

NSLS All Hands Meeting on Safety

Steve Dierker
December 2, 2004

Agenda For This Meeting

- Why are we here today and what do we need to take away from these meetings?

Steve Dierker

- How are we doing and where do we go from here?

Bob Casey

Additional Meetings During Stand-down

- Work Control Coordinators
- Scientists and Engineers
- Supervisors and Technicians
- Division Meetings
- Administrative personnel
- PRT Staff

Smaller meetings to permit discussion of particular issues and to encourage dialogue with all staff

Why are we meeting?

We have made significant improvement in many areas of our safety performance; however...

- Our work place is complex - there is clearly the potential for a serious accident. Incidents in recent years cast doubt that we can operate safely
- We need to examine our work practices and ensure that we take the proper steps to reduce the potential for a serious accident. The consequences for the individual, his/her family and colleagues, and the facility are too great!
- Lets take the time now to talk about working safely, rather than after a serious accident

Each Of Us Has Much at Stake With Our Safety Performance

- *Human Costs – Injured Staff*

- *Injuries affect not only the individual suffering, but family members, friends, and colleagues*

- Lost Time

- Accidents and Injuries result in significant lost time for many involved

- Loss of Confidence

- DOE, Public/Community, Colleagues

- Lost Funds

- Loss of Funding for Programs
- Fines (OSHA/PAAA)
- Equipment Damage

Lets work together to make sure that we work safely and that everyone goes home safe each night.

SAFETY

This is Why I Won't Get Hurt Today!



It's Not Just About Statistics

OCT 27 2004

We Also Have Much At Stake Collectively!

- LANL shut-down for months following a laser eye injury
- SLAC still shut-down following an electrical accident which severely injured a worker
- DOE has stated they are extremely troubled by the high frequency of incidents at the NSLS – following the electric shock incident, we were given 30 days to demonstrate that continued operation will be within acceptable safety limits

What Do I Worry About?

- *Someone will be seriously injured*
- Is everyone on board with regard to our safety expectations?
 - NSLS Staff
 - PRT staff
 - General users
- High frequency of electrical incidents
- Is our work planning adequate?
- Potential impact on NSLS and NSLS-II of a safety incident

To Improve Program Performance What We Should Focus On?

- Management, staff & user understanding and commitment to the principles of ISM
- Proper work planning by everyone to assure identification and control of hazards
- Safety management at the beam lines

Important Messages That You Should Understand and Practice During Your Daily Work

- We have very high expectations for performance
- Getting the job done safely is our highest priority
- Rules are not discretionary, but remember that good judgment is always needed
- Take a time out and reconsider if conditions aren't as expected
- If you have doubts, pull back and get help
- Everyone has a part to play – watch out for the other guy
- Life is too short to take unnecessary risks

Everyone Has a Leadership Role in Safety

- You are Responsible for Your Own Safety AND for the Safety of Your Co-workers
 - Comply with all requirements for work
 - Don't proceed with work if conditions are different than expected or if you have questions regarding safety
 - Report injuries, hazards and near-misses, so we can learn and improve
 - Identify and control hazards and suggest ways to reduce risks
 - Talk to your supervisor or others in your management chain
 - Talk to members of the ESH Staff or the ESH Improvement Committee
 - Anonymous Outlet Available: ext. 8800
 - Praise safe behavior
 - Take ownership when you see unsafe acts and stop at-risk behavior - we are in this together

NSLS Goals for Safety in FY05

- No lost time injuries
- No occurrences due to poor work planning
- Develop and implement a new Safety Improvement Plan for FY 05

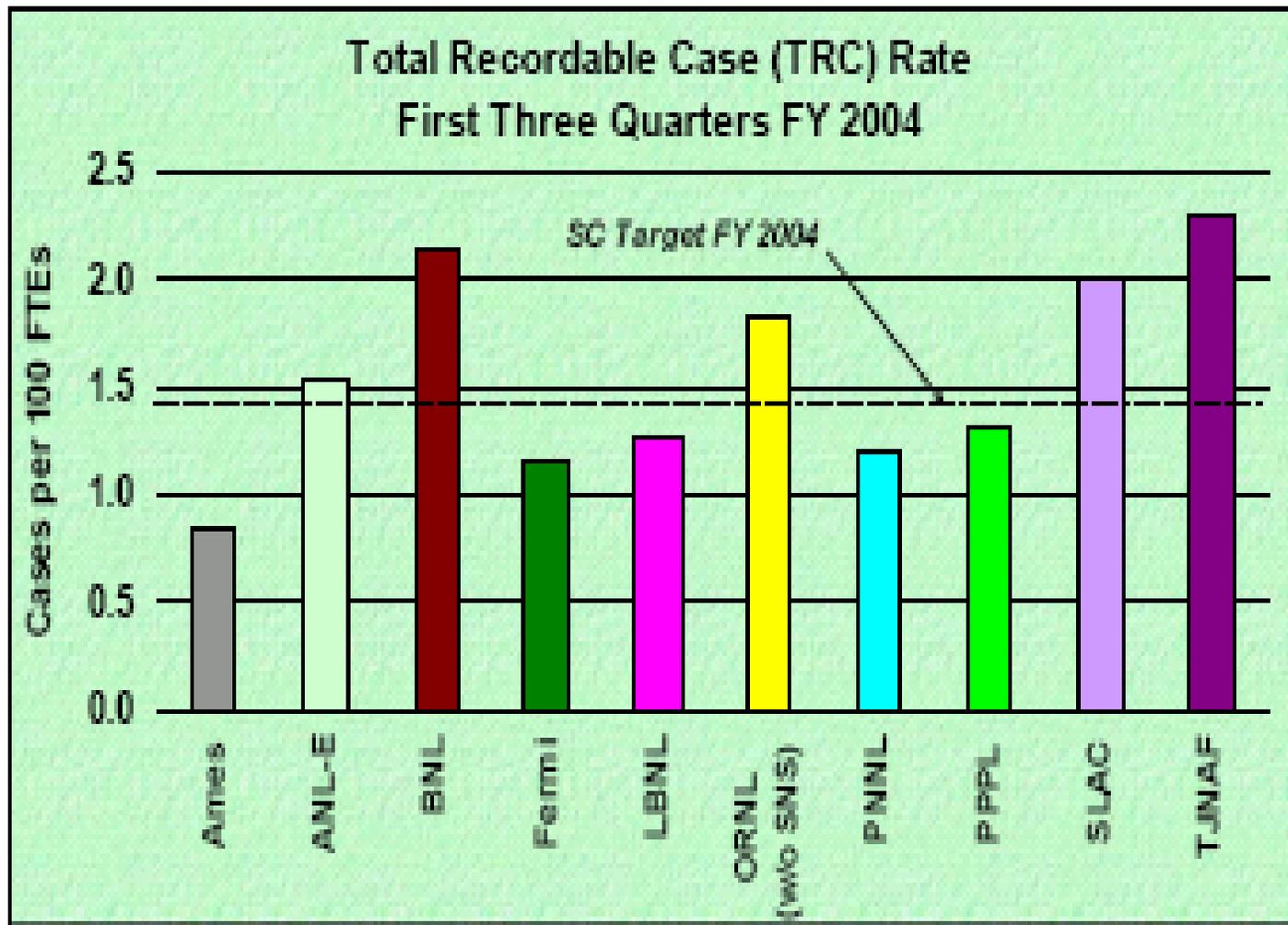
How Well Are We Doing and Where Do We Go From Here

