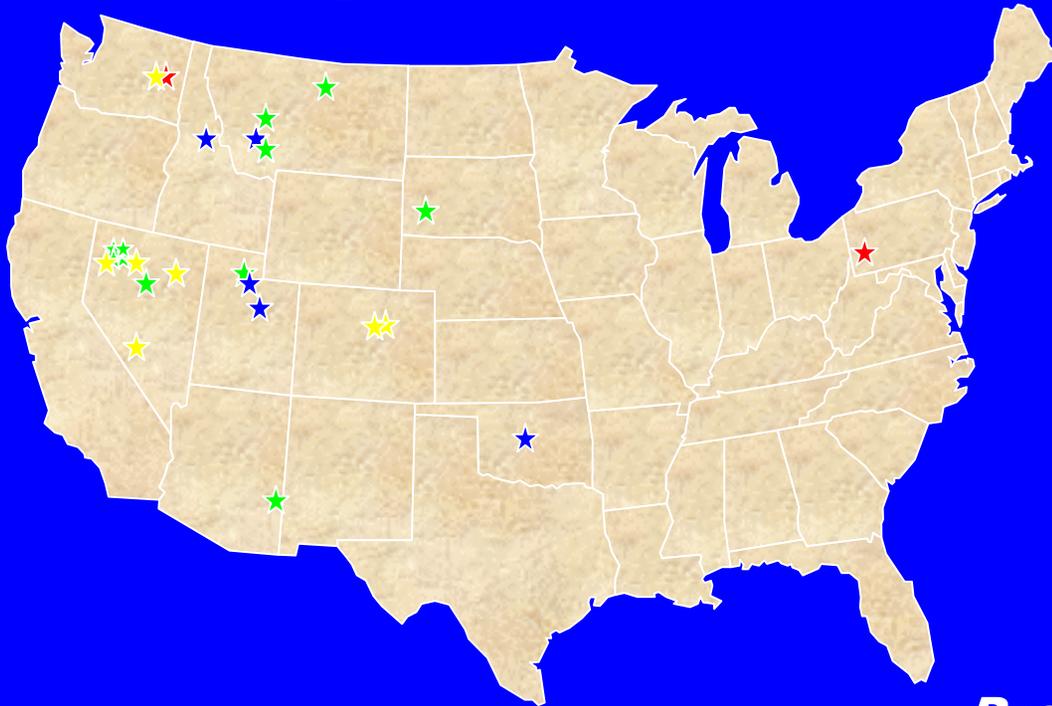


NIOSH

Office of Mine Safety and Health

Pittsburgh Research Laboratory

Spokane Research Laboratory



*Presented by: R. Karl Zipf, PhD
CFD&P Branch Chief*

Office of Mine Safety and Health

- Mission: Provide national and world leadership to prevent mining work-related illness, injury, and death by gathering information, conducting scientific research and demonstrations, and translating the knowledge gained into products and services.

