

---

# LIGO Hanford Observatory Safety and Operational Procedures Overview

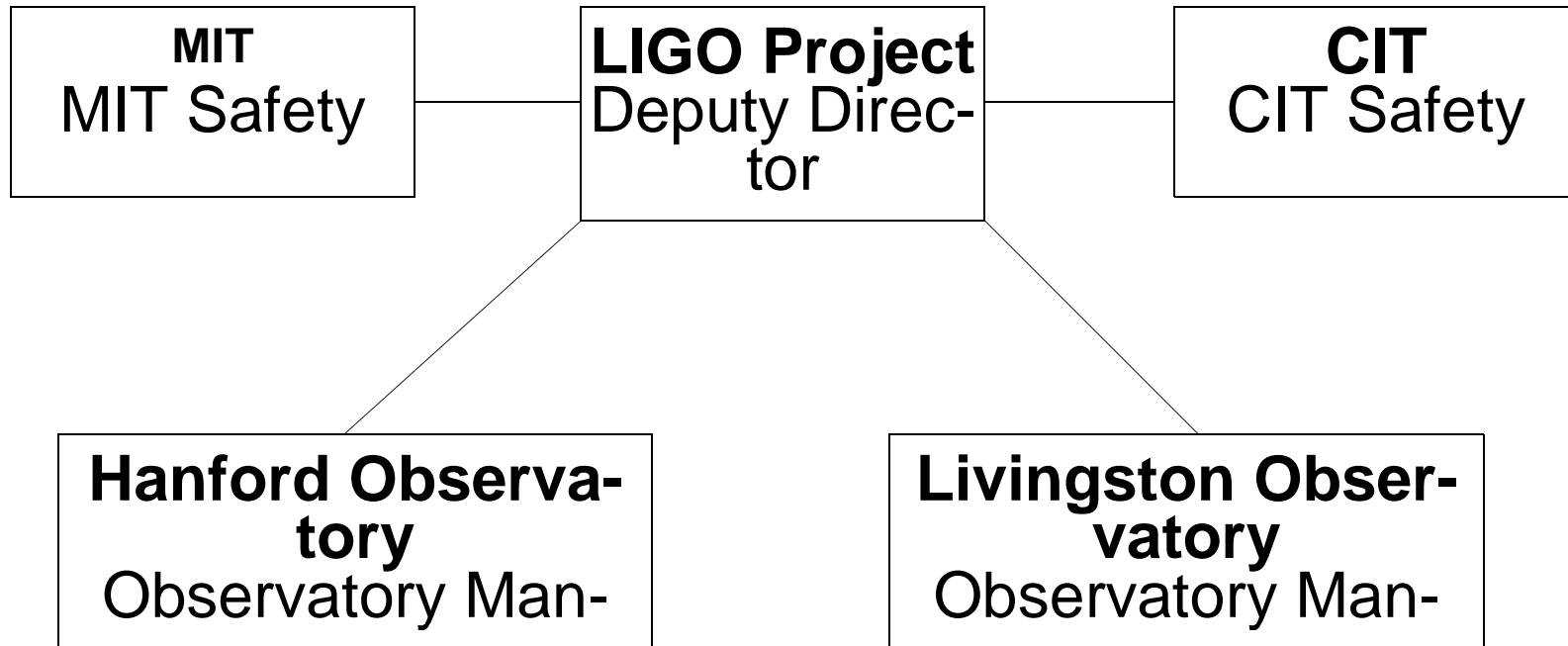
Fred Raab

June 23, 1998



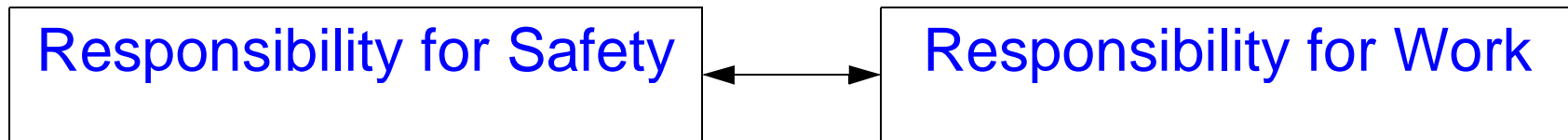
# LIGO Operations Safety Structure

---



# Safety Issues Incorporated at Task Level

---



- Observatory Manager coordinates and ensures compliance
- Special skill sets have expert coordinators who are close to the work
  - ››D. Cook, Lasers & Optics
  - ››R. McCarthy, Electrical & Electronics
  - ››J. Worden, Vacuum Systems

# Who Works at LIGO Hanford Observatory

---

- Resident Staff

- ››on 6/18/98 there were 14 resident staff

- ››eventually 22-23

- ››mgt = 3; scientists = 5; engineers = 3; technical support =12

- ››broad job categories; no separate departments

- Visitors

- ››on 6/18/98 there were 8 working visitors

- ››expect an additional 5 long-term visitors by late summer

- ››eventually 9-12 visitors

- ››important to efficiently assimilate visitors into work & safety structure

# Information for Visitors

- Simple, one-page guide (even if the print is small) highlights how we do business:
  - ›› what you need to know
  - ›› when you need to know it
  - ›› what you need to bring
  - ›› where to sign up
- Will be available on Web so visitor can plan in advance and have resources prepared by arrival time
- All visitors are assigned a technical liaison to help ensure success of visit
- Business & safety aspects are totally intertwined

