

# Long Shutdown Pre-SAD Agenda

(May 7, 2012 1:30pm-3:00pm & May 8, 2012 9:30am-11:00am)

**Introduction**

*Mont/ Mike*

**Scope of Work**

*F. Pilat*

**Execution**

*W. Oren/ D. Napier*

**Safety Issues**

*M. Logue*

**RadCon Brief**

*D. Hamlette*

**Closing Remarks**

*Mont/Mike*

\*\* Both meetings are in CEBAF Center Auditorium with overflow in CEBAF Center F113

# The Long Shut Down Scope of Work & Execution

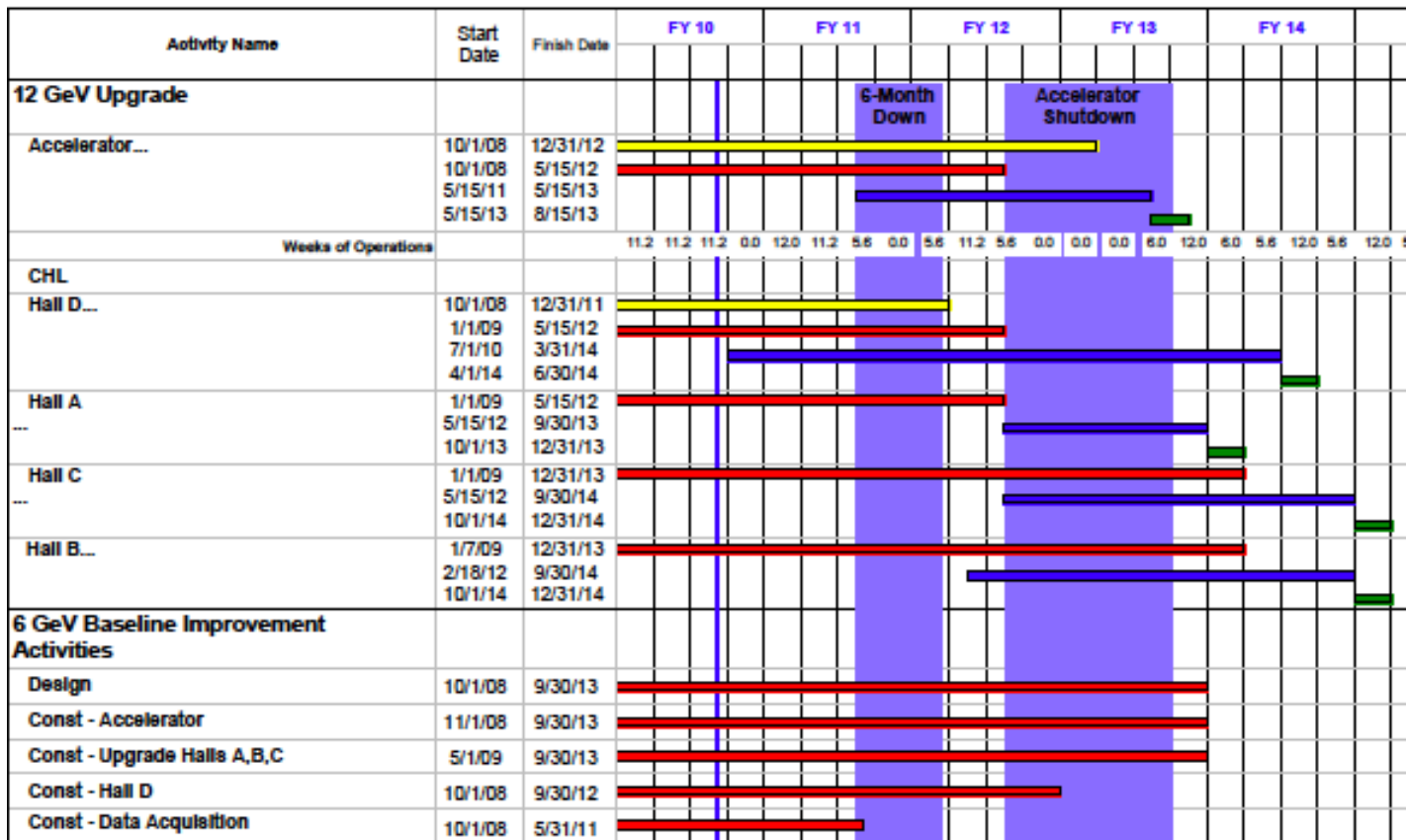
Fulvia Pilat

Dianne Napier, Will Oren

All Hands Meeting May 7<sup>th</sup> & 8<sup>th</sup> 2012

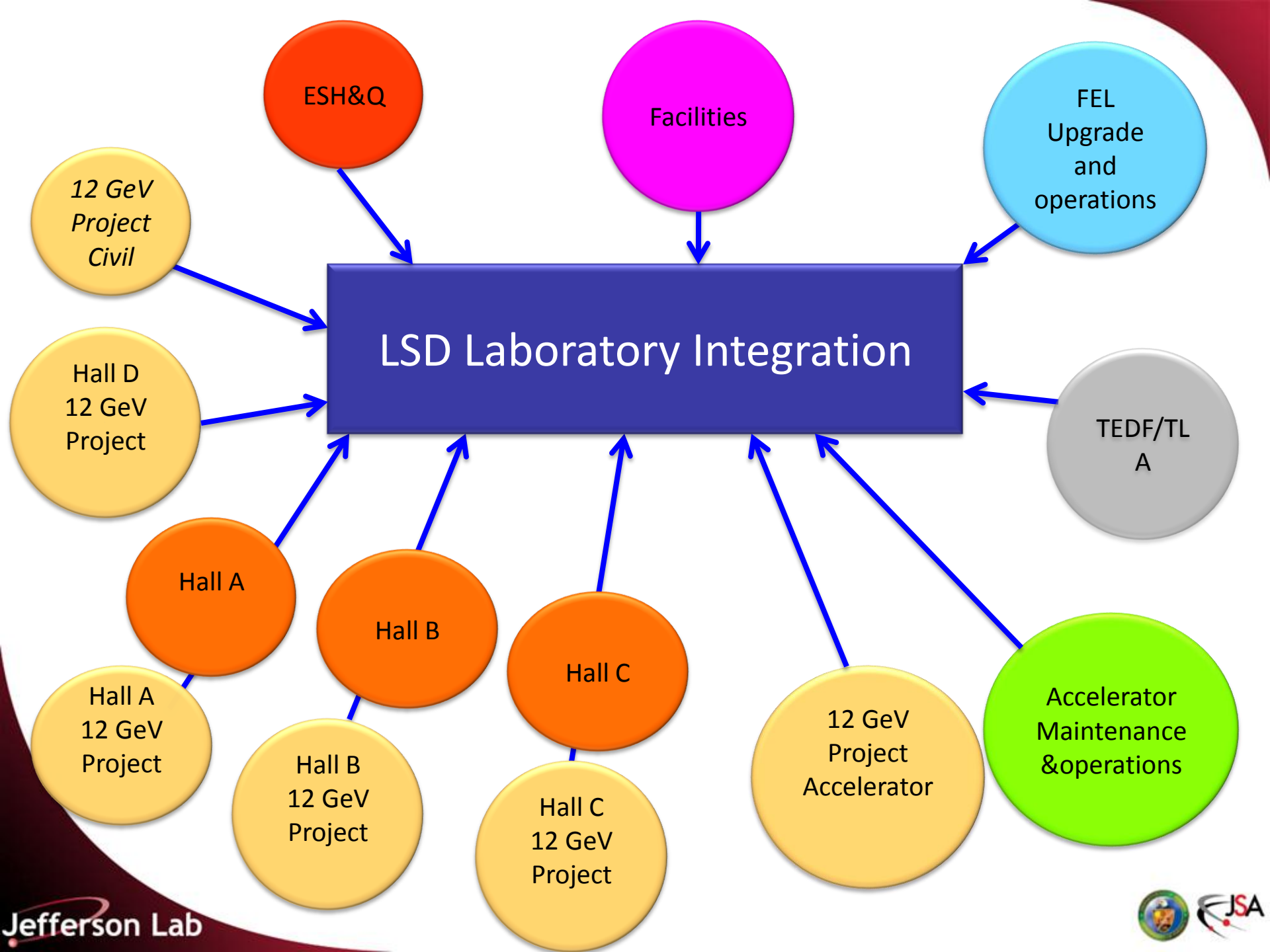
- ❑ **6MSD** (6-month Shut-Down) and **LSD** (Long Shut-Down):  
Lab-wide integration
- ❑ **LSD scope of work**
- ❑ **Organization**
- ❑ **Preparation:** schedule, resources, baseline
- ❑ **Execution:** field organization, change control, schedule progress (Dianne Napier, Will Oren)

