

**Final Minutes of the Tier I Working Group Meeting FY 09 Q4 held November 4, 2009  
Safety and Health Services Division  
Brookhaven National Laboratory**

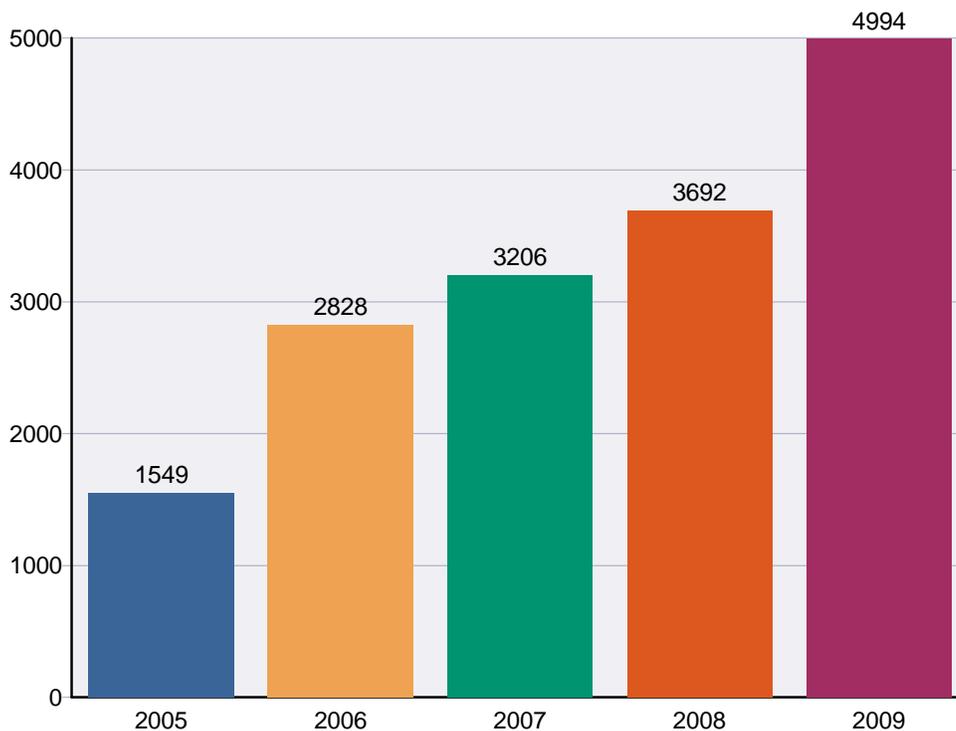
**Attendees**

Kay Conkling, Cheryl Conrad, Deborah Cubillo, Michael Dooling, Peter Eterno, John Flannigan, Ayse Frosina, Nicholas Houvener, Steven Kane, Keith Klaus, Arnold Moodenbaugh, Dave Passarello, Alan Raphael, Robert Sabatini, John Taylor, Mel VanEssendelft

**Agenda**

1. Rollup of FY 2009 Tier I Findings
2. BHSO Issue Database Trending Report (P. Sullivan) (He was unable to attend, but will come to a future meeting. It will be useful to see what BHSO is looking at in order to give us a heads up on what to look at.)
3. Presentation of Panel Labels and Labeling (A. Raphael)
4. Funded OSHA Work (M. Paquette)
5. New Tier 1 Database – Status (J. Flannigan)
6. Other Tier I Efforts this Past Quarter
7. Review of the Fire Safety Checklist