Bob Casey
December 2, 2004

Review of BNL Safety Goals

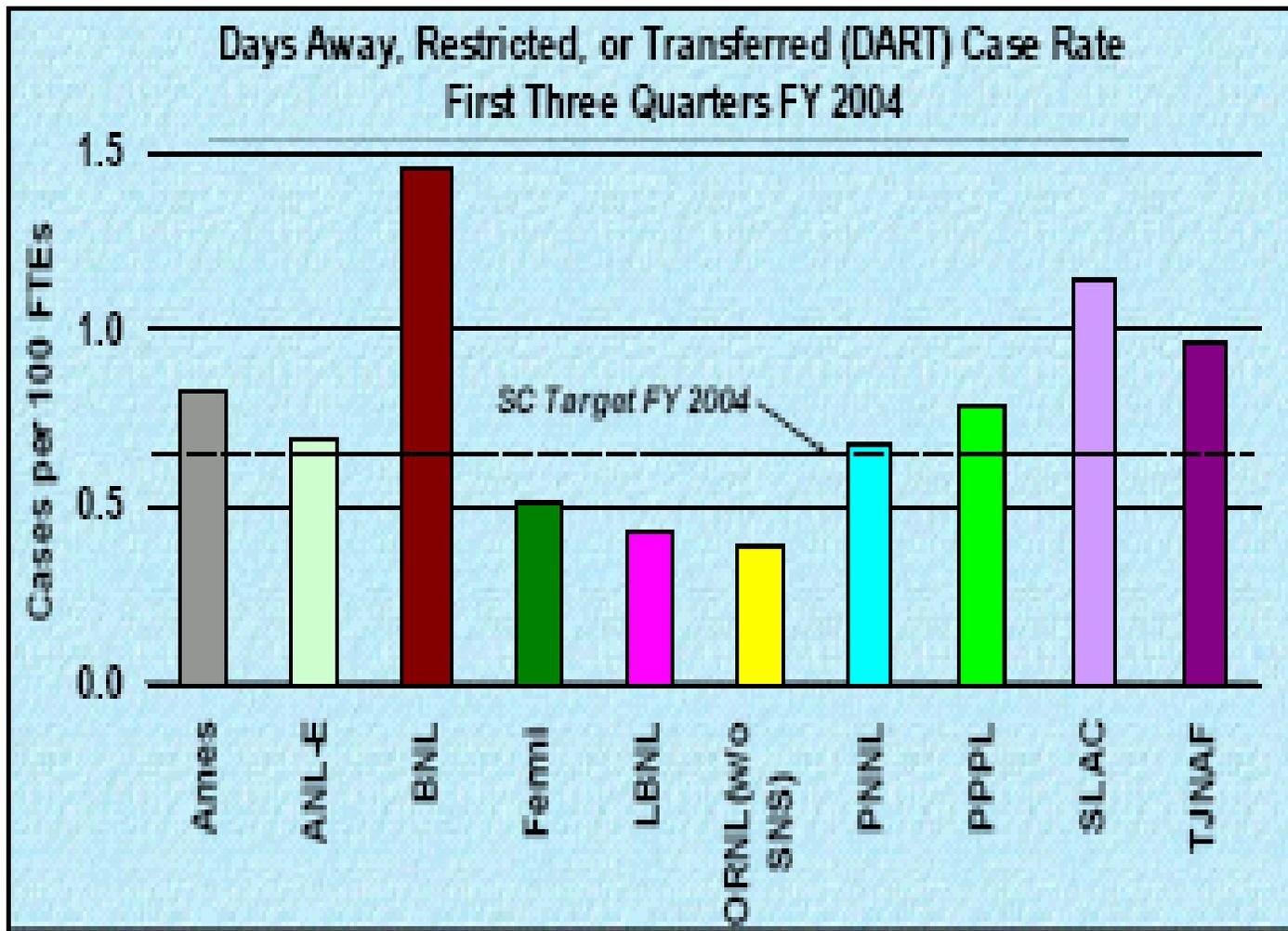
- BNL safety performance is measured in part by DOE in terms of Recordable injury and DART rates
- Basic Information
 - An OSHA recordable injury is an occupational injury or illness that requires medical treatment more than simple first aid and must be reported on the OSHA form 300
 - DART stands for "Days Away, Restricted or Transferred." A DART case is a subset of OSHA recordable cases where the injury/illness is severe enough that the individual loses time away from his/her job by being away from work, on restricted duty, or is transferred to another job function because of the injury

