical Safety Requirements
5. Work Controls

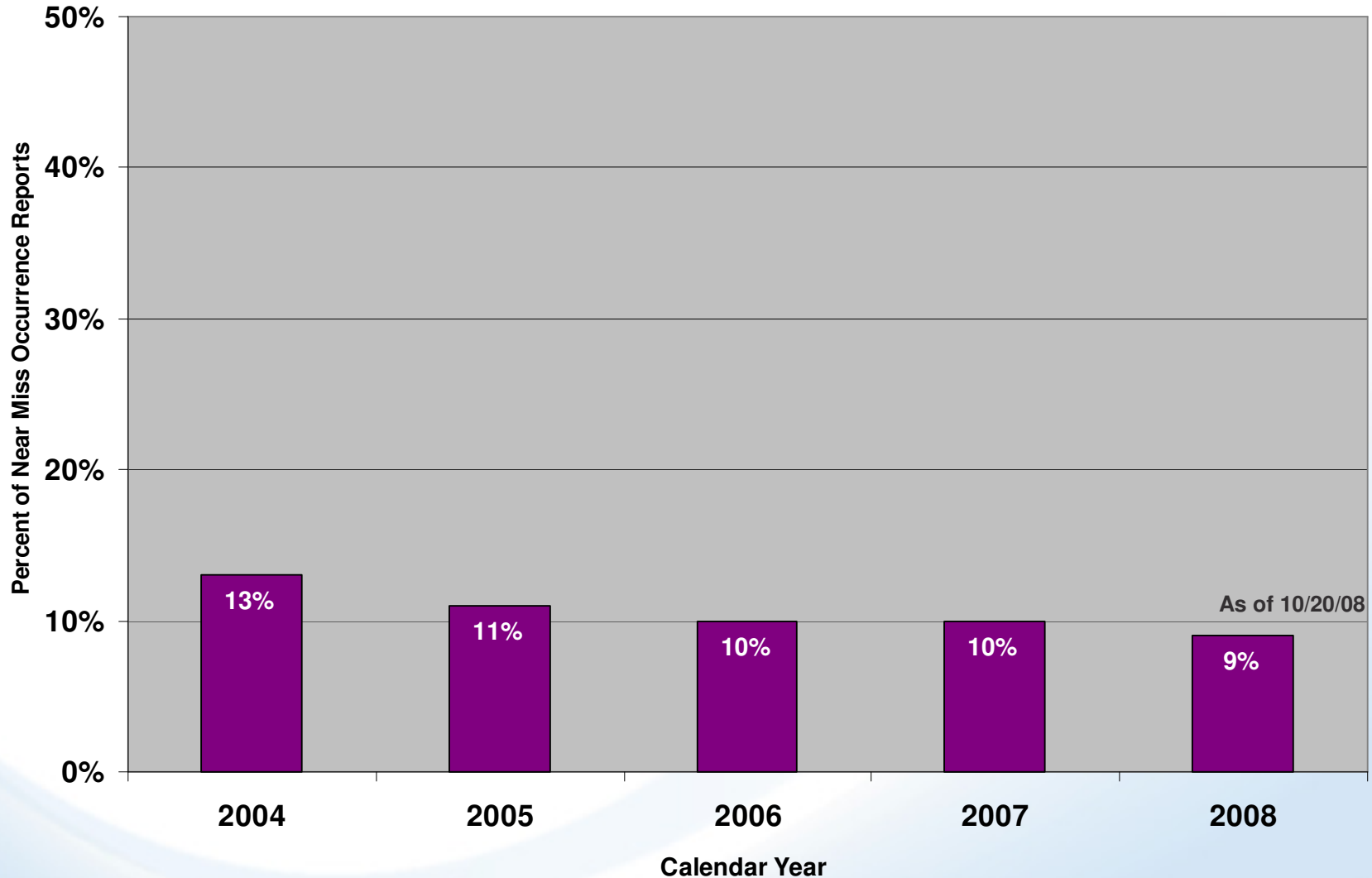
Is Near Miss Reporting on the Decline?



Note: This data includes reports that cite multiple reporting criteria.

Is Near Miss Reporting on the Decline?

The Percent of Near Miss Reports As Compared to Total Reports Issued



Note: This data includes reports that cite multiple reporting criteria.

Is ORPS Reporting in Agreement with the Safety Pyramid?



Overcoming Objections to Near Miss Reporting:

- They won't report near misses
- They won't report all the near misses
- We don't have the time or resources to deal with everything
- Marella, William M., "[Why Worry About Near Misses](#)," Patient Safety and Quality Healthcare, September/October 2007

What do Brookhaven National Laboratory (BNL) Event Categorizers Think About Near Miss Reporting?