# 6MSD and LSD



- Civil Construction
- Procurement & Assembly
- Installation & Checkout
- Beam Commissioning
- Procurement & Assembly - Proposed
- Installation & Checkout - Proposed





# 6MSD Summary

- Length: **May 15 –Nov 19**
  - Wide scope of work: 12 GeV civil construction 12 GeV accelerator, Halls maintenance, Accelerator maintenance, Facilities, FEL operation, TEDF construction
  - **Challenge:** quick return to operations for the last 6 GeV physics run
- Lab-wide integration, Director appoints “czar”  
6MSD Czar, Team, Project Management practices and support  
Preparation: Sep 2010 – May 2011  
Execution: May 2011 – Nov 2011
- **Scope of work accomplished** (exceeded the 12 GeV Project “stretch goal”)  
**Machine operations restarted at the target date**  
Critical to include in the plan 6 weeks of system **hot-checkouts** and machine **re-commissioning**

## LSD main differences from 6MSD:

- **length** (16+ months)
- Limited **civil construction**
- Much **more scope** for 12 GeV Project accelerator
- **Begin** of the installation of 12 GeV Project detectors in 4 Halls
- Commissioning of **new machine** at the end
- More **limited resources** (2012-13 budgets)

## Planning and execution of LSD based on 6MSD but:

- Adjustment of **Team composition** to scope of work
- Incorporation of **lesson learned** from 6MSD
- Adaptation of **organization** to the longer time-scaled
- More **dynamic schedule** (re-baseline every 5 months)

# LSD Scope of Work, High-Level

## 12 GeV Project, accelerator

- Install and commission **8 cryomodules**
- Complete all new RF zones
- Remove/rework/replace all **spreaders** and **re-combiners**
- Refurbish **Arcs 1 and 3**, complete **Arc 10**
- Complete and commission **CHL2** and **Hall D refrigerator**
- Rework HA HB HC beam-lines, install beam-line to HD
- New box and trim supplies

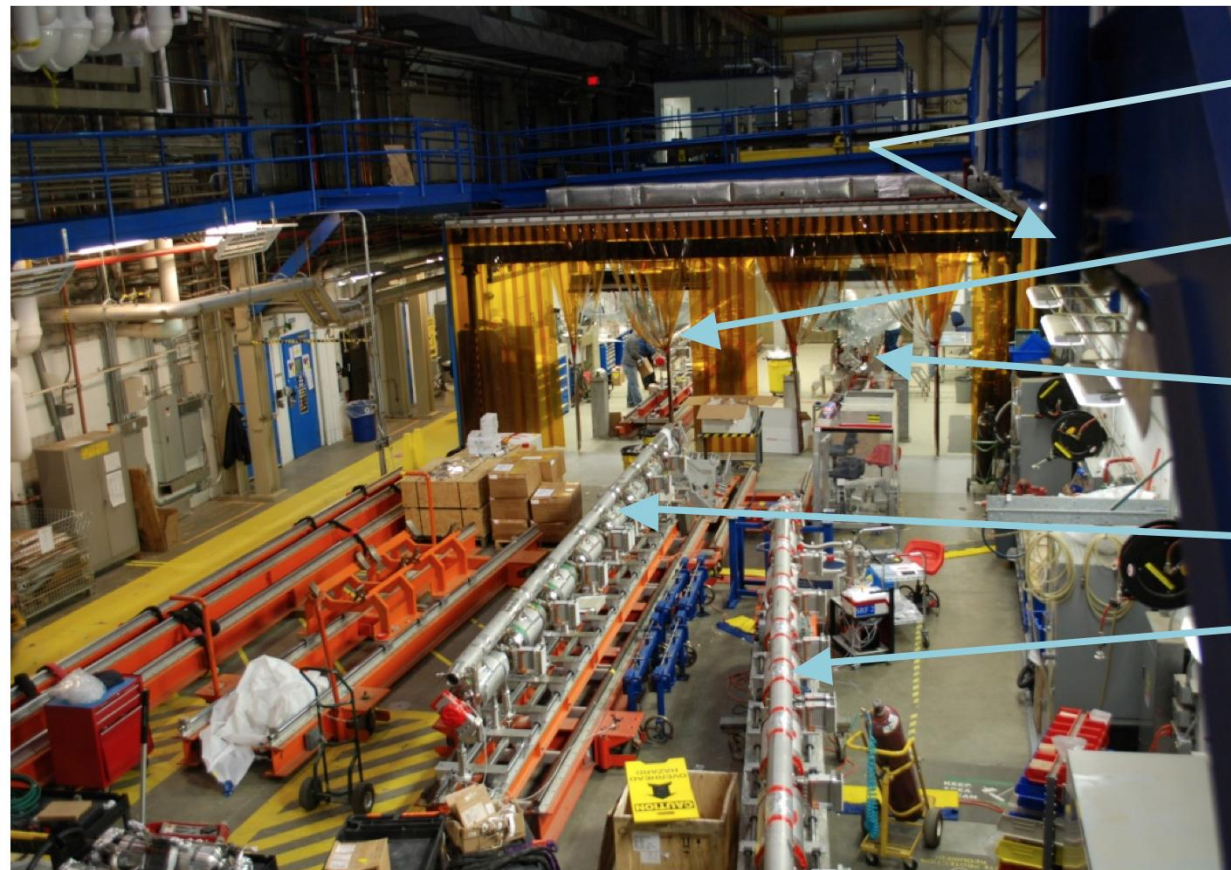
## Non-12 GeV Project, accelerator

- Upgrade of the injector
- **PEPPo running** (experiment to demonstrate polarized positron production)
- 11 GeV separators
- Dogleg upgrade
- Hall A dump
- Application software and operations database upgrade
- Maintenance tasks



# C100 Cryomodules now in construction

C100-1 and C100-2 in the tunnel; C100-3 and C100-5 in storage



C100-04 - Acceptance testing in progress

C100-06 - Cold mass assembly in progress

C100-07 - Final assembly in progress

C100-08 - He headers complete

C100-09 - Leak check in progress

C100-10 - Cavity string assembly complete; staged in cleanroom.