Office of Science Experience FY04



Recordable
Case
Rate

Office of Science Experience FY04



Days Away,
Restricted, or
Transferred
Rate

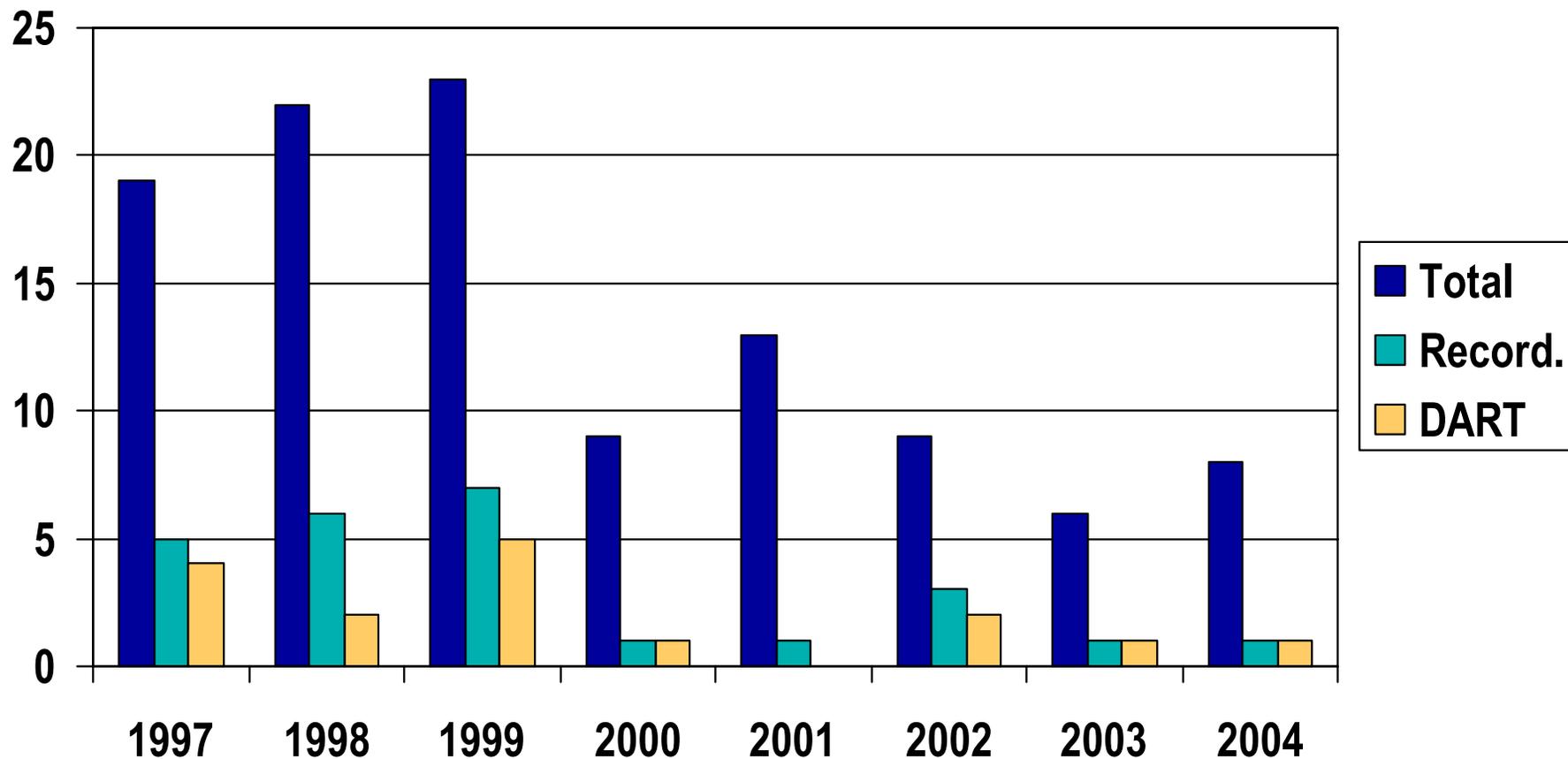
DOE Targets for FY05 are Reduced

- DART rate goal for BNL for FY05 is 0.45
 - Equivalent to 11 DART cases during the year
- The OSHA recordable goal for BNL for FY05 is 1.05
 - Equivalent to 26 recordable cases during the year