- A near miss should be categorized at one significance category lower than had the event actually occurred.
- The management concern criteria provides a better mechanism for managers to share Near Miss and other issues.
- Near Miss reporting is so subjective and many times there is no barrier just good/bad timing.
- The problem with “chance” in the proposed criteria: (1% chance?, 10% chance?, 50% chance?, everything since there is always some chance?)

Proposed DOE/Contractor ORPS Near Miss Reporting Criteria:

A near miss to an otherwise ORPS reportable event, where something physically happened that was unexpected or unintended and significant consequences were avoided only by chance. The near miss resulted from either:

- a) no controls or no protective equipment in place to prevent more severe consequences, or**
- b) ineffective controls or protective equipment.**

The significance category assigned to the near miss should be based on an evaluation of the potential risks and planned or anticipated corrective actions.

Other Near Miss Criteria:

- **“A near miss is an unintentional, unsafe occurrence that could have resulted in an injury, fatality or property damage. Only a fortunate break in the chain of events prevented an injury, fatality or property damage.”** www.firefighternearmiss.com
- **“There were several failures of protective systems and if one more condition was changed in a plausible way, the consequences would result in a reportable occurrence.”** - BNL Staff
- **“An opportunity to improve safety practice based on a condition, or an incident with potential for more serious consequence.”**
<http://opim.wharton.upenn.edu/risk/downloads/wp/nearmiss.pdf>
- **“Any potentially harmful event that could have had an adverse result, but, through chance or intervention, harm was prevented.”**
<http://www.floridapatientssafetycorp.com/NearMissReportingSystemsandAdvisors/tabid/4289/Default.aspx>

Other Near Miss Criteria, Cont:

- **“A sequence of events and/or conditions that could have resulted in a loss, or in an outcome with more severe consequences than actually occurred. This loss was prevented only by a fortuitous break in the chain of events and/or conditions. The potential loss could result from human injury, environmental damage, or negative business impact (e.g., repair or replacement costs, scheduling delays, contract violations, loss of reputation).”**

http://www.rina.org.uk/c2/uploads/msc_84_15_4.pdf

Significance Category BNL (SCBNL): The Elusive Near Miss?

1. Operational Emergencies
2. Personnel Safety (SCBNL added)
3. Nuclear Safety Basis
4. Facility Status (SCBNL added)
5. Environmental
6. Contamination/Radiation Control (SCBNL added)
7. Nuclear Explosive Safety
8. Transportation
9. Noncompliance Notifications
10. Management Concerns/Issues



SCBNL Criteria

Group 2 - Personnel Safety and Health

- **An occupational injury that:**
 - **Requires hospitalization**
 - **Results in simple fractures of fingers, toes, or nose, or a minor chipped tooth**
 - **Causes damage to nerves, muscles, tendons, and/or ligaments as determined by a physician**
 - **Causes third-degree burns**
 - **Causes second degree burns with the exception of burns to extremities**
- **Any fire on the BNL site**



SCBNL Criteria

Group 4 - Facility Status

- Any evacuation not due to false alarm or part of drill/exercise
- Any Stop Work issued for confirmed imminent danger

Group 6 - Contamination/Radiation Control

- Loss of radioactive material which exceeds **50%** of the quantities specified in 10 CFR Part 835, Appendix E, or loss of accountability of such material for more than 24 hours.
- Identification of onsite radioactive contamination greater than **5 times** the total contamination values in 10 CFR 835 Appendix D
- Identification of onsite legacy radioactive contamination greater than **5 times** the total contamination values in 10 CFR 835 Appendix D