# Scope of Work – High Level

## Facilities Management

- **CHL-1 cooling tower** replacement
- 40 MVA to 22 MVA **Tie line**
- Tunnel penetrations repairs
- Counting house renovation
- Replacement of MCC HVAC/roof
- Countless maintenance activities (including waste disposal)

## FEL

- **Run until July 31** (CHL-1 down)
- Pull FL02, FL03, FL01 cryomodules
- **Upgrade and reinstall cryomodules**
- Prepare injector upgrade
- **FEL run starting February 2013**

# Scope of Work – High Level

## Hall A

- Upgrade Compton and Moller polarimeters
- Remove G2P experiment
- Install first 12 GeV experiment (APEX or A1N)
- Upgrade cryogenics

## Hall B

- Disassemble and remove CLAS
- Prepare for installation CLAS12 experiment
- Beam-line components
- Infrastructures (electrical, LCW, cryogenics, computing)

## Hall C

- Decommission and remove Qweak
- SHMS installation
- Magnet, power supplies and controls installation

## Hall D

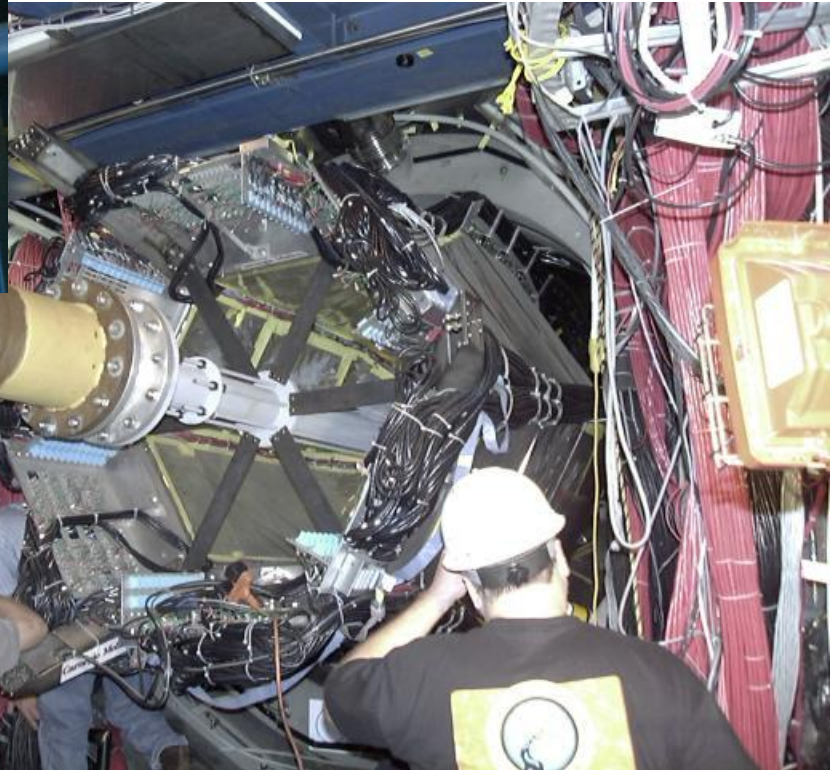
- Tagger area magnet and equipment
- Infrastructure Tagger area and Hall D
- New beam-line components
- BCAL, Pair Spectrometer, FDC, CDC, Target/Start Counter, FCAL, TOF