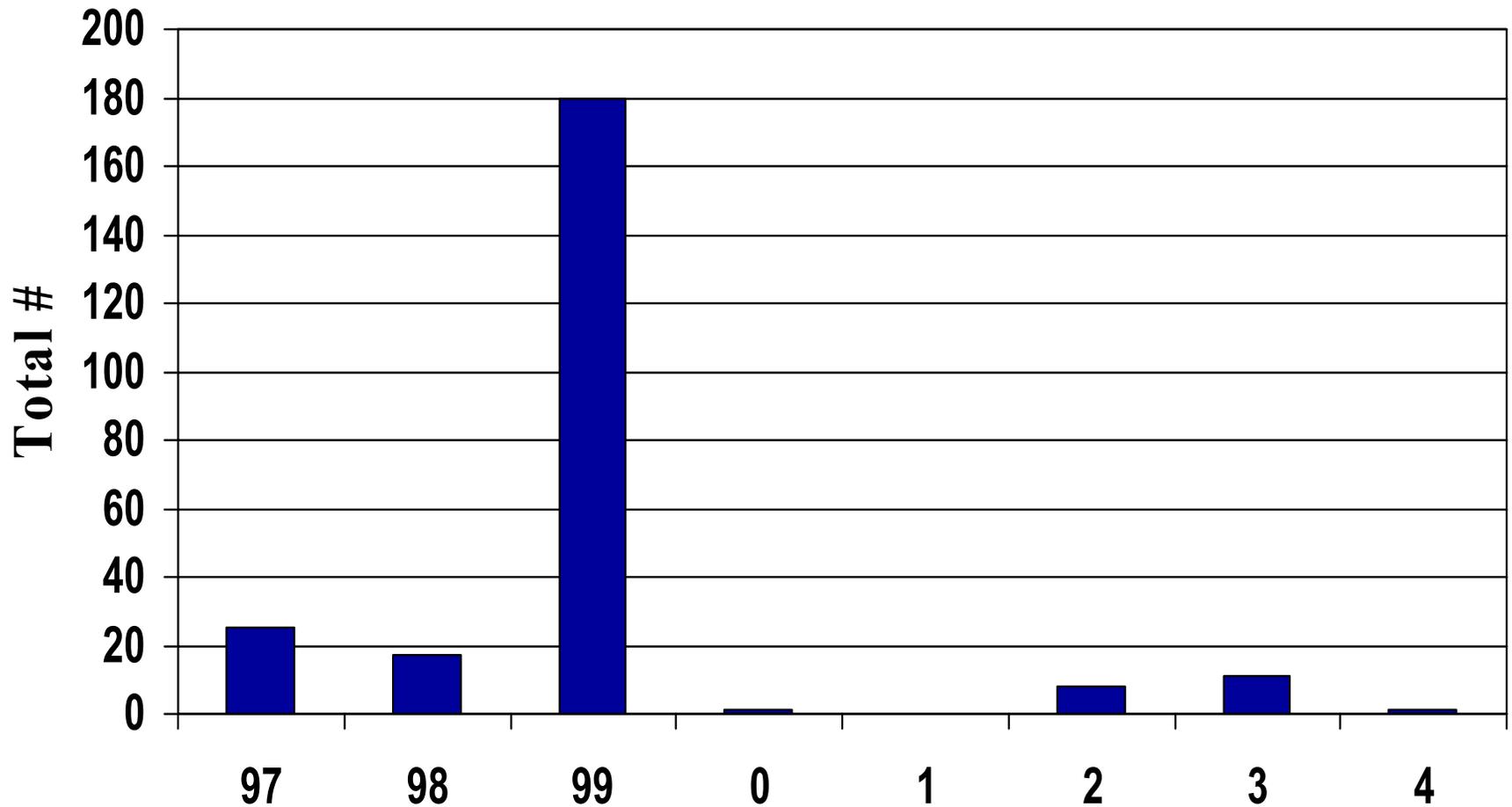
How is the NSLS doing?