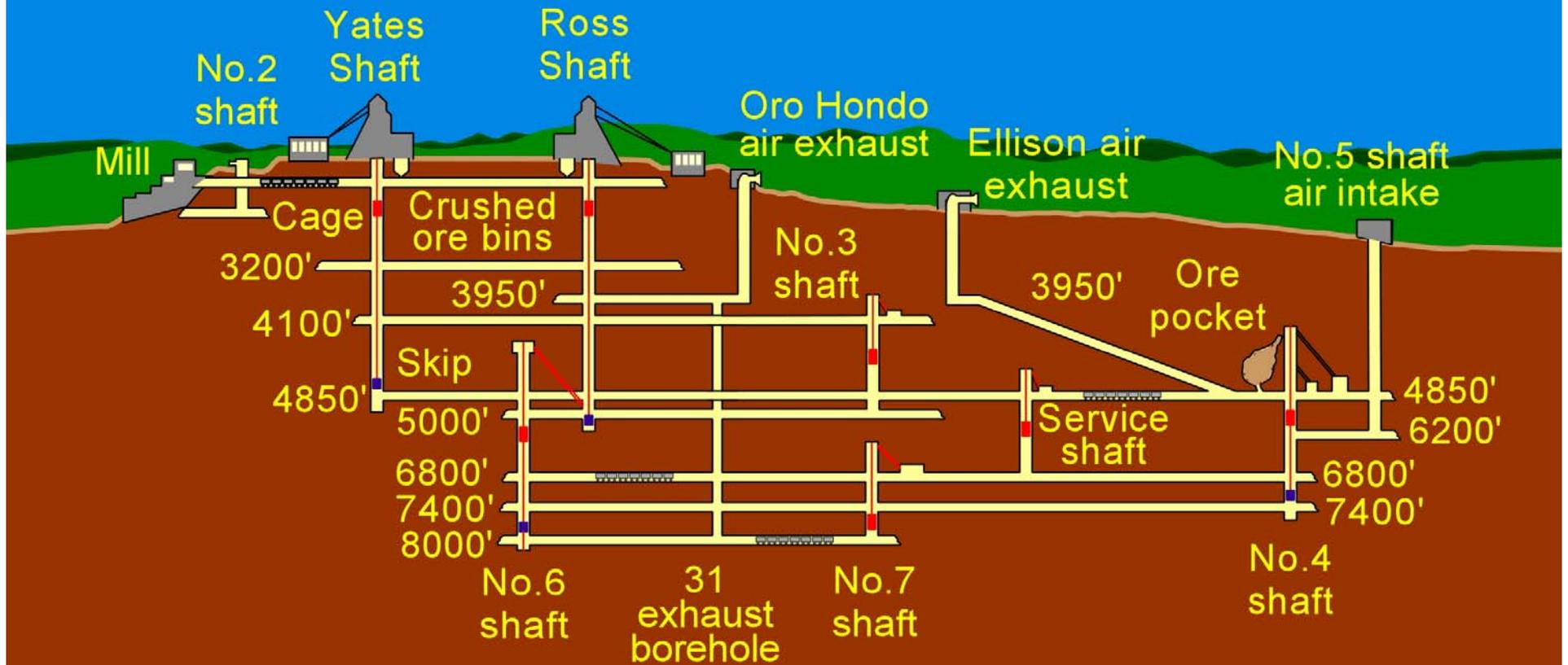
NIOSH – OMSH Research Areas

- Hearing Loss Prevention in Miners
- Dust Exposure – especially silica
- Fatalities and Injuries from Ground Failures
- Fatalities and Injuries from Equipment
- Diesel Exhaust Exposure
- Chemical Hazards Exposure

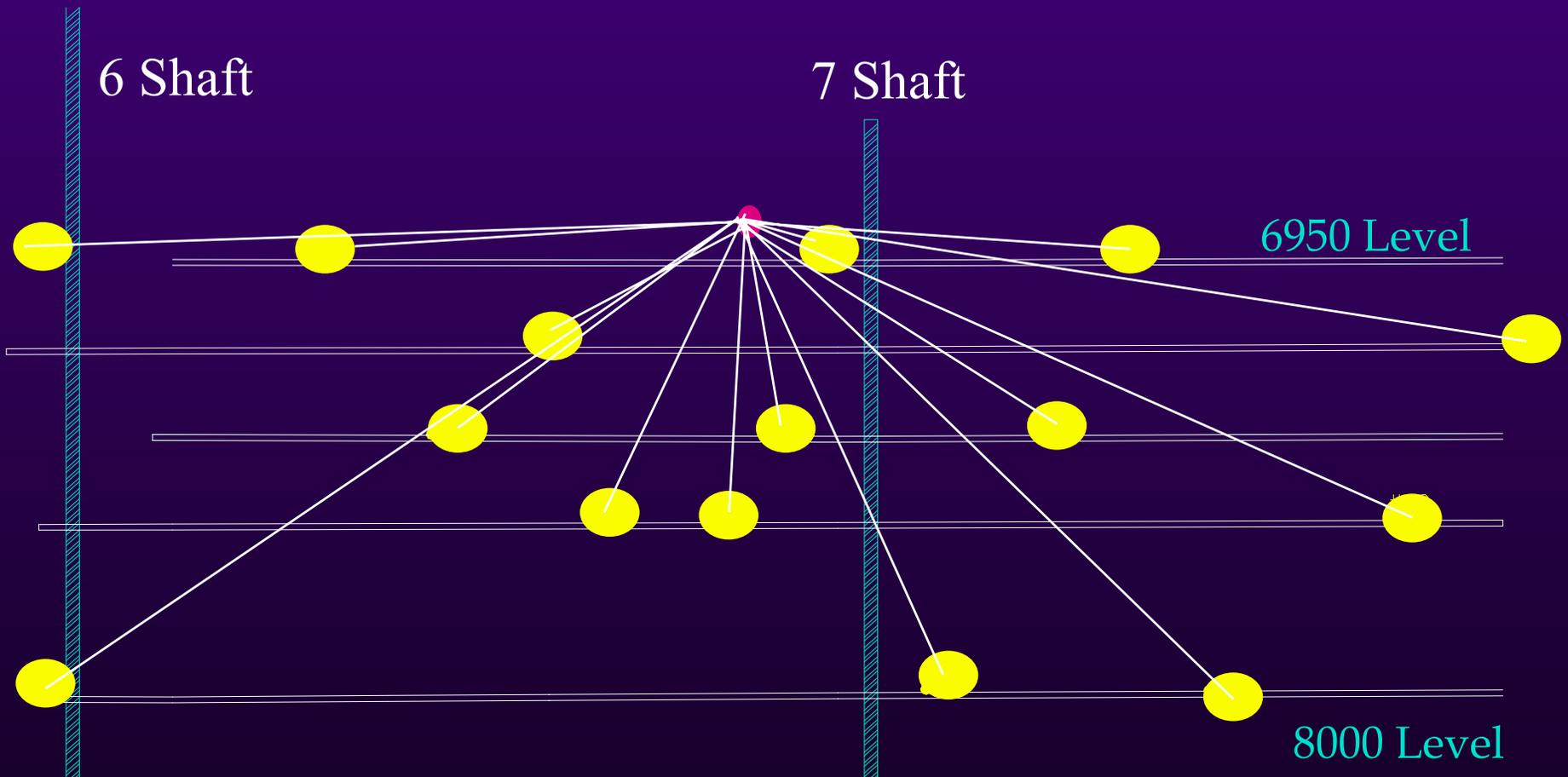
SRL Ground Control Research at Homestake