**For all Halls: commissioning**

# Hall A De-Installation



# Hall B Torus and Drift Chamber Removal



# Hall C De-Installation

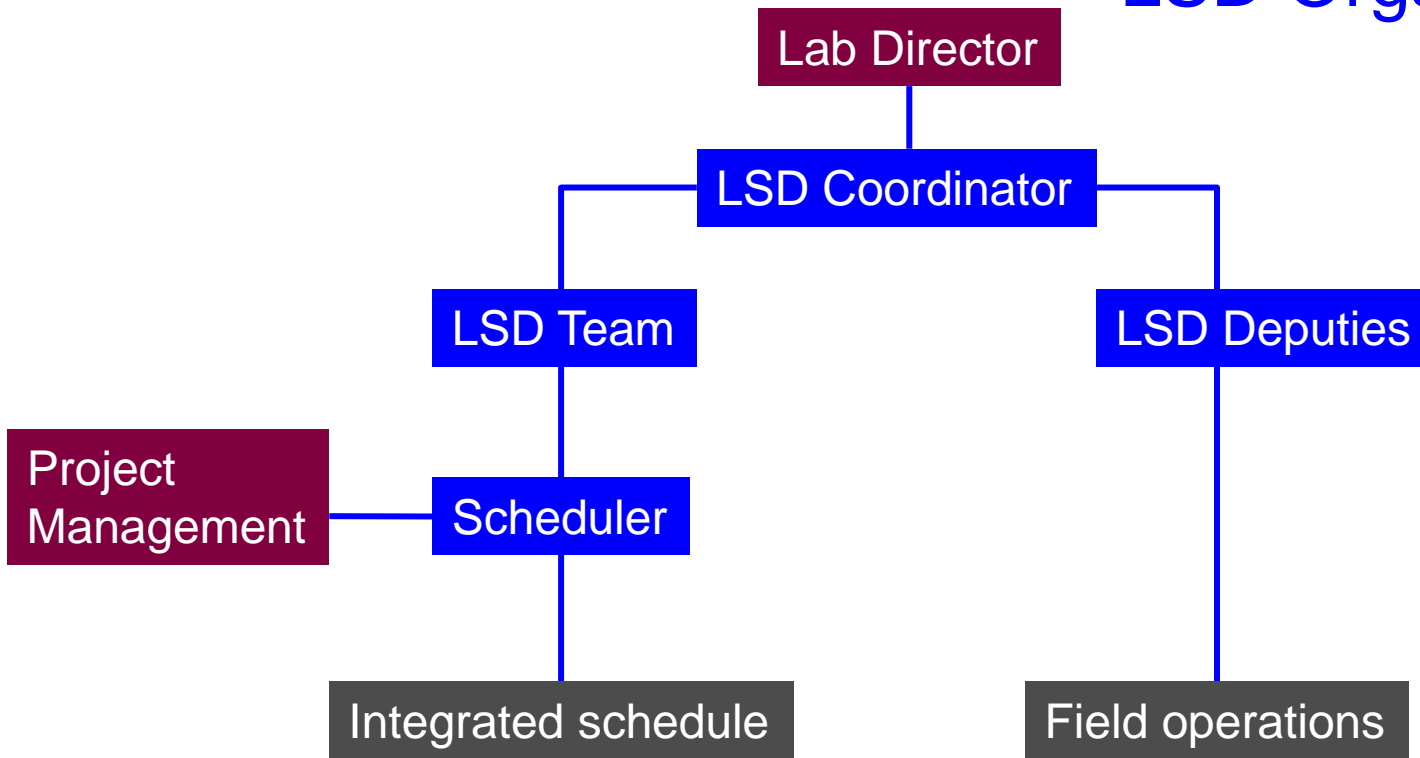


# Hall D Installation





# LSD Organization

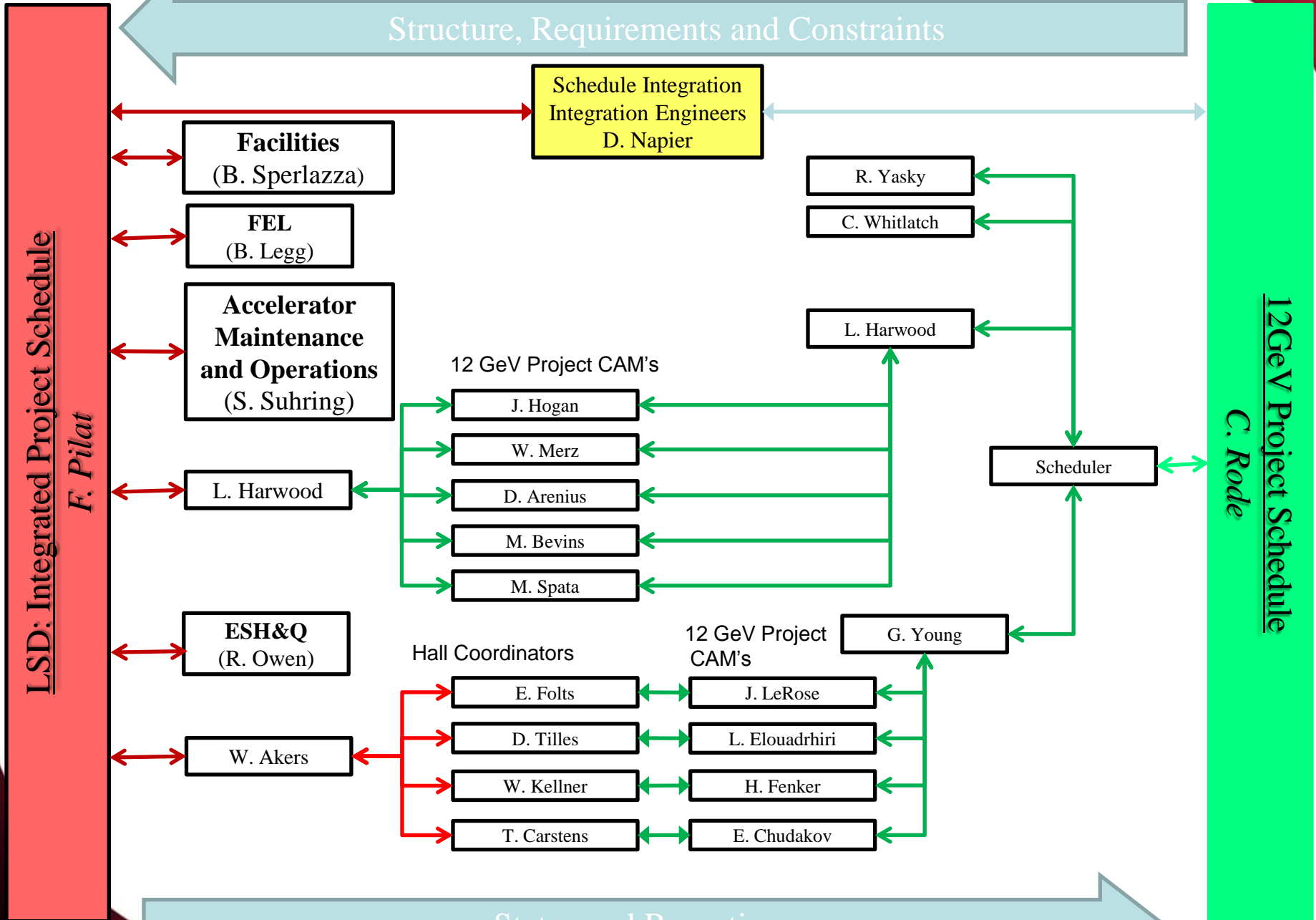


- **Team: coordination, priorities, problem solving**  
Representation from all Lab parties with scope of work  
Appropriate level
- **Integrated schedule**
- **Risks tracking**

- LSD Coordinator
- Physics
- Accelerator
- 12 GeV Project - Physics
- 12 GeV Project - Accelerator
- FEL
- Facilities (FML)
- Engineering
- Integration and Schedule
- ES&H
- Project Management

F. Pilat  
W. Akers, R. Ent, J. Gomez  
S. Suhring, A. Freyberger  
G. Young & CAMS  
L. Harwood  
B. Legg  
B. Sperlazza  
W. Oren  
D. Napier  
M. Logue, D. Owen, K. Welch  
H. Derby, P. Collins

Structure, Requirements and Constraints



# LSD Preparation

Weekly update meetings, November 2011 to May 2012

Define **scope of work**

Identify priorities

Build **integrated schedule** (Primavera)

**Resource allocation and leveling** (April 27)

**Baseline** (end April)

Lab all-hands scope/safety meeting (May 7-8)

**Director review** of baseline (May 16)

**Shutdown start** (May 18, day before Open House)

# LSD Execution

D. Napier/W.Oren

- **Weekly LSD Update Meetings**

- LSD Team meets every Thursday 10-11am CCF224 if needed to:
- **Review the long term view (6 weeks and on)** of the plan/schedule & discuss major issues that need all project managers
- **Continue long term planning** (Jan 2013 and on) & re-baselining (Aug/Sept 2012)

- **Monthly Schedule Progressing**

- The LSD Integrated Schedule will be **updated (progressed) monthly** and serves as the **long term view**
- Information available on the **LSD website**  
([https://www.jlab.org/div\\_dept/directorate/proj\\_mgmt/lzd/index.html](https://www.jlab.org/div_dept/directorate/proj_mgmt/lzd/index.html))
  - **Schedule** in PDF and Excel version
  - **Resource data** (list of activities by resource type/org)

# LSD Integrated Schedule

Integrated schedule  
(PDF and Excel Version)

2000+ activities

Cost not managed – only Schedule

Responsibility = Project Manager  
in charge of this scope/activity

LSD PLAN All Activities 03 May 2012		Durations are given in days and Budgeted Labor is given in hours										2012											
Activity ID	Activity Name	Start	Finish	Orig Dur	Budg Lbr	Physical % Complete	Predecessors	Successors	Resource IDs	RESP - Responsibility	Total Float	LSD PROJ ABBREV	J	F	M	A	May	J	July	A	S		
1.3.1.2.3	INSTALL CMFS	29-May-12 08:00 AM	01-Apr-13 04:00 PM	208.00d	1940.80h						77.00d												
495	4 - SL22 (132113075a)	29-May-12 08:00 AM	11-Jun-12 04:00 PM	10.00d	172.00h	0%	486, 01, 485a	496, 510, 495a	MECH ALIGN TECH MECH INST TECH LITE, MECH VAC TECH, DC ELEC TECH, RF ELEC TECH, SRF MECH TECH (Assty), CRYO MECH TECH	HOGAN	0.00d												

% Complete - Progressed every month  
(end of the month)

Resource IDs = resources required to  
perform the scope/activity

# LSD Resource Data

Resource Data  
(Excel Version)

List of activities by resource – S&A Example

Activity ID	Resource ID	Activity Name	Budgeted Units (hours)	Activity Start	Activity Finish	PROJECT/SCOPE LSD	PROJ ABBREV
124152125	SURV & ALIGN TECH	Survey of Laser System if Necessary	8	5/18/2012 8:00	5/18/2012 16:00	HA Compt Polar	
12432010	SURV & ALIGN TECH	Q-weak Post Run Surveys: Setup one Instrument Beam Left on Target Box Window	8	5/21/2012 8:00	5/21/2012 12:00	Hall C Qweak Remove	
1232000	SURV & ALIGN TECH	S & A PEPPo	48	5/21/2012 8:00	5/22/2012 16:00	PEPPo	
12432015	SURV & ALIGN TECH	Measure The Cold Motion, Fill With Helium and Cool, Warm Up Target	32	5/21/2012 12:00	5/23/2012 12:00	Hall C Qweak Remove	
12433000	SURV & ALIGN TECH	Laser table as-found (including BPM's)	24	5/25/2012 12:00	5/29/2012 12:00	Hall C Qweak Remove	
495	SURV & ALIGN TECH	4 - SL22 (132113075a)	0	5/29/2012 8:00	6/11/2012 16:00	12ACC-Instl CMs	
495a	SURV & ALIGN TECH	4 - SL22 Initial Alignment	24	5/29/2012 8:00	5/29/2012 16:00	12ACC-Instl CMs	



# SAD Calendar

Scheduled Accelerator Down

Login

<< Week 19 2012 >>

View ATLis Help

Key

- Good Plan
- Tentative Plan
- Major Event
- Incomplete Task
- Lock Up
- Utility Interruption
- Radcon Group
- Special Support
- Subset
- New/Changed
- ATLis Task

	Sun	M	T	W	T	F	Sat
19	2012-05-06	07	08	09	10	11	12
Owl							
Day				0830 BS (Beam C100 push -OR- PEPPo Work PEPPo BS Plan Replace bulk	1330 Safety	0930 Safety XC ITV swap	
Swing							
20	2012-05-13	14					
Owl							
Day							

https://www.jlab.org/div\_dept/directorate/proj\_mgmt/lzd/index.html



https://www.jlab.org/div\_dept/directorate/proj\_mgmt/lzd/index.html

- LINKS
- LSD Home
  - Meeting Agendas
  - Meeting Notes
  - Presentations
  - LSD Pre-SAD Safety Training
  - Weekly Progress Meetings
  - Scope of Work
  - List of Issues