- Injury rates
- Traffic Violations
- Occurrence rates

NSLS Clinic Visits and Injuries per Fiscal Year



Lost Work Days FY 1997 - present

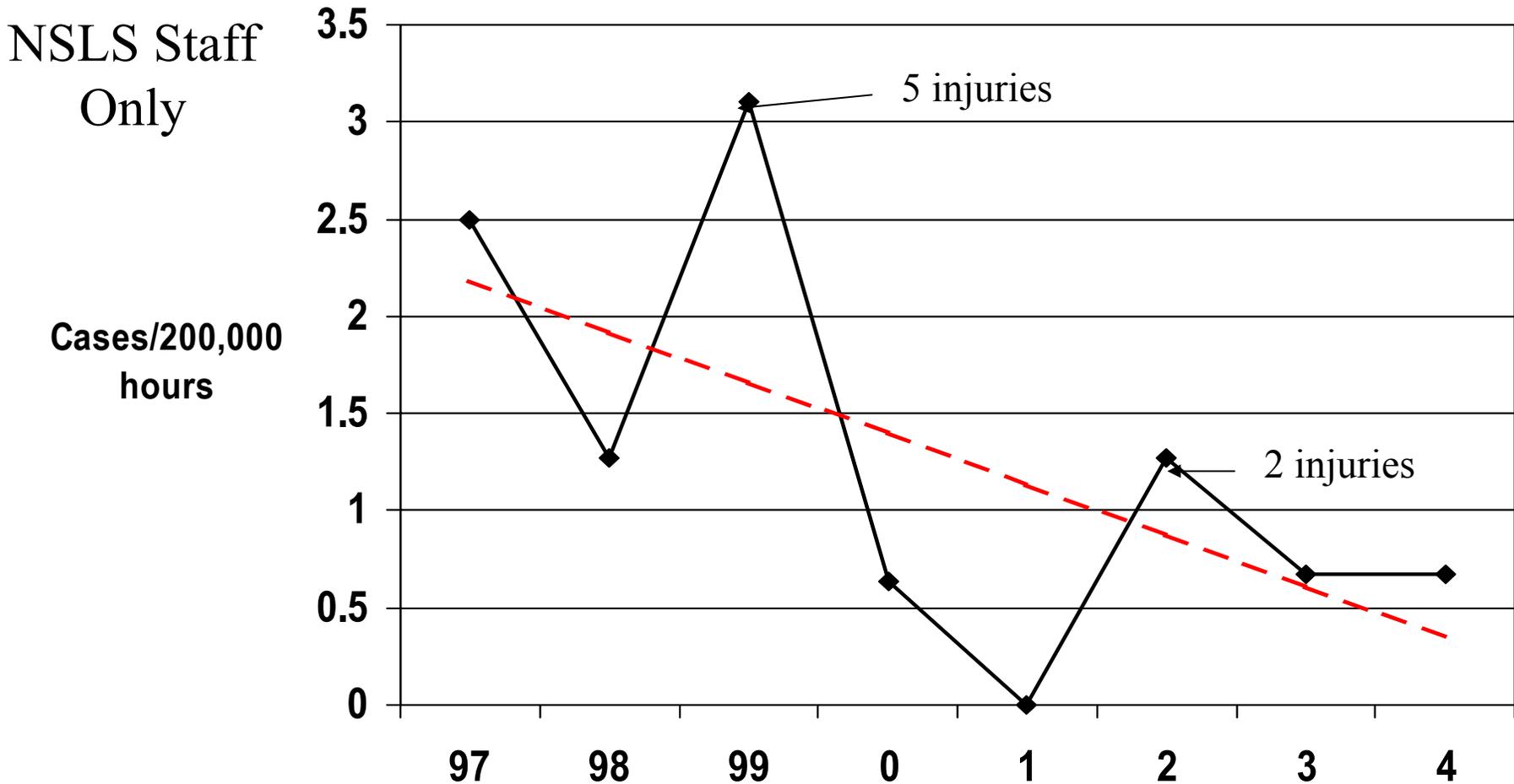


Types of Injuries

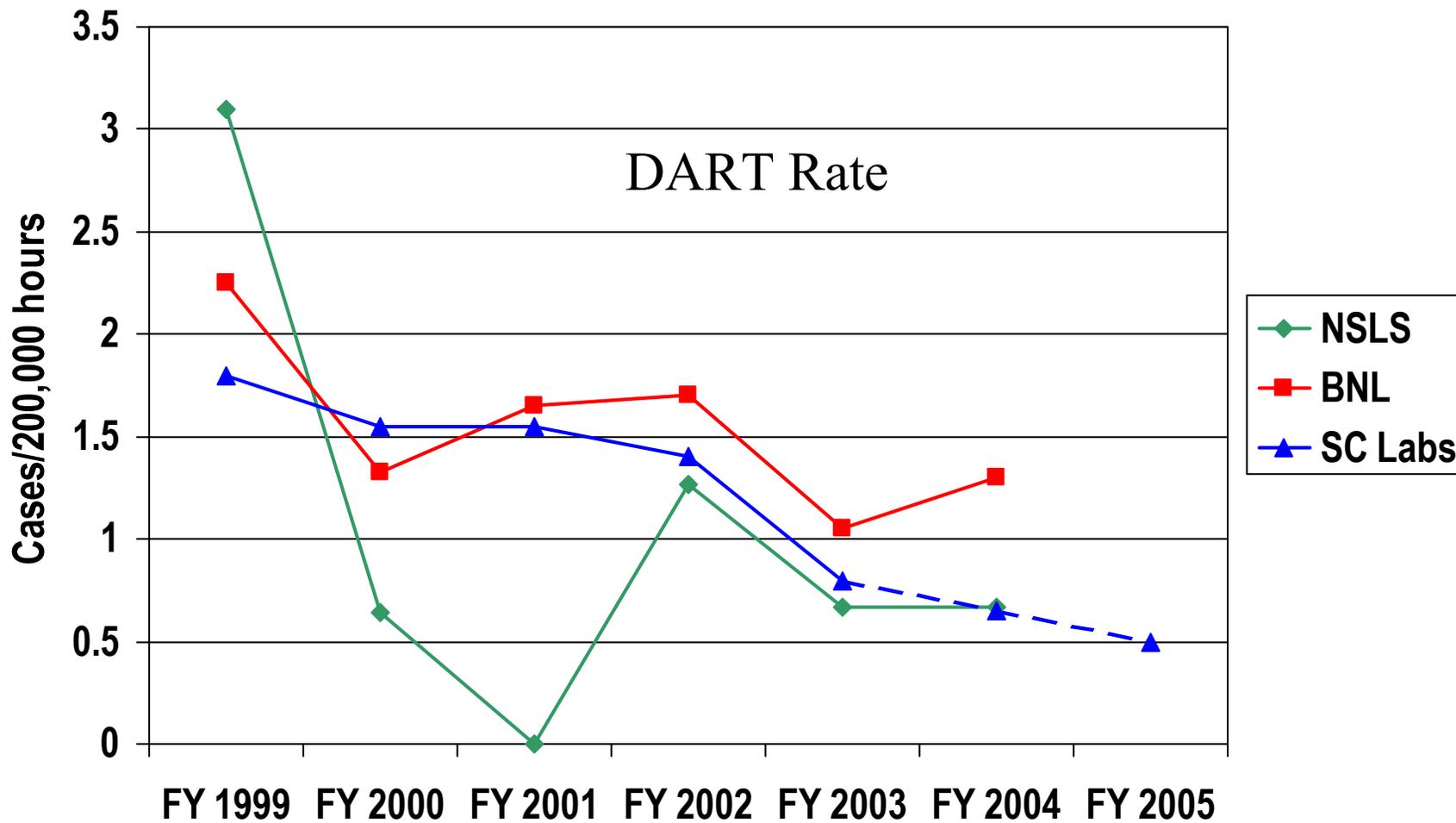
(Does not include injuries experienced by users)

- Slipped or tripped on floor and fell – 3
- Moving or lifting heavy loads – 2
- Slipped and fell on stair way – 2
- Cuts from sharp objects (e.g. bandsaw, razor knife, sheet metal) – 4
- Hernia from assuming awkward positions in difficult job – 1
- Fell while riding bicycle - 1
- Hurt back bending over - 1
- Stepped in pothole in parking lot and fell – 1
- Struck by car while crossing road – 1