- Microseismic Monitoring of Rockbursts
- Long-Term Stability Studies
- Stability of Large Openings

General Homestake Mine Development



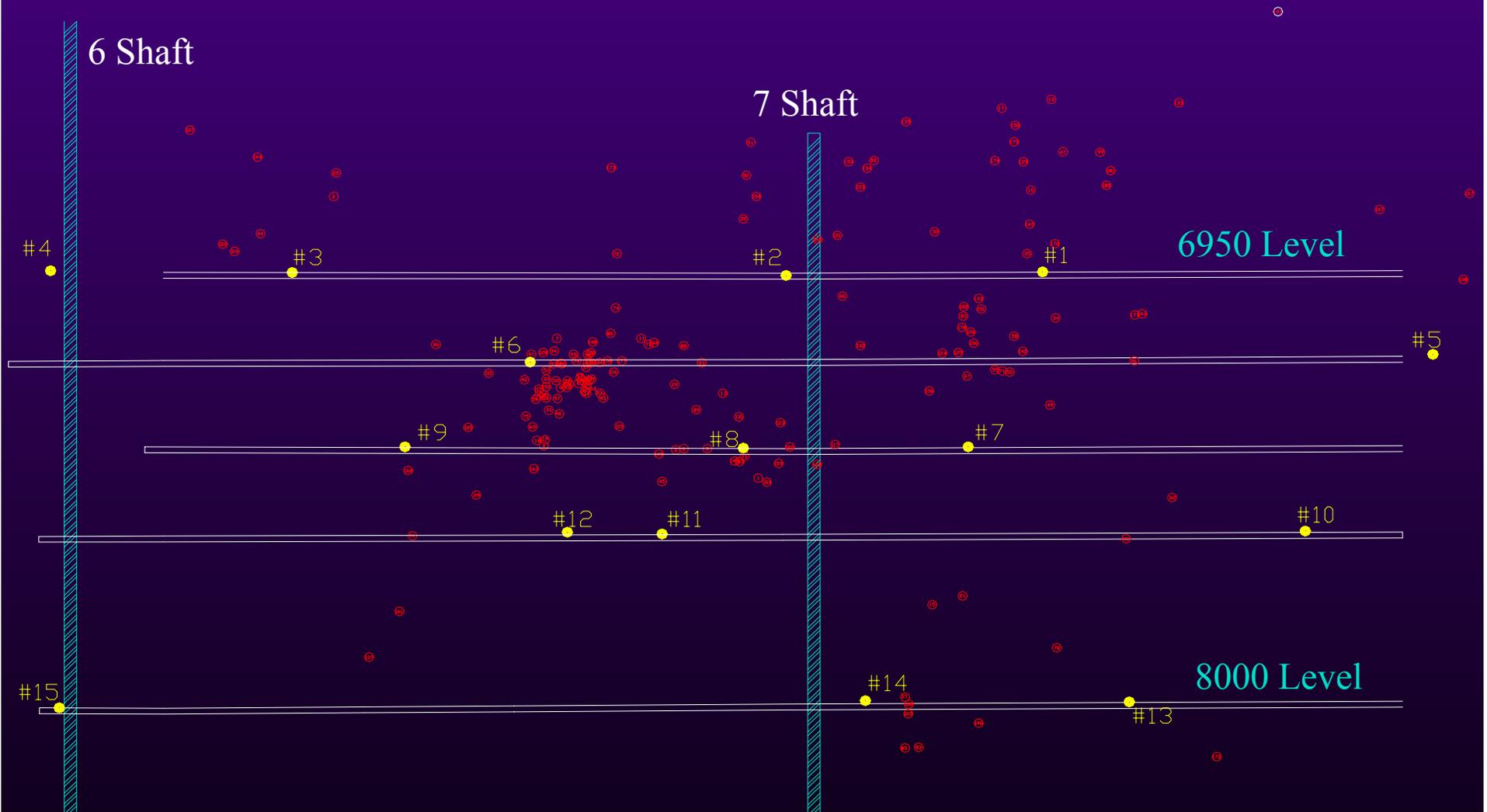
Cross-sectional view of geophone locations