### Long Shutdown (LSD)

[SAD Calendar](#)

[Integrated Schedule Folder](#)



Click on Image

- **Monthly CCB (Change Control Board) Meetings**
  - **Who can you go to for changes in the plans?**
  - **Board consists of:**
    - **D. Napier** (Change Request Coordinator (CRC))
    - **F. Pilat** (LSD Coordinator)
    - **W. Oren** (Engineering)
    - **S. Suhring** (Accelerator Operations)
    - **L. Harwood** (12GeV Accelerator)
    - **G. Young** (12GeV Physics)
    - **J. Gomez** (Physics)
    - **Advisors:**
      - LSD Deputy (during their rotation period)
      - D. Owen (ESH&Q)
      - H. Derby, P. Collins (PMI)
- **CCB meets monthly (or as needed) to review log and Change Requests**

**Re-baseline in August/Sept 2012 and every ~5 months  
(adapting to FY funding levels)**

# LSD Execution

- **The 3-C's of Human Performance (our training from last week)**
  - **Communication**
  - **Communication**
  - **Communication**
- **It starts with your daily toolbox meetings:**
  - **Work group meetings**
  - **Project coordination meetings (Beam transport, CM installations, endstation work, etc...)**

# LSD Execution

- **Daily 8:00 AM Meeting**
  - **Where:** Machine Control Center until renovations begin then ???
  - **What:** Look ahead for that day and the upcoming week.
  - **Who:** Work coordinators, Project coordinators, supervisors & “Long Shutdown Deputy (LSDD)”

# LSD Execution

- **Biweekly Wednesday 1:30 Resource Meeting**
  - **Where:** MCC until renovations begin then???
  - **What:**
    - Glance back on previous 2 weeks,
    - Look ahead next 4-6 weeks w/ any change orders
    - Safety performance review
    - Project & resource provider presentations where there are “challenges”
  - **Who:** Work coordinators, Project coordinators, & “Long Shutdown Deputy”

# Long Shutdown Deputies

- LSDD Duties:
  - Write the Daily Activity Summary, post it to the e-log & conduct the 8:00 Daily Summary Meeting reviewing the activities and the SAD Calendar.
  - Consult with the LSD Coordinator, Operability Manager, EES Liaisons, Director of Operations and Project Managers as necessary.
  - Organize and lead any additional meetings needed to tackle issues that affect day-to-day scheduling that are not addressed elsewhere.
  - Carry the LSDD phone (876-7997)

# Why “Waste” Your Time in Meetings??

- **Again Human Performance/Work Planning**
  - Understand the **conditions** you are working in:
    - Who is in the same area or coming through
    - Is there hot work going on?
    - Is alarm testing going on: Fire, ODH, .....
    - Power outages, Etc.
  - Understand the **context** you are working in:
    - Are we holding schedule & if not how is it being changed
    - Are there new folks working around you? What are their skills sets and plans?
  - The way you do this is to **communicate**

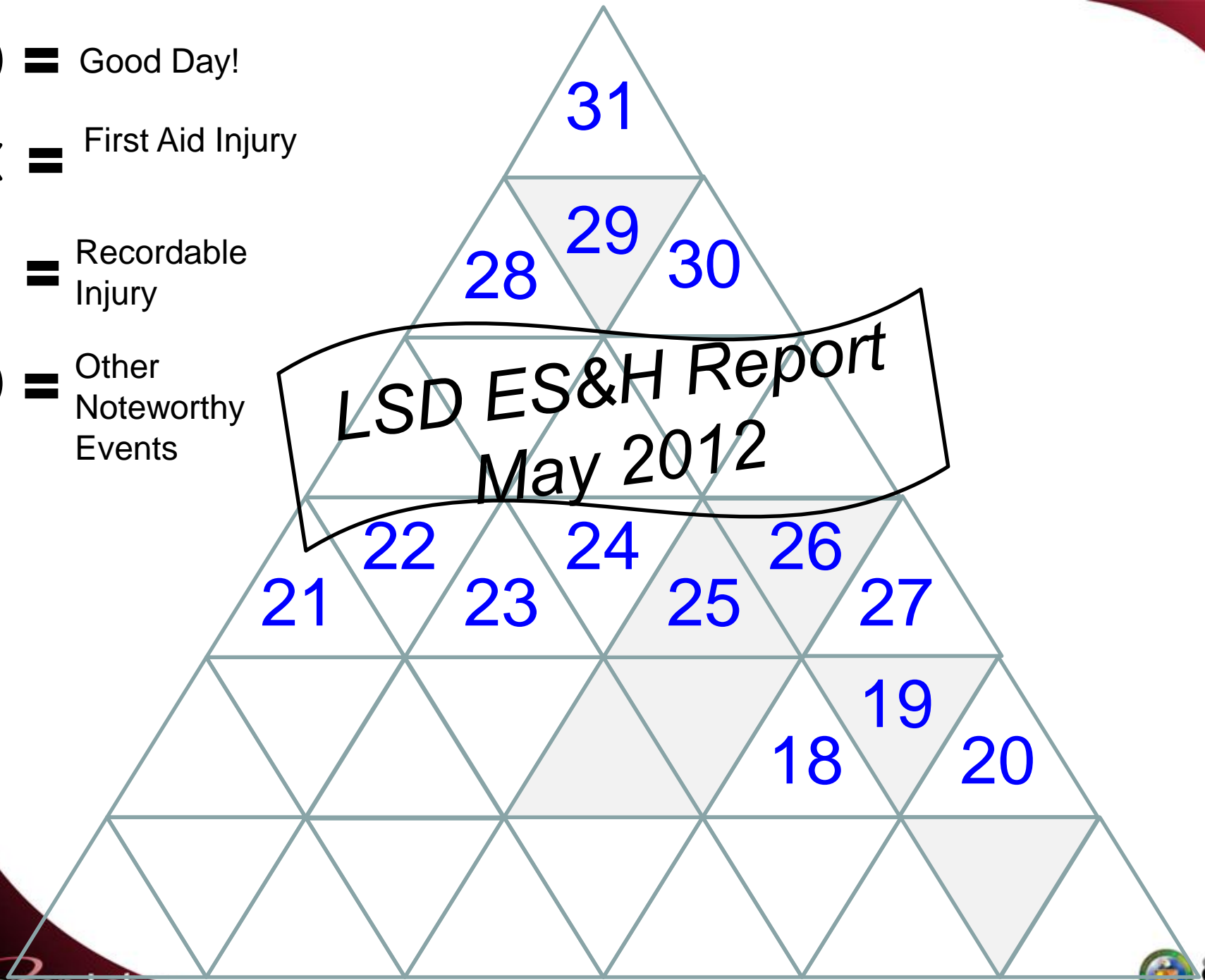
# Conclusion

- You should be hearing about what is going on from your supervisor, he/she will be attending the coordination meetings.
- In general, there will be no lack of information just a failure to pass it on!



-  = Good Day!
-  = First Aid Injury
-  = Recordable Injury
-  = Other Noteworthy Events

**LSD ES&H Report  
May 2012**



- Injury History of Past Shutdowns
- Lessons Learned from 6MSD Events
- Focus: Work Planning
- Focus: Weekly Tool Box Meeting
- Focus: Newer Employees
- Safety Observations during 6MSD
- RadCon Reminders

# Shutdown Injury History

	<b>FY10 (12 weeks)</b>	<b>FY11 (26 weeks)</b>	<b>FY12/13 (64 weeks?)</b>
<b>First Aid Injuries</b>	12	21	?????
<b>Recordable Injuries</b>	2	1	????
<b>DART Injuries</b>	1	0	??