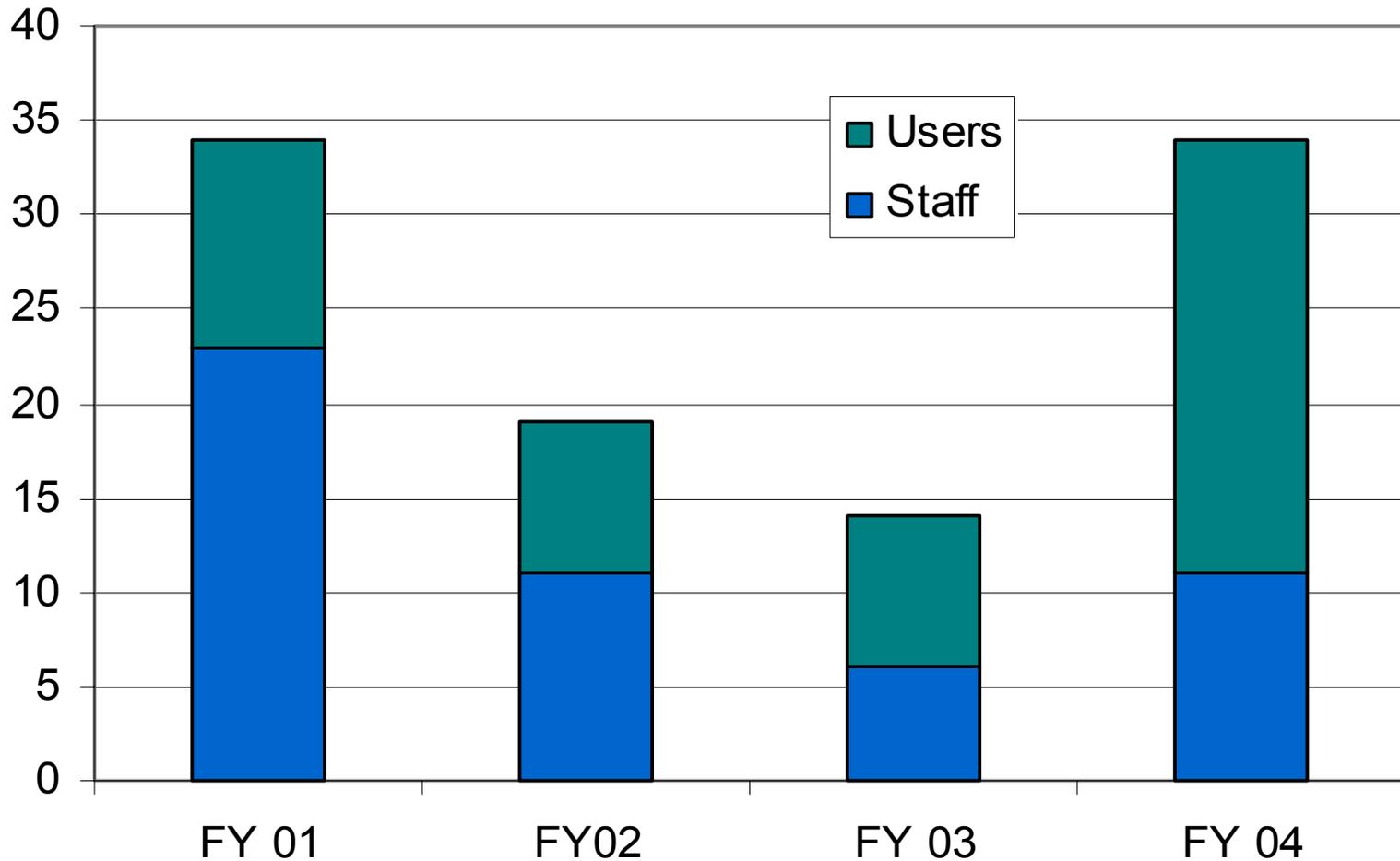
NSLS DART Rate by Fiscal Year



NSLS Compared to BNL & All SC Labs



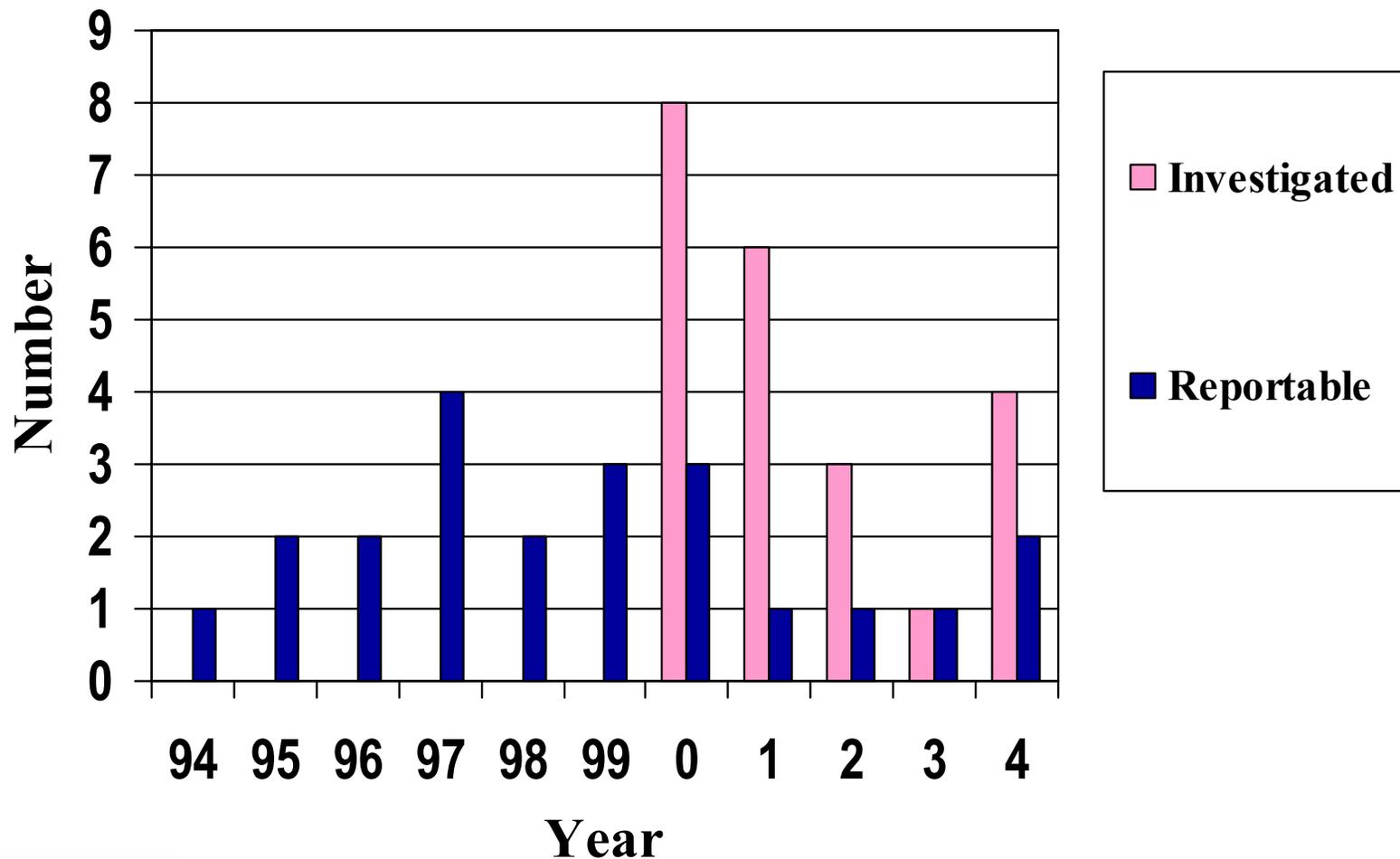
Traffic Tickets per Fiscal Year



Traffic Violations

- 18 tickets since new policy and traffic enforcement campaign started 4/1/04
 - 3 tickets received by NSLS personnel [1 student, 1 post-doc, 1 staff member (ticket successfully appealed)]
 - 3 tickets received by PRT beam line staff
 - 12 tickets received by General Users
- 18 tickets distributed as follows:
 - 3 parking
 - 1 speeding
 - 1 following too close (appealed)
 - 13 stop sign violations

NSLS Occurrences 1994-2004



Types of Reportable Occurrences in Past 10 Years

- 2 working hot incidents (95, 97)
- 2 electric shock (02, 04)
- 2 spills (96, 97)
- 2 cryogenic (over pressurized dewars) (97, 99)
- 2 laser incidents (Non-exposure) (99, 01)
- 2 fires of electrical origin (97, 99)
- 3 personnel injuries (97, 00, 03)
- 1 procedural violation during beam line alignment using synchrotron radiation visible light (02)

Examples of Recent Incidents at NSLS

- 5/2002 – Local contact modifies electrical connections to address an operational issue with his sample and accidentally energizes BNC connector to 1000 V. d.c. Subsequently, he experiences electrical shock
- 10/2002 – Beam stop and barriers for alignment at VUV beam line are removed prematurely and worker is exposed to low intensity light beam from ring
- 3/2003 – Despite repeated warnings, a user enters the experimental floor on several occasions without radiation dosimetry

Recent Incidents at NSLS (Cont.)

- 2/2004 – A post-doc begins operation of class IV laser plasma x-ray source experiment before completion of safety reviews and satisfying all safety requirements
- 5/2004 – In an effort to change polarity, two users reverse electrical connections of cable at 1000 V. power supply and accidentally energize outer shell of SHV connectors. Unsafe condition exists for ~ 5 days and carries on to 2 subsequent experiments.

Recent Incidents at NSLS (Cont.)

- 8/2004 – Local contact for beam line and NSLS tech remove front plate to a beam line component. Neither is aware of energized surfaces within box and tech subsequently suffers 300 V d.c. electrical shock.

Patterns of Recent Incidents

- Most incidents involved inexperienced personnel or personnel not familiar with the equipment
- Most of the electrical incidents involve high voltage, low current DC applications utilizing coaxial cable
- Most of the incidents were the result of inadequate work planning
- Most of the incidents involved hazards created by failure to maintain a safe configuration
- None of these incidents resulted in even minor injury, however each represented a serious departure from expected practice
- We really do need to do better

Where do we start?

- Consider lessons learned from recent incidents
- Ensure that principles of ISM and work planning are incorporated into daily work practices