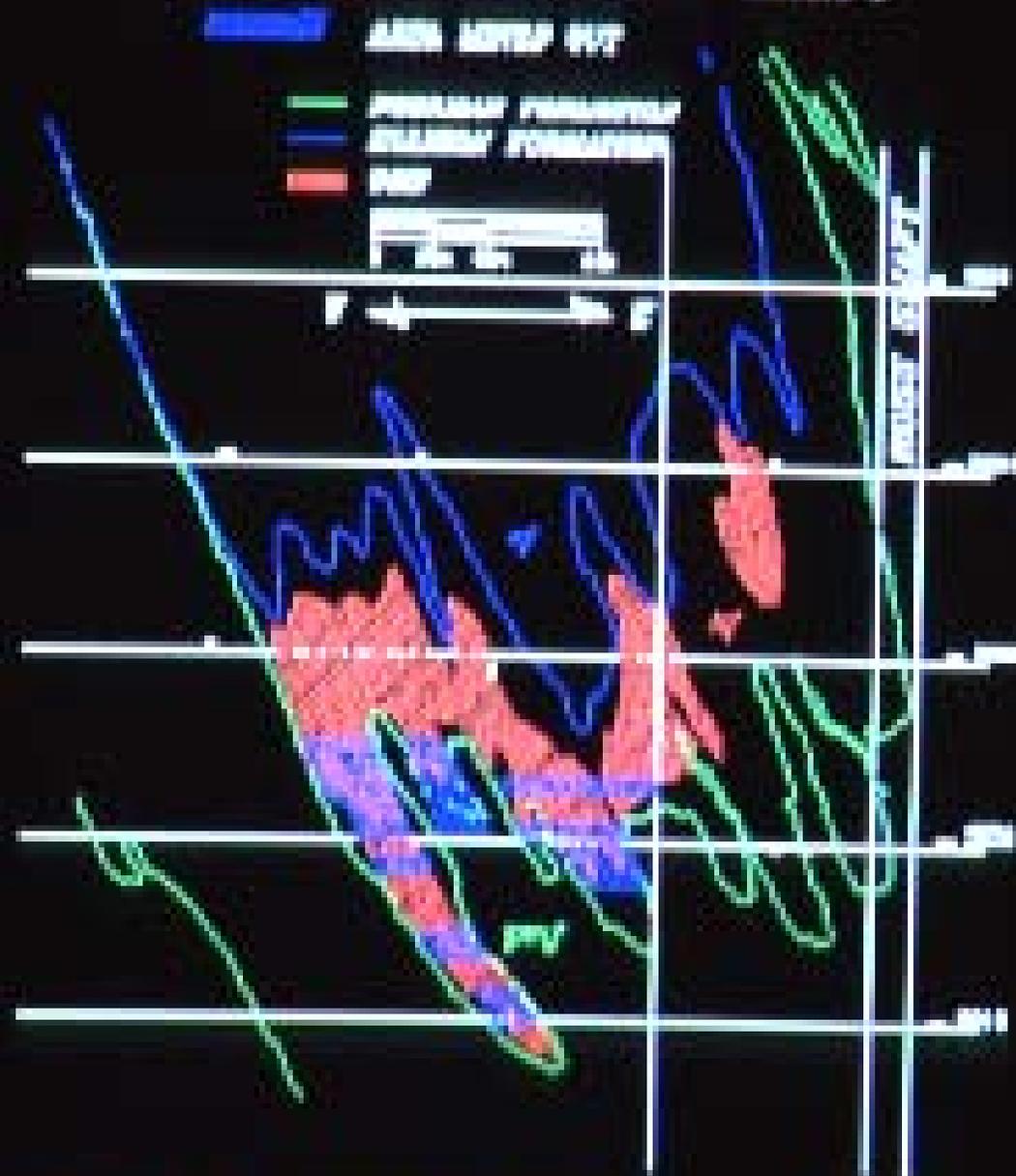
Monitoring system located underground at the Homestake Mine