# Lessons Learned from 6MD Injuries & Events

- **Regularly reevaluate work** areas as conditions may change daily
- **Use a spotter** as necessary during material handling
- **Communication is vital** in order to report and understand the status of accelerator systems **particularly at the end of an extended shutdown**



Figure 2: Damaged Coils

# Lessons Learned

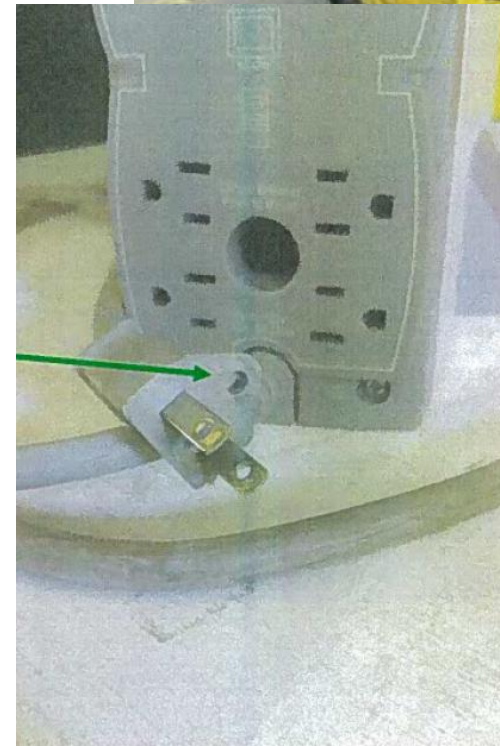
## – Work Planning

- **Seek input during work planning** and consult relevant resources to thoroughly evaluate hazards to reduce exposures
- **When an unplanned situation is discovered:** immediately suspend the task and replan the work before restarting
- **Use engineering controls preferentially over PPE**



# Lessons Learned - Electrical

- **Routinely conduct inspections for equipment which is moved frequently** and plugs are subject to more wear and tear versus fixed location or rarely moved equipment
- **"Independent" quality control checks** should be initiated to double check tasks which are being completed to ensure electrical safety measures are being followed



UPS power cord close-up with broken ground pin

# Focus: Job Planning

- **Data Shows:** The more serious injuries occur while employees are performing “routine” work
- Pre-Job Briefing with employees is important
  - S** ummarize the critical steps
  - A** nticipate error traps
  - F** oresee consequences
  - E** valuate defenses
  - R** eport lessons learned
  - Include walk-down of work area
  - Post Task Hazard Analysis in work area

# Focus: Job Planning

- Work Control Documents are required if more than just Standard Protecting Measures are required to get Risk Code  $\leq 2$ 
  - OSP/TOSP/THA
  - Temporary Work Permits
    - Confined Space, Hot Work, RWP, Dig/Blind
- Watch for Scope Creep and unanticipated changes
- Don't forget post job review
  - Complicated jobs
  - Tasks where unanticipated issues arose

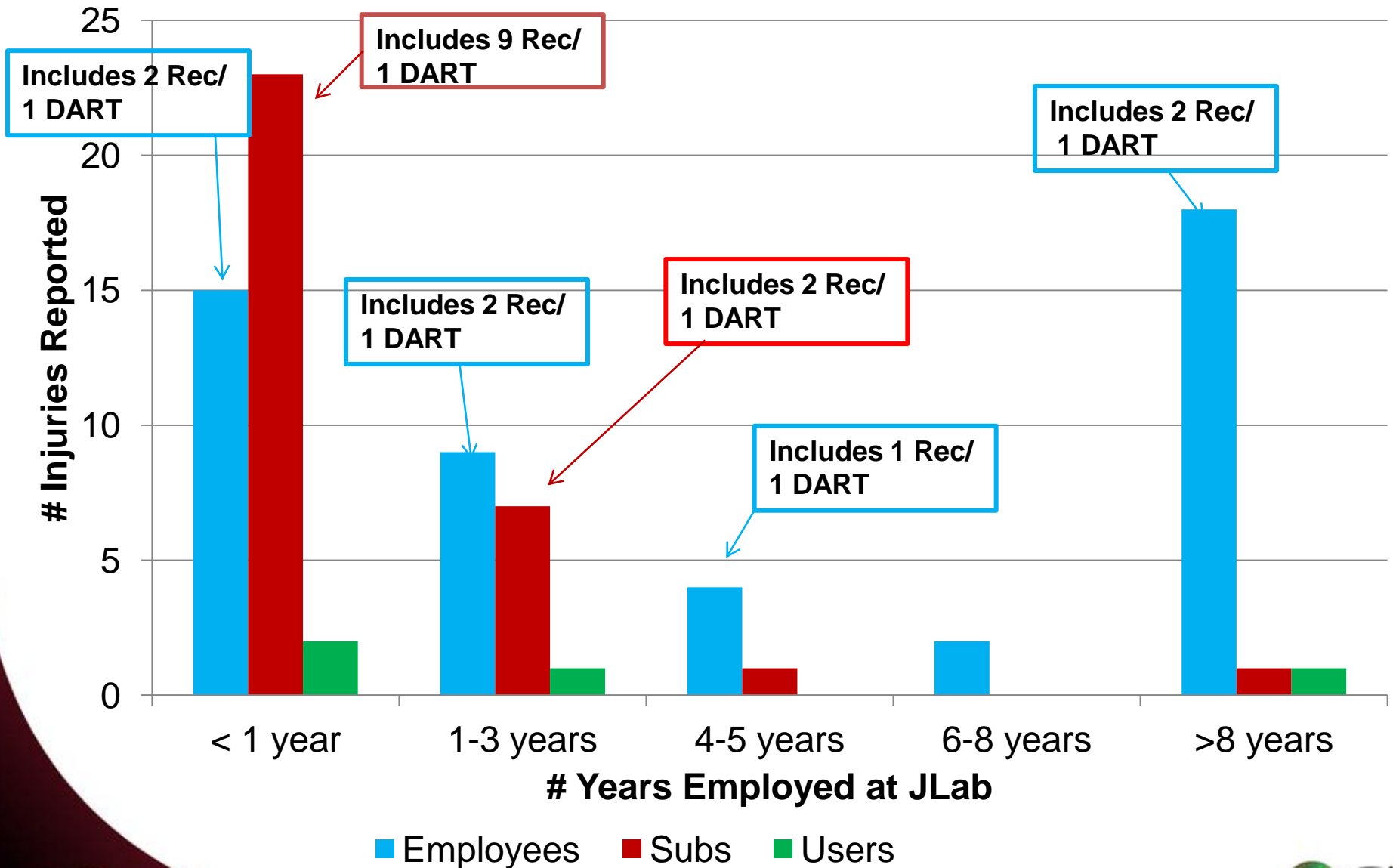


# Weekly Toolbox Safety Briefing



- **S**elect a relevant topic
  - Use the THA or some current/relevant source of information
- **U**ppdate the group on the topic
  - recruit a speaker who can share relevant work or personal experience for a few minutes
- **P**romote a questioning attitude
- **E**ncourage discussion on the topic
- **R**efer questions that can't be answered
  - DSO, EHS&Q Liaison, Safety Warden