- Reflect on your personal views and how they may impact safety performance
- Continue to improve safety program in FY05

Recent Incident with X1 PBPM

- Cooling water hose for BPM was being replaced by tech as a part of normal maintenance
- He contacted the local contact for support in the replacement activity
- A face plate was removed, but power to component was not turned off
- When tech used a wrench to disconnect the hose he was shocked at 300 V. D.C., 20 mA
- Detailed critique available on NSLS web site

Lessons Learned from Incident

- Management
- Work Control Coordinator
- Worker
- Users and Staff

Management Lessons learned

- Ensure that all beam line and facility equipment with significant hazards has clear ownership and a responsible person
- It is vital that all hazardous equipment has someone designated to maintain safe configuration, including appropriate warning signs, and to act as a contact for questions concerning hazards, operation, maintenance, and troubleshooting

Work Control Coordinator Lessons Learned

- Do not assign work as “skill of the worker” on equipment with electrical or other energy sources that you are unfamiliar with
- When screening work to determine hazard level and work planning requirements, be particularly cautious with equipment that has no readily identifiable responsible person

Worker Lessons learned

- All electrical equipment must be de-energized before work may begin on the system
- You must assure that the power supply is de-energized, locked, and tagged out and confirmed safe before work begins
- Make no assumptions
- If there is uncertainty, contact your supervisor and ask to initiate a formal work plan

Staff and Users Lessons Learned

- Do not alter the configuration of equipment or components unless you are authorized to make change and are knowledgeable of the hazards associated with the equipment
- Use inherently safe voltages (< 50 V a.c./d.c. or < 10 mA) whenever possible when designing and constructing equipment

Principal Elements of Corrective Action Plan for Electric Shock Incident

- Identification of equipment with hazards and responsible personnel within department and at beam lines and development of procedures as needed
- Improved work planning – focus on quality of job matrices
- Improved warning signs
- Improved safety management at beam lines – blosa, oversight of users, configuration control of equipment and components
- Increase understanding of BNC use above 50 V and red tape warning tags
- Improved maintenance data base

The Key Elements of Our Safety Program

- Awareness, involvement, commitment of all personnel – safety is everyone’s responsibility
- Proper training and qualification
- Well defined and understood safety requirements
- Work planning to ensure identification and control of hazards
- Work performed in accordance with planning and other BNL requirements established in training

Key elements of our safety program (cont.)