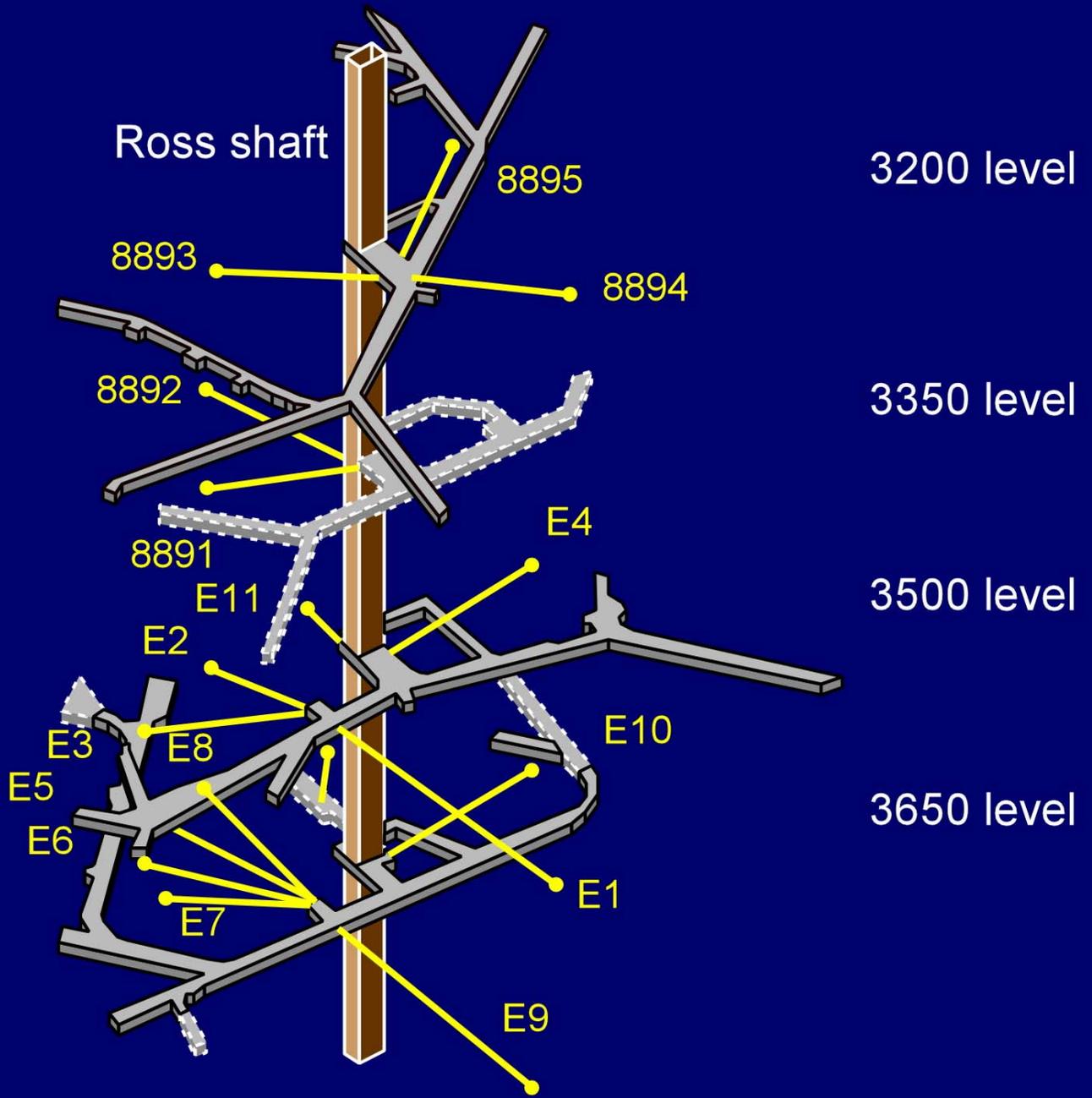


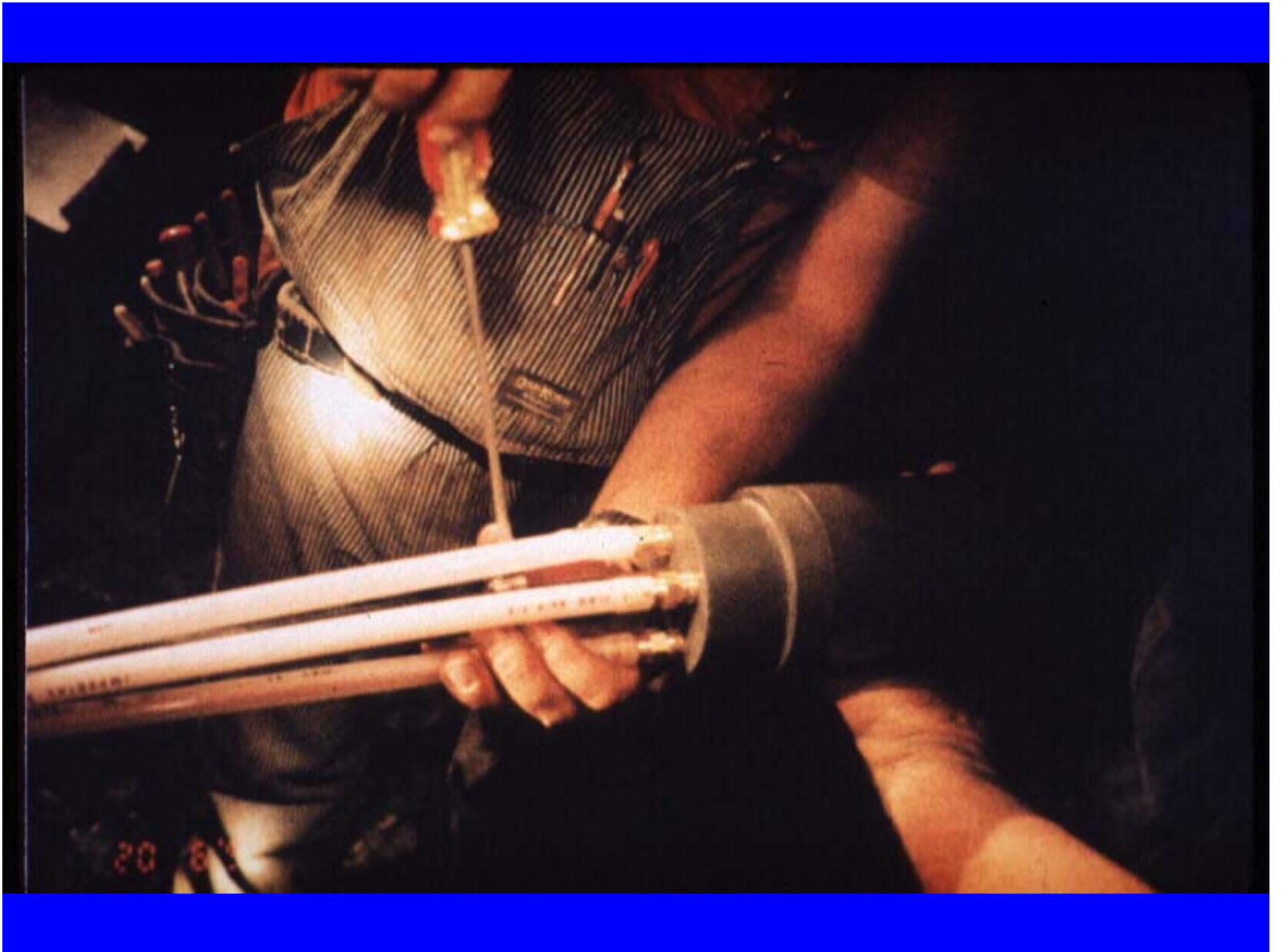
Cross-sectional view of seismic events



X-SECTION ALONG ROSS SHAFT

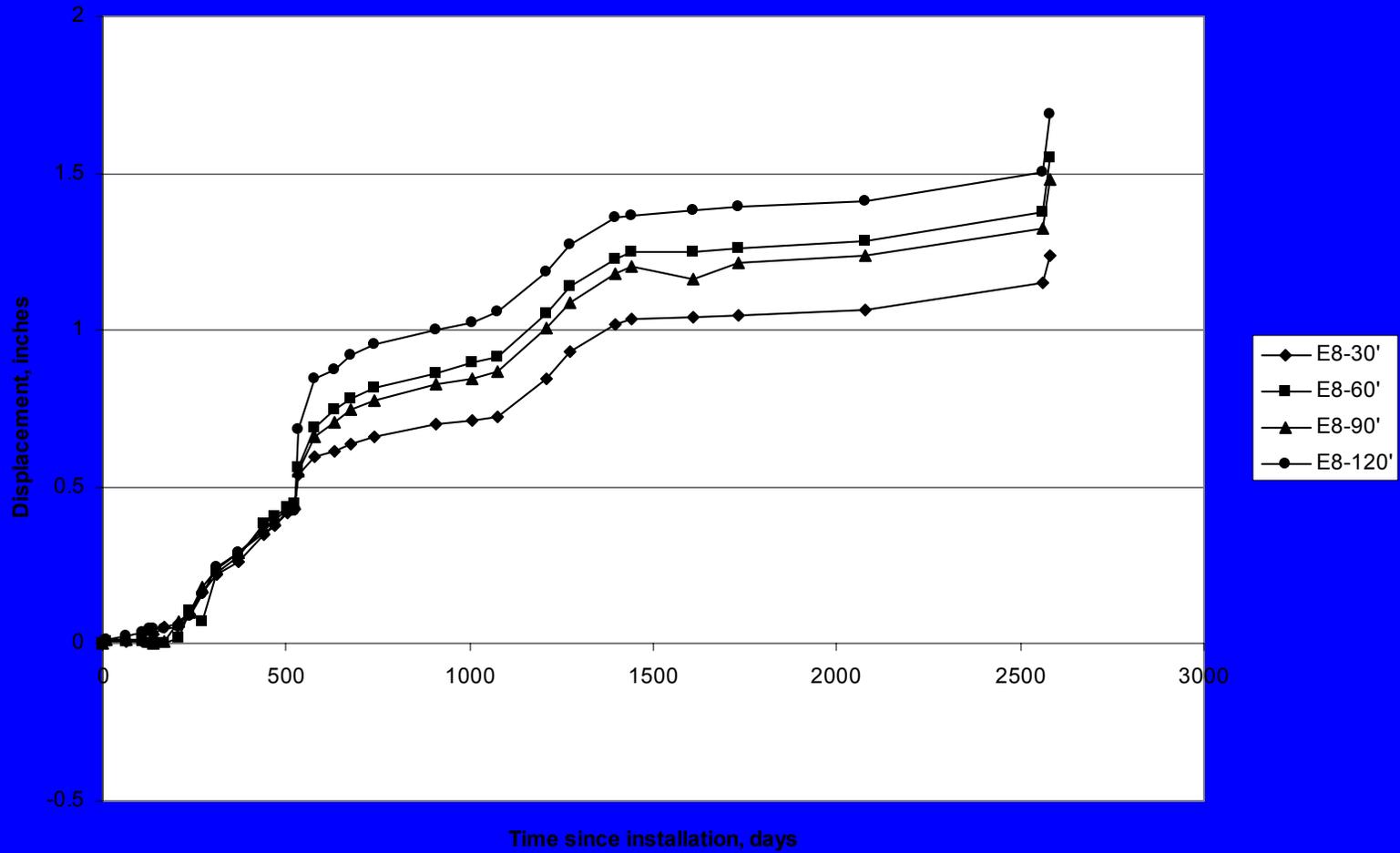