# FY11/12 Injuries – Years of Experience at JLab



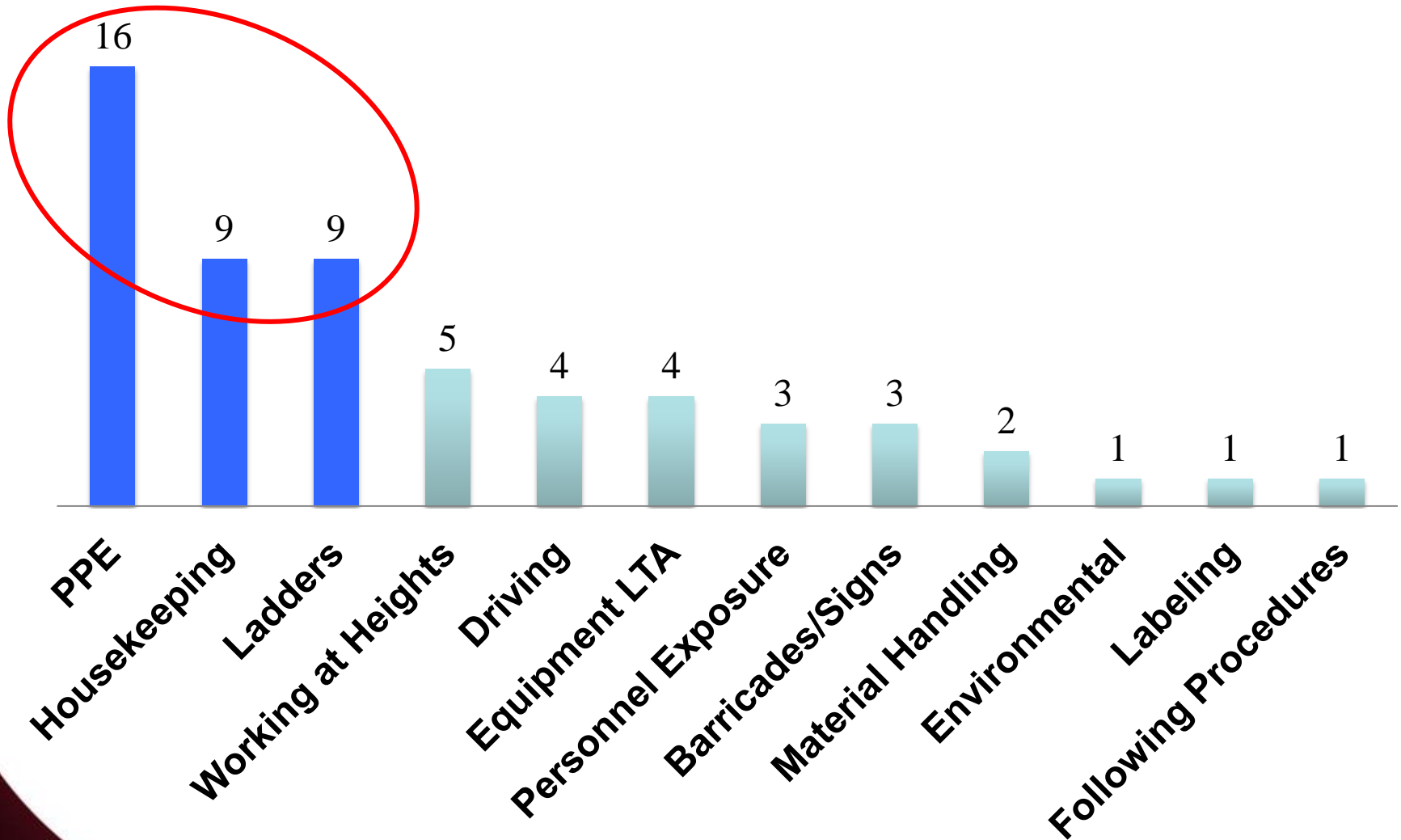
# Focus: Newer Employees

- **Data Shows:** Our more serious injuries are happening to employees who have been at JLab <3 years
- **Don't let anyone perform work until you are satisfied that they can work safely and to your expectations**
  - Make sure training is complete, OSP/TOSP/THA have been reviewed
  - Hold daily pre-job briefing
  - Use "Repeat Back" style of communication

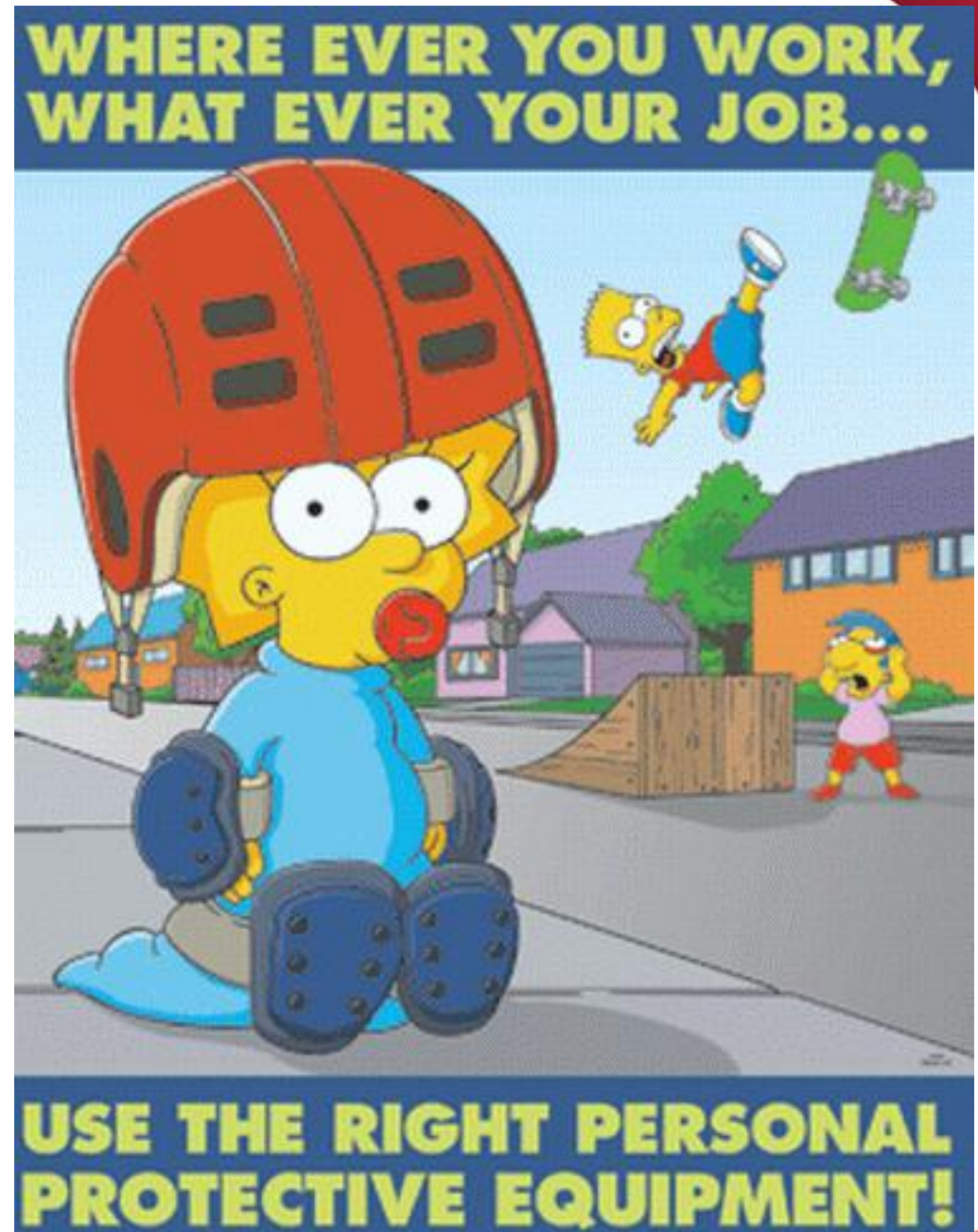


"Who taught the new guy how to use the Brad Nail Gun?"