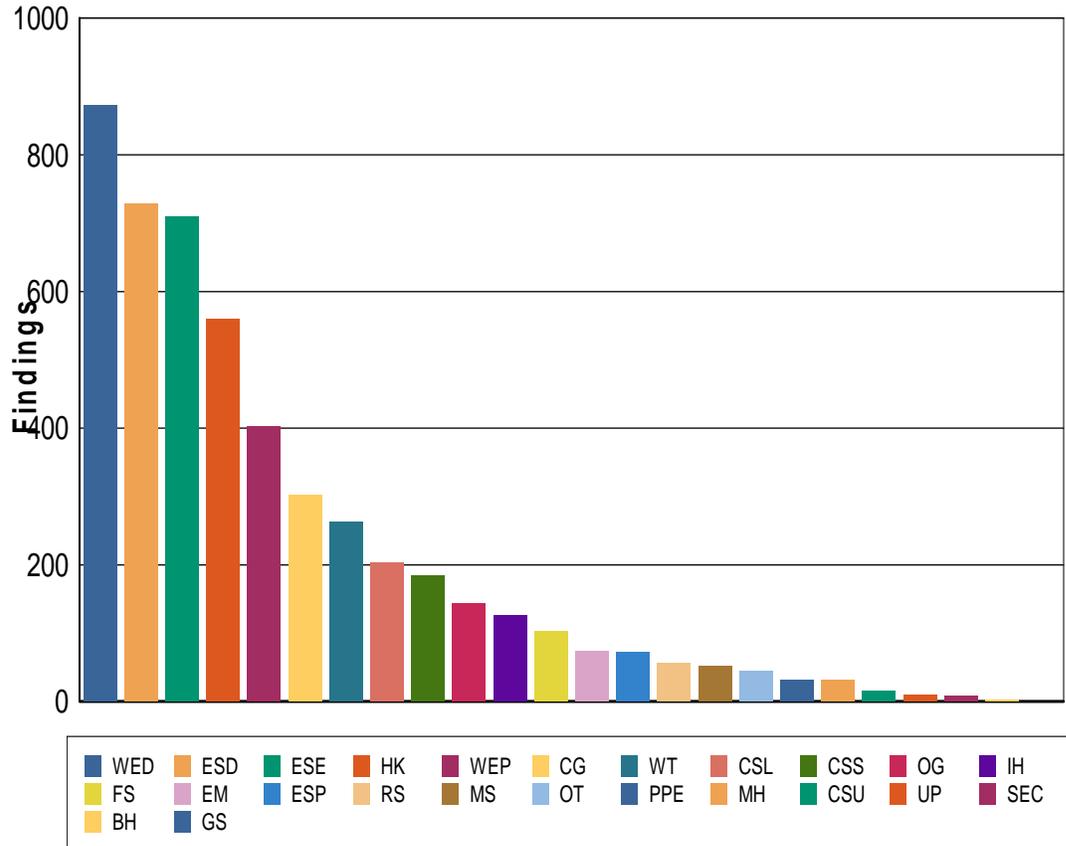
**Data Rollup Tier I Findings by Fiscal Year**



The following points were made:

1. The number of findings for FY 2009 exceeded S. Kane's expectations and is a banner achievement.
2. This indicates that the people are finding what there is out there to be found.

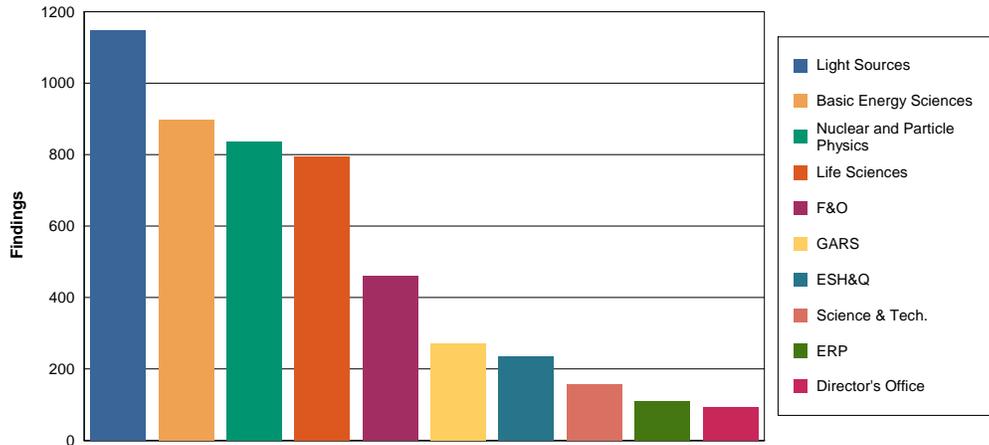
## Data Rollup of FY 2009 (Q1, Q2, Q3, and Q4) Tier I Findings by Category