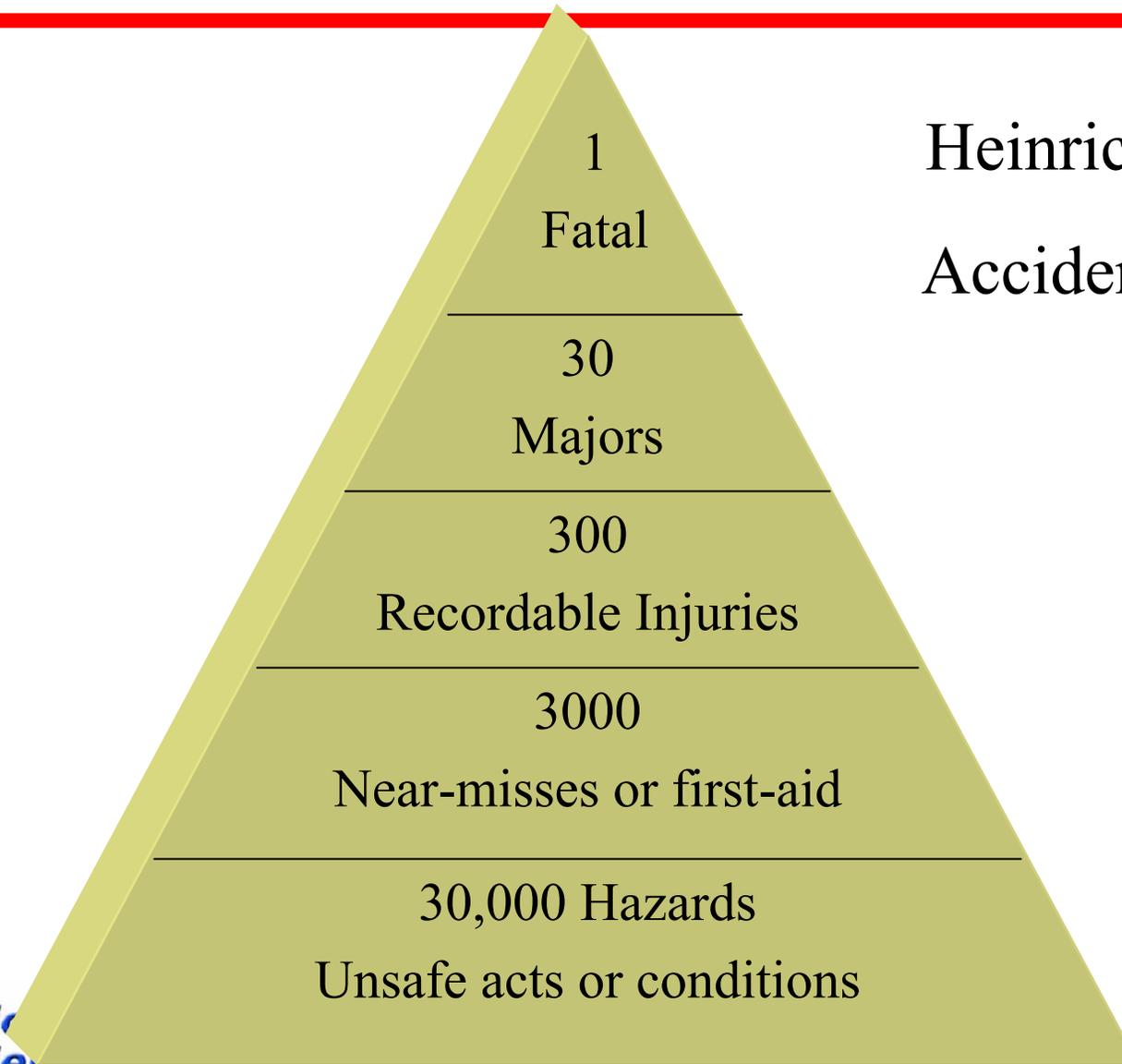
- Review of additions & changes within the facility
- Review of procurements and equipment designs
- On-going identification and elimination of unsafe conditions or acts (e.g. Tier 1, self-assessments, BNL or DOE reviews, lessons-learned)
- Feedback to improve work and safety performance

Personal Views That Can Be Traps

- Accidents are inevitable
- Safety is common sense
- It won't happen to me
- I already work safely
- Safety is extra effort that costs time and money
- Us vs. Them

Injuries: A Matter of Probabilities

Heinrich Theory of
Accident Causation



What Targets Should We Address in FY05?

- Safety Week
- Develop and implement new safety improvement plan utilizing results of recent assessments and input from staff
- Develop OSHS 18001 program and seek registration
- Integrate OSHA fall protection into NSLS work program
- Ensure successful implementation of hoist and crane requirements

Important Messages That You Should Understand and Practice During Your Daily Work

- We have very high expectations for performance
- Getting the job done safely is our highest priority
- Rules are not discretionary, but remember that good judgment is always needed
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Questions for Discussion

- What do we need to do to get everyone who works here to make safety such an important part of their thinking that they:
 - plan and execute their work properly and safely
 - don't take short cuts
 - call attention to things that are wrong or not as planned
 - watch out for one another
- What are we doing well in our safety programs? What are our strengths? What are our weaknesses?