# FY11 6MSD – Safety Observations



# PPE

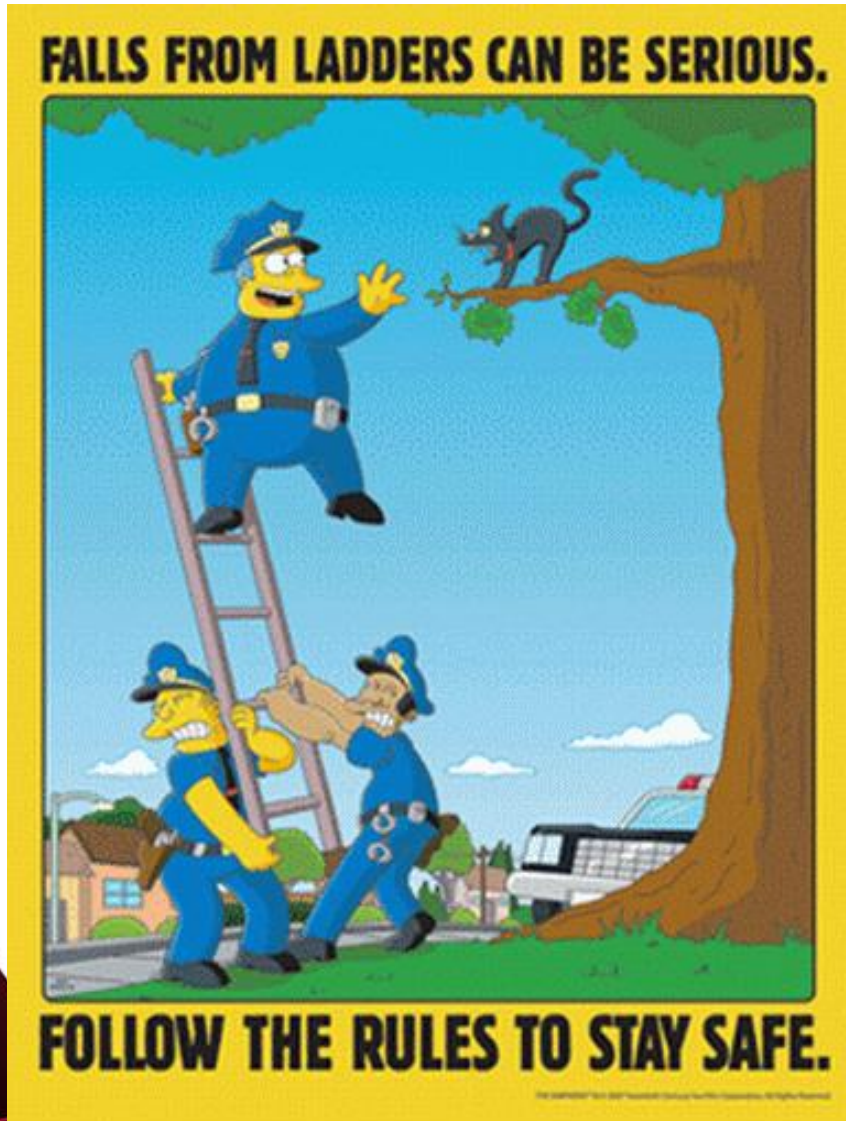


# HouseKeeping

- Our most serious injuries can be attributed to housekeeping
- Take the time to clean when you finish a task
- Have a place for everything and keep everything in its place



# Ladders



- Use right ladder for job
- Inspect before use
- 3-point hold
- Don't stand on top 2 steps
- Don't straddle



**NOBODY  
GETS HURT  
TODAY !**



# Pre-LSD Safety Shutdown Meeting 2012

**MISSION POSSIBLE**

*RADWORKER PROTOCOLS*

# *Mission Objectives*

- **Radioactive Materials removal**
- **Radwaste**
- **Release of Materials**
- **New Radioactive Materials Areas**
- **Visitor**
- **Basic RW-1 Protocol “refresher”**

# *Radioactive Materials*

*There will be a significant amount of radioactive materials coming out of the beam enclosures....*

- Hall B and C overhaul.
  - The spreader/recombiner upgrades
  - The continued dipole magnet re-work
  - Hall dump tunnel maintenance and upgrade
  - Typical routine PM
- \* Remember, ALL RAM at JLAB is accounted for!*

# Radioactive Materials(cont'd)

A yellow radioactive material tag from Thomas Jefferson National Accelerator Facility. The tag includes fields for Description, Location Generated, System, Time Rate (mR/h) Contact, Contamination Level, Special Instructions, Special Characteristics, Bulk Liq, Wet, Dry, In Re. Act, SF, Normal, Other, NCT Signature, Date, Material Type, SBR, Waste, Other, RAM Cost, and Tracking No. 2232.

- All items coming out of beam enclosures require RadCon survey PRIOR to removal (be mindful of tool bags and equipment carts when performing repairs/replacements)
- Items activated are labeled with Ram tag
- Significant coordination with respect to RAM storage.
- Staging shelves and racks in the NL/SL/Halls & FEL
- Items that are considered Save for beneficial reuse (SBR) will have identified storage locations (some new areas posted)

# *RADWASTE*

- A large amount of the equipment coming out of the beam enclosures will be activated and require disposal
- Activated items/equipment determined as non-usable are managed via the RCD radwaste program
- Typically large Equipment designated as radwaste, taken to ESB/Radwaste or CMSA
- Small potentially activated items can be thrown in Radwaste bins
- There will be several new hoppers and containers for various waste provided by Facilities and RadCon

# *RADWASTE (cont'd)*



*We must ensure radioactive waste is placed in the proper containers!*



# *Release of Materials*

- Items that are surveyed “clean”
  - ✓ “ok” tags used in the halls (only during SAD)
  - ✓ RadCon is responsible for surveying and bringing up items from N&S Linacs

*\*RCT's perform site rounds at least twice daily to support work efforts*

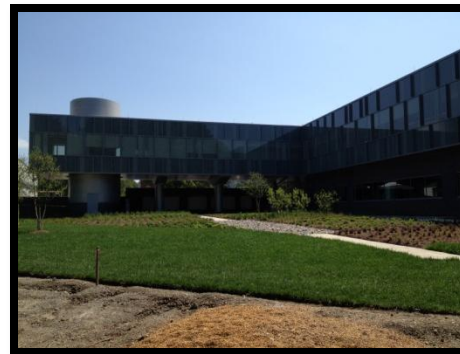
## *Moratorium/metal suspension*

- We will be taking advantage of suspension clarification
- Beam enclosure metals cleared by RadCon as indistinguishable from background (IFB) will be recycled through Facilities Management and contractors.

# NEW RAM AREAS

*The RAM traffic associated with the Accelerator upgrades, TEDF occupancy, and continuing RAM storage needs, will create new radioactive material areas...*

- Portions of the EEL Machine shop
- The Magnet Measurement facility
- North and South Access buildings
- Additional space in the CMSA
- TEDF





# *Visitors/Contractors*

Lots of opportunity for Public Affairs tours and guests

- Should be scheduled with area coordinators
- Visitor dosimetry available in Bldg 52 from 8am-4:30pm
- Can not enter Radiation areas or greater
- Must have and escort at all times
- If escorting, ensure adequate briefing prior to tour

Contractors on-site are not familiar with our hazards or safety culture

- Reinforce our safety protocol whenever possible
- Call RadCon for any questionable conditions

# *BASIC RW-1 PROTOCOL*



Working in Hall A&C  
Equipment Racks



M  
"Rad  
Ma

**NOTICE**  
RadCon approval  
required prior to  
disassembly of  
radioactive  
materials or  
relocation from  
designated  
Radioactive  
Material Areas  
CALL 876-1743 for  
assistance



Disassembly of  
"AM"



Beamline Hardware  
removal

*Coordinate work with RadCon!!*

# ***BASIC RW-1 PROTOCOL***

- Obey all radiological postings
- Radiological conditions may have changed since your last entry
- Remember, certain postings invoke additional restrictions(i.e. no eating, drinking, or smoking in Radiological Areas/RMAs)
- If you have questions about postings or signage, call 876-1743!!

*Take Away...*

**MISSION POSSIBLE**

***RADWORKER PROTOCOLS***

When in doubt call  
the RadCon cell phone  
**876-1743**  
The LSD activities are...