The following points were made:

- 1 The greatest number of findings is in Working Environment Department (WED) (872 findings) and indicates that you are looking at yourselves critically.
- 2 There are almost as many findings in Electrical Safety Distribution (ESD) (728 findings) and Electrical Safety Equipment (ESE) (710 findings), with Housekeeping (HK) (560 findings) coming in fourth.
- 3 There was a good effort in finding Compressed Gas deficiencies; DOE was doing surveillances and M. Gaffney, subject matter expert, was out in advance of the new subject area and training.
  - 3.1 Not a lot of people have compressed gas, and this was validated by DOE.
- 4 SHSD is trying to get on top of static inventories.

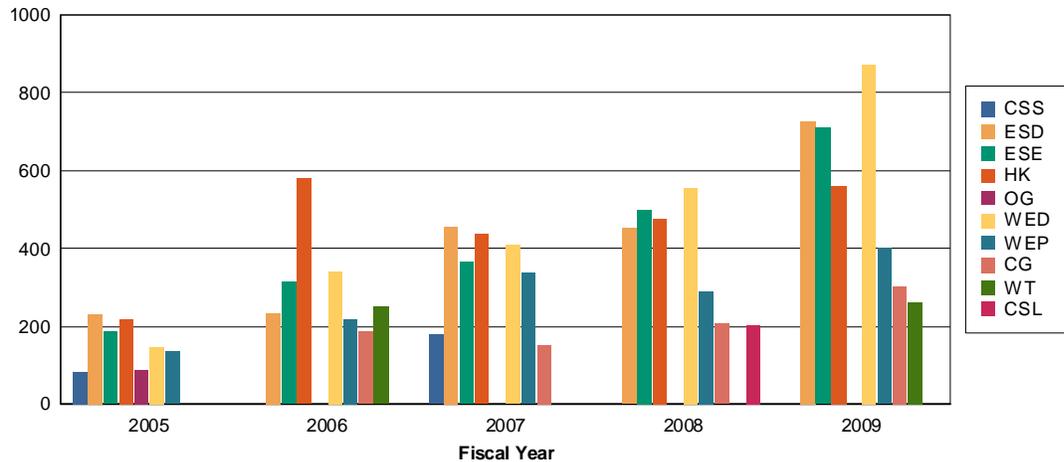
## Data Rollup of FY 2009 (Q1, Q2, Q3 and Q4) Tier I Findings by Directorate



The following points were made:

1. Keith Klaus of Light Sources, which had the most findings, has six buildings, one of which is a really large building.
2. BES is being truthful in trying to find what's out there to be found.
3. Departments in general are doing a good job.
4. F&O does not have enough findings to reflect the number of buildings it has.
5. EENS should try a little harder in finding deficiencies.
6. Maybe F&O and EENS should be given some training or assistance next year to help them find what they are not finding.

## Tier I Findings by Top 7 Categories



### 2009

WED	Working Environment: Department	872	ESD	Electrical Safety: Distribution	728
ESE	Electrical Safety: Equipment	710	HK	Housekeeping	560
WEP	Working Environment: Plant	403	CG	Compressed Gas/Cryogenics	302
WT	Waste	263			

The following points were made:

1. The most findings in FY '09 were Working Environment-Department.
2. Compressed Gas (302 findings) has received a lot of attention.
3. There were 263 findings in the Waste category which were due in part to the training given by S. Ferrone, F&O Environmental Compliance Rep, and the Satellite/Universal Waste Accumulation Area Guide he provided.