# Restricted Areas

---

- Unrestricted spaces for working visitors:
  - ››office spaces, the control room, computer-user's room are treated as office quality space; can further restrict later as necessary
  - ››electronics lab and mechanical lab are general lab-quality spaces
- Restricted due to laser and contamination concerns:
  - ››Optics Lab and Vacuum Assembly Area
  - ››Laser & Vacuum Equipment Area (LVEA)
  - ››Vacuum Equipment Areas (VEAs) in Mid Stations and End Stations
  - ››Covered by Laser Safety Plan (& SOPs) and by Contamination Control Plan
- Beam-Tube Enclosure is unventilated, unlighted & unoccupied; entry governed by special procedure

# Restricted Equipment

---

- vehicles

- ››list of qualified drivers (safety & insurance issues)

- lifts

- ››list of qualified operators for fork lifts

- ››pallet jacks are not restricted

- cranes

- ››list of qualified operators with formal training program

- shop and tool areas

- ››contact person & qualification procedures

# Safety Equipment

- required safety equipment is spelled out in required reading for various work classifications & areas
- observatory supplies
  - ››hard hats, work gloves, non-prescription safety glasses for all
  - ››baseline/termination eye exams, prescription safety glasses, and safety shoes for resident staff
  - ››visitors supply their own eye exams (where needed), prescription eyewear and safety shoes
- safety budget is part of maintaining physical plant (just like fire and emergency services)
- work permitting system provides feedback on custom requirements for different job situations

# Work Permits

- ANY work that could potentially interfere with another task or process requires a work permit!
- Open permits are reviewed at Work Briefing
  - ››every business day
  - ››meeting run by observatory manager
  - ››each working group needs to be represented
  - ››new permits can be issued with concurrence of management & other working group representatives
  - ››permit specifies procedures and process provides safety checkpoint
- Permits publicly available in conference room
- Permits are formally closed and signed off by task leader and observatory manager

# Contact Personnel

- 
- Prime contact for visitors is liaison
  - Expert consultants/coordinators for specific areas
    - ›› Computing Systems-----C. Patton
    - ›› Electrical/Electronic Systems-----R. McCarthy
    - ›› Lasers & Optics-----D. Cook
    - ›› Vacuum Systems-----J. Worden
  - Consultants/Coordinators set standards for proper use of equipment
  - All custom set-ups are reviewed by appropriate coordinator prior to turn on

# Organizational Meetings

- 
- Work Briefing - daily review/issuance/close-out of permits
  - Operations - weekly review of science/engineering tasks & progress
    - ››assumes weekly report has been read
    - ››focuses on where we are going and how to get there
  - Business & Safety Meeting - reviews how we work
    - ››are we efficient
    - ››are we safe
    - ››how can we do better

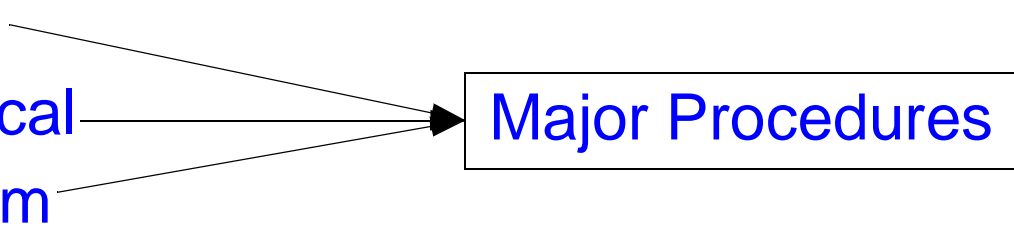
# Emergency Services and Plans

- Hanford Fire Department provides fire and ambulance services with ~ 5 minute response time or less
- Fire Department trains on site to ensure all staff familiar with facilities
- “Crash phone” provides notification in case of emergencies originating outside of LIGO
- Hanford Security patrols site during “off” hours
- Emergency telephone dispatch (911) or fire alarm dispatch (if caught outside)

# The Major Cause of Accidents



# Review of Major Hazards

- 
- Smart people acting stupid --> weekly safety discussions
  - Haste --> we are willing to pay to do it carefully
  - Irresponsibility --> work permits and major procedures require LEAD responsibility to be identified up front
  - Material handling --> training, qualified operators
  - Laser
  - Electrical
  - Vacuum
  - Chemical --> std MSDS
  - Cryogenics --> std Oxygen Deficiency Monitor
  - Unventilated space without lighting (Beam Tube Enclosure)
  - Confined space (manholes, etc.)
- 
- ```
graph LR; Laser --> MP[Major Procedures]; Electrical --> MP; Vacuum --> MP;
```