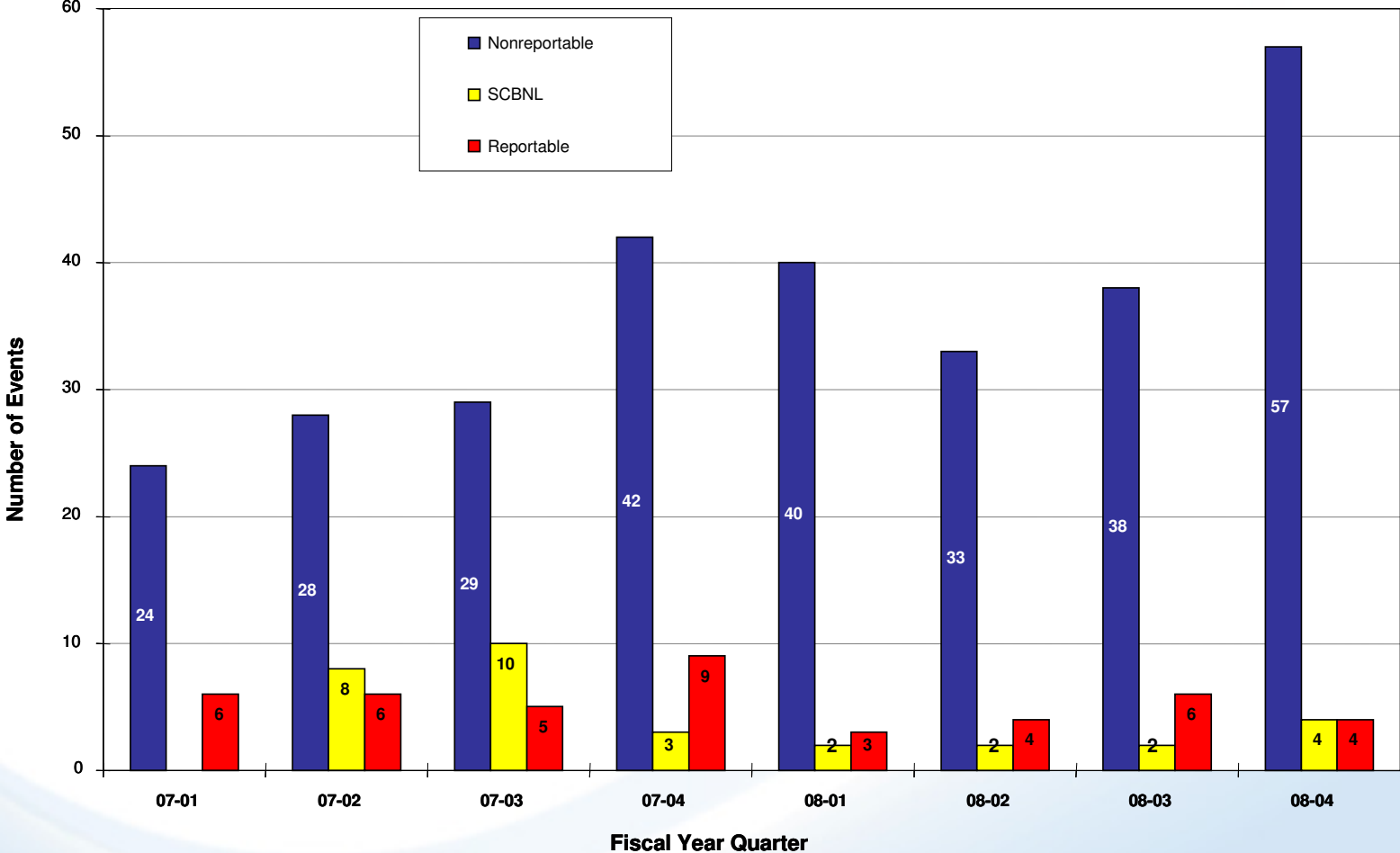


SCBNL Criteria

Group 6 - Contamination/Radiation Control

- Any single occupational exposure that exceeds an expected exposure or dosimetry result by: (1) **250 mrem** Committed Effective Dose Equivalent (CEDE), or (2) the greater of **5% or 50-mrem** effective dose equivalent due to external exposure.
- Determination of an estimated annual dose that exceeds **5 mrem** Total Effective Dose Equivalent (TEDE) for offsite exposures to a member of the public from air pathways only.
- Any onsite contamination of personnel or clothing (excluding site-provided protective clothing) that exceeds **5 times** the values for total contamination identified in 10 CFR Part 835, Appendix D. The contamination level must be based on direct measurement and not averaged over any area. This criterion does not apply to tritium contamination.

SCBNL: The Elusive Near Miss?



Ode to a Near Miss

**“A near miss is, one might say
An Accident that got away.
To 'see' it one must understand
That accident was close at hand.
Believers cross themselves and pray
While scientists see chance at play.
To see a near miss one must know
How accidents are prone to go.
How things go bump within the dark,
How grim reaper can leave his mark.**

Ode to a Near Miss – Cont.

Those who see 'incident' here
Know 'accident' was quite near.
Whatever term you wish to use
It's up to you, go on, please choose.
It matters not to us down here
How you measure just how near
Was the miss you almost had
Just that you missed, of that we're glad.
Defining's nonsense I would say
Let's just be pleased
It got away.”

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Proposed Path Forward

- **“Keep the conversation going”**

Gawande, Atul., “better A Surgeon’s Notes on Performance,” 2007

- **More research**

- **Develop a satisfying Near Miss Reporting Criteria that includes a cross section of examples**