### **Presentation of Panel Labels and Labeling (A. Raphael)**

1. A. Raphael is the project manager for the arc flash analysis project which was a one time effort to go through BNL's electrical distribution system to identify all devices, analyze the devices, and calculate the available energy so that people could be told what PPE to wear.
2. Power comes in from the 69 kV LIPA grid into two central substations, one by the Collider-Accelerator Department and the other by the steam plant.
3. From there, it is broken down to 13.8 kV, some 4.16 kV systems, and a very old large 2.4 kV system. It then goes down to 480V systems.
4. At 208V, F&O and the LESC arrived at an agreement on the minimum voltage for labeling. The industry minimum is less than 125 kV amps transformer; hazards are not that bad if you are wearing normal electrician-type clothing, i.e., long sleeves, non-flammable clothing, a hard hat, and safety glasses.
5. The LESC asked that the project go down to 208V lighting panels and to follow the circuits off of them if the current was more than 225 amps.
6. They needed to get from LIPA the available energies coming into the plants.
7. A lot of field work and researching old drawings was done, and one computer model was made for each distribution system, and over 200 individual substation or transformer models were developed.
  - 7.1 Some transformers may feed multiple buildings, and in some cases multiple transformers feed one building.
8. Of the 30,000 devices analyzed, over 570 problem areas were identified for upgrades and funding was requested.
  - 8.1 In some cases because the equipment is so old, good operating curves could not be obtained because the manufacturers had gone out of business.
  - 8.2 In other cases, where the system could not be shut down for inspection, estimates of the most conservative case were made, i.e., the base model sold, but what was actually bought may have been a higher level.
9. The BNL approved arc flash label begins at hazard/risk category 0+, 1.2 calories/m<sup>2</sup>, which is the amount of energy a worker would be exposed to at the normal working distance. The PPE listed is to prevent you from getting any worse than a second degree burn.
  - 9.1 There are labels up to a hazard/risk category 4 listing the PPE to be worn for each category.
  - 9.2 For hazard/risk categories greater than 4, BNL does not have PPE that can protect the worker and posts a label stating "Danger, energized work prohibited" as indicated below.



10. There are also "Do Not Operate" labels which indicate not to open the enclosure while it is energized or do not operate it energized.

11. Another label posted on some of the 570 problem areas indicates “equipment overdutied”.
  - 11.1 In Chemistry there are a lot of panels that were energized when the electrician came by and could not be turned off; therefore the analysis could not be done.
  - 11.2 These panels were assumed to be 10,000 amps, but could have been 16,000 or 18,000 amps with the potential to carry 11,000 or 12,000 amps.
  - 11.3 In this situation the worst case was assumed and labels as indicated below were posted.



- 11.4 When maintenance has to be done on the system, the breaker/switch from this panel cannot be used to turn equipment off, and another switch upstream will have to be turned off.
- 11.5 This would be a good time to let A. Raphael know that equipment can be deenergized so the electricians could come in and verify whether or not the panel is really 10,000 amps, in which case this type of label may be replaced.
12. The module that A. Raphael discussed at the meeting is just one of five modules, and A. Raphael would gladly give this training (~2 hours) which covers everything from arc flash basics to the design of future systems to anyone interested.
  - 12.1 His course has been approved for PE continuing education credits.
13. A. Raphael made zero labels for some people. Using the table in SBMS, if under 250 volts and 225 amps, it is assumed to be a zero.
  - 13.1 The bottom of the label has room for a calculation number, and if marked NA it is because no calculation was performed and it does not show up on the one-line diagram.
  - 13.2 For people who put in a request, A. Raphael can model their system, do a calculation to verify it is zero, and put in on the one-line diagram.
14. In more of the modern buildings where 480V equipment is used, the equipment falls within the arc flash program and are labeled.
15. If something changes in your building, such as fuses or switches, let F&O know so that the calculations can be redone and the labels changed, if necessary.
16. If you are calling in a work order and want the analysis done as part of the work, make this clear so that P. Eterno can pass the work order on to an engineer.

### **Funded OSHA Work (Pete Eterno)**

The following points were made:

1. In FY '09 \$100K was spent correcting OSHA violations identified on Tier I's, and BNL hopes to get an additional \$100K for FY '10 to correct OSHA identified on Tier I's.
  - 1.1 Some of the issues addressed in FY 09 were: handrails and guardrails, emergency eye wash/shower upgrades, loading dock guardrail protection, handicap ramp repairs, belt and shaft guarding upgrades, fall protection devices, and machine shop anti-start devices.
2. The money received will be spread out among the buildings and availability of the trades.
3. Continue to identify OSHA-related issues on your Tier I inspections, and send the issues to M. Paquette so they can be addressed as funds become available.
4. If requested, M. Paquette will come out on your Tier I inspection.
5. Upper management is aware of the total dollars needed to fix OSHA violations, and there are other projects in the ADS system to fix other OSHA violations, i.e., panel labeling, that will get funded.
6. There is a five-year plan to work on panel labeling (putting up indexes and ID numbers) and we are now in the second year.

- 6.1 Some of the funding for the panel labeling had to be given to A. Raphael for the arc flash program.
7. Every building has a work order put in, areas are identified, and they hope to get funding.
8. M. Paquette will prepare for the next Tier I WG meeting two lists: (1) the buildings where complete panel directory updates will be done, and (2) those projects funded by OSHA money.

### **Tier I Inspection Web-Based Database (J. Flannigan)**

The following points were made:

1. DOE wants one system to capture all inspection findings.
2. It was decided to use Maximo as F&O uses Maximo for its work orders.
3. This core system will store Tier I inspections and deficiencies, and the option for notification will be added in Phase 2 which will occur when the next version of the software comes out, hopefully before the end of the fiscal year.
  - 3.1 A few screens were shown, i.e., the inspection comes up with the inspection number, system owner, summary details, target start and end dates, team members, location (selected from a pull-down menu), status of inspection, and details of each deficiency.
  - 3.2 Each department will be able to see only their data, and S. Kane will be able to see all the data.
  - 3.3 There is an option to export the data in an Excel spreadsheet.
4. C-AD enters its findings into ATS which has a notification feature and wants to change to a system that has notification; they want to use only one system.
5. J. Flannigan suggested a Working Group be formed now to look at the database.
  - 5.1 Although a Requirements Document exists, he wants to see what additional features the users want.
  - 5.2 D. Cubillo, K. Klaus, M. VanEssendelft, B. Sabatini, and D. Passarello volunteered to be on this working group. Addendum: P. Carr also volunteered.
  - 5.3 J. Flannigan will set up log-ons for these individuals.
6. R. Portesy is spending 50% of his time on the Tier I database and 50% of his time on Experimental Safety Reviews.
7. A requirements meeting was scheduled for 11/15/09 where R. Lebel will look at whether Maximo will be used for ATS.

### **Other Tier I Efforts During FY09 4<sup>th</sup> Quarter**

#### **Tier I Program Area**

The following points were made:

1. From the Safety and Health Services web page, select Program Area on the left navigation bar, click on 'T' to jump to the list of program areas that begin with a 'T', and then 'Tier I Inspections'.
2. The Tier I Program Area was expanded to include working group meeting minutes, inspection guides, and training and special information, i.e., information on container venting cap.
  - 2.1 New information is highlighted with a yellow star.
  - 2.2 The 'View Tier I Reports' link can be used to create charts similar to those presented at the meeting.
  - 2.3 The category table which was vetted two years ago can be viewed by selecting Tier I Deficiency Category Table.

#### **Fire Safety Guide**

The following points were made:

1. J. Levesque drafted a Fire Safety Guide referencing the Fire Safety subject area and NYS Fire Code.
  - 1.1 The guide includes the most common fire safety issues we should be looking for on the Tier I inspections so that we do not always need to have Fire Protection staff accompany us.

2. The category Housekeeping and Storage should be changed to Housekeeping and Workplace and Storage.
3. There should be at least 2 feet of clearance between the ceiling and storage in non-sprinklered buildings and at least 18" below sprinkler heads in sprinklered buildings.
  - 3.1 Ensure that if you have 2-door cabinets, material is not stored on top of the cabinet.
  - 3.2 If you have shelves, check that nothing is stored too close to the ceiling.
4. For hot work, i.e., cutting and welding operations, be sure there is a permit.
5. While ornamental, decorative or scented candles are not to be used, someone mentioned that when someone in her department was burning incense, the individual was told to stop.
  - 5.1 The subject area has to be checked to see if anything is mentioned about burning incense. Addendum: 11/19/09, C. Conrad, A search for "incense" from the BNL home page did not find any result for burning incense. Addendum: 12/8/09, J. Levesque, Under the Fire Safety Subject Area Section 1.2, Open Flames, Step 3 states "Do not use decorative or scented candles for ornamental reasons in the workplace or apartments." While this section does not mention incense, J. Levesque would extend this ruling to incense; it is open burning.
6. On your inspections, check to see that in occupied areas you have enough emergency lights and, if not, put in a work order to add additional emergency lights as this is an OSHA violation.
  - 6.1 Also check that these emergency lights are functional.
7. In the past there had been a problem with fires in butt stops, so please continue to check the butt stops. Refer to the subject area.
8. When checking fire doors to see if they are free to swing closed, pull the door off the magnet and see if the door swings closed.
9. Combustible storage should be at least three feet away from lead-acid battery charging areas.
  - 9.1 It was mentioned that custodians have floor machines that get plugged into lead-acid batteries and S. Kane will follow up on this.
  - 9.2 Oil-soaked rags must be kept in metal containers with tight-fitting metal lids separated by a distance of at least 2 feet from other combustible materials.
10. Flammable liquids that are transferred from their original containers must be in properly labeled and NRTL approved flammable containers.
  - 10.1 If necessary, use approved smaller bottles to store this liquid.
  - 10.2 Check that you see the label and it is properly marked, i.e., "UL".
11. Corridors must be unobstructed to the width of the exit door, that is, if the exit door is 32" wide, the hallway leading up to the exit door must be 32" wide and clear and unobstructed.
12. Portable space heaters need a BNL-approved label (see below), including the location which is paired to the room the space heater will be plugged into.

### Space Heater Label

<b>Property of Brookhaven National Laboratory</b>	
Placement of this space heater has been reviewed and is approved for:	
<b>Building</b> _____	<b>Room</b> _____
Keep combustibles 3 ft. away. Turn off when not in use. Stop use if circuit breakers trip.	
<b>Questions:</b> Contact the Facility and Operations Center, ext. 2468.	

- 12.1 During your Tier I inspection, check that the location on the label is the location for the space heater on the label.
- 12.2 If you find a space heater that does not have a BNL-approval label, call 2468 to put in a work order requesting an electrician to check the unit, and in the meantime ensure that the unit is not used.
- 12.3 The electrician will check the unit, the circuit that the heater will get plugged into, and the tip-over functionality.
13. The suggestion was made to offer NYS Fire Safety training to this audience. Addendum: 12/8/09, J. Levesque, He has been looking into training for the ESH Coordinators and Building Managers. It is not something that his group can provide in the near future. He supports the concept fully and would think we need to obtain outside support (and money to pay for them) to get it accomplished.
14. Development of a Cryogen Guide was requested.

## **Small Sciences Discussion of Working Environment Department Category**

The following points were made:

1. Small Sciences looked at what Working Environment Department really means and what, if anything, should be done about splitting up and better defining the category.
2. The group has additional work to do.

### **Short Topics:**

#### **CMS Static Inventory**

The following points were made:

1. When doing a Tier I, be sure that the static inventory is posted and current and does not go over the inventory.
2. If the static inventory is not posted, or if putting a quantity of gas would exceed the static inventory, the delivery will not be made.
  - 2.1 If there is a problem with this, contact F. D'Agostino of PPM, ext.2597, who has been very cooperative.
3. Returned bottles should be marked "empty" and placed in the appropriate empty area.
  - 3.1 DOE has backed off on empty cylinders putting a location over its static inventory.

### **Assessments**

The following points were made:

1. S. Kane will be doing an assessment of Department Tier I programs and how closely they are using the guides.
2. Please be sure that while you may not be using the Tier I Inspection Guide on the SHSD program area, the applicable elements of the guide are captured in your Tier I inspection.

### **Actions for S. Kane**

1. Check if there is an SBMS requirement prohibiting the burning of incense.
2. Check the issue of custodians who have lead-acid battery charging areas and may not be aware that combustible storage cannot be within 3 feet of the lead-acid battery charging area.
3. Ask J. Levesque about the criteria for exit signs, i.e., must they either be self-illuminating or illuminated by an emergency light?
4. Is there training on the NYS Fire Code geared for this audience, i.e., compressed gas?
5. Can a Cryogen Guide be developed?
6. Send an email to the folks concerning the requirement that space heaters must have a BNL-approval label displayed on the space heater (per Fire Safety Subject Area 1.1).