Ext 8 Displacement





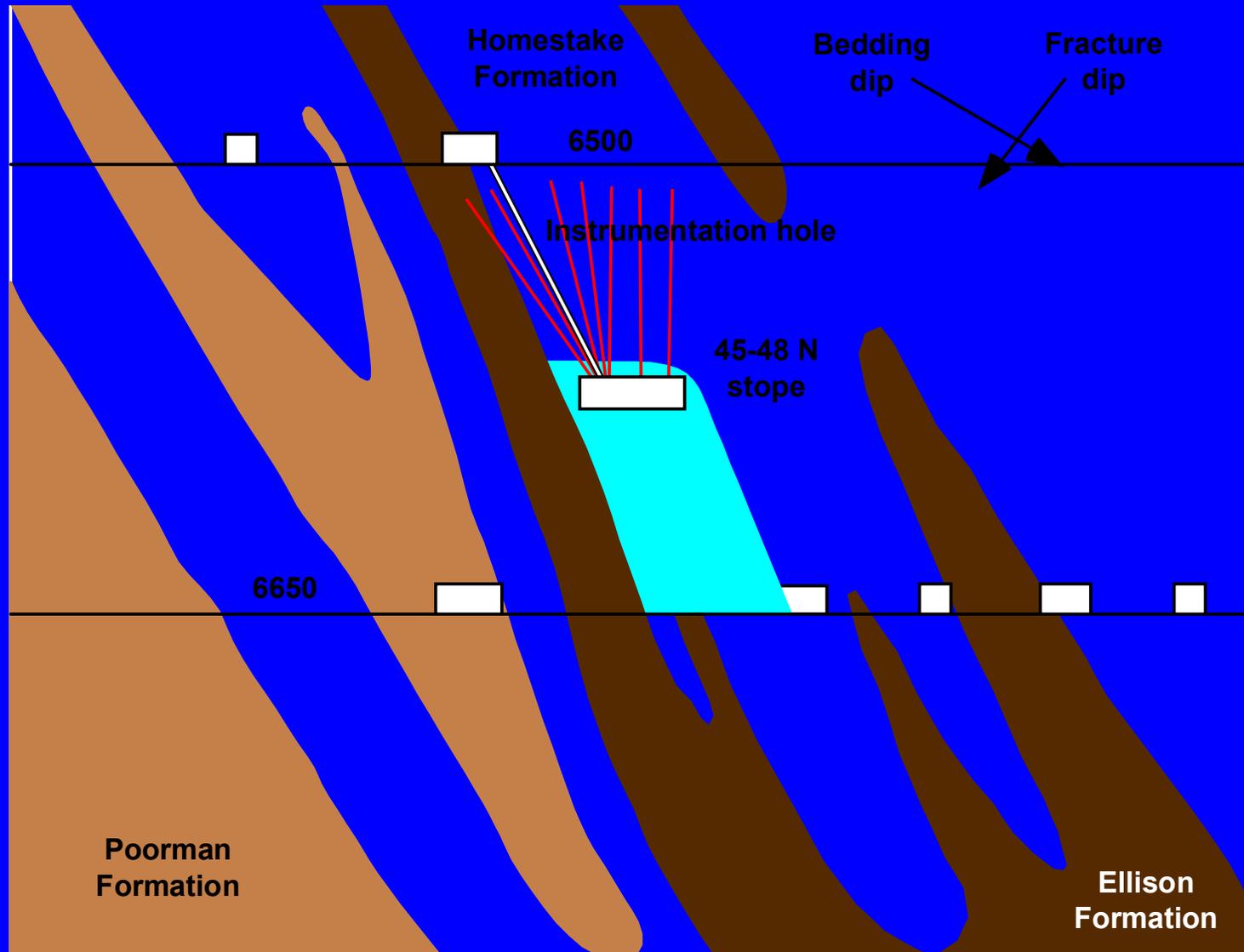
ROSS PILLAR X-SECTION



DISPLACEMENTS VAL

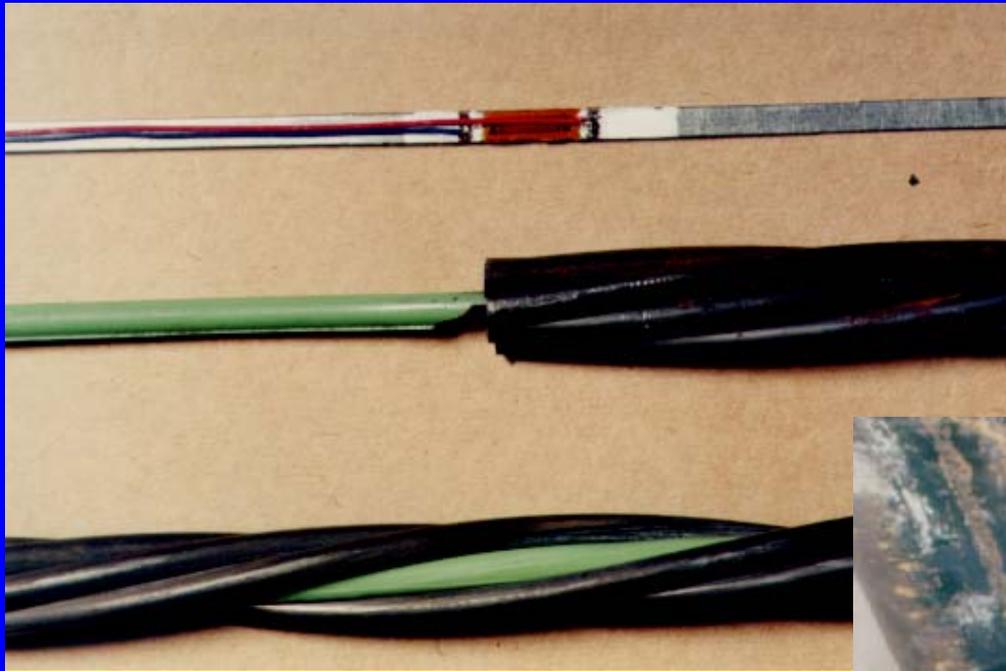
- KEY:
- 1'-3'
 - .5'-1'
 - .25'-.5'
 - .1'-.25'
 - .5'-1'

Geology Surrounding Drift on 6500 Level and Stope on 6580 Level





Instrumented Cable Bolt









NIOSH Geomechanics Applications at NUSL

- Stability of Large Openings
 - Microseismic monitoring
 - Long-term monitoring
 - Support system monitoring
- Blasting studies
- Detecting loose rock blocks
- Mine-wide monitoring systems

Showcase and Test Site for NIOSH Mine Safety and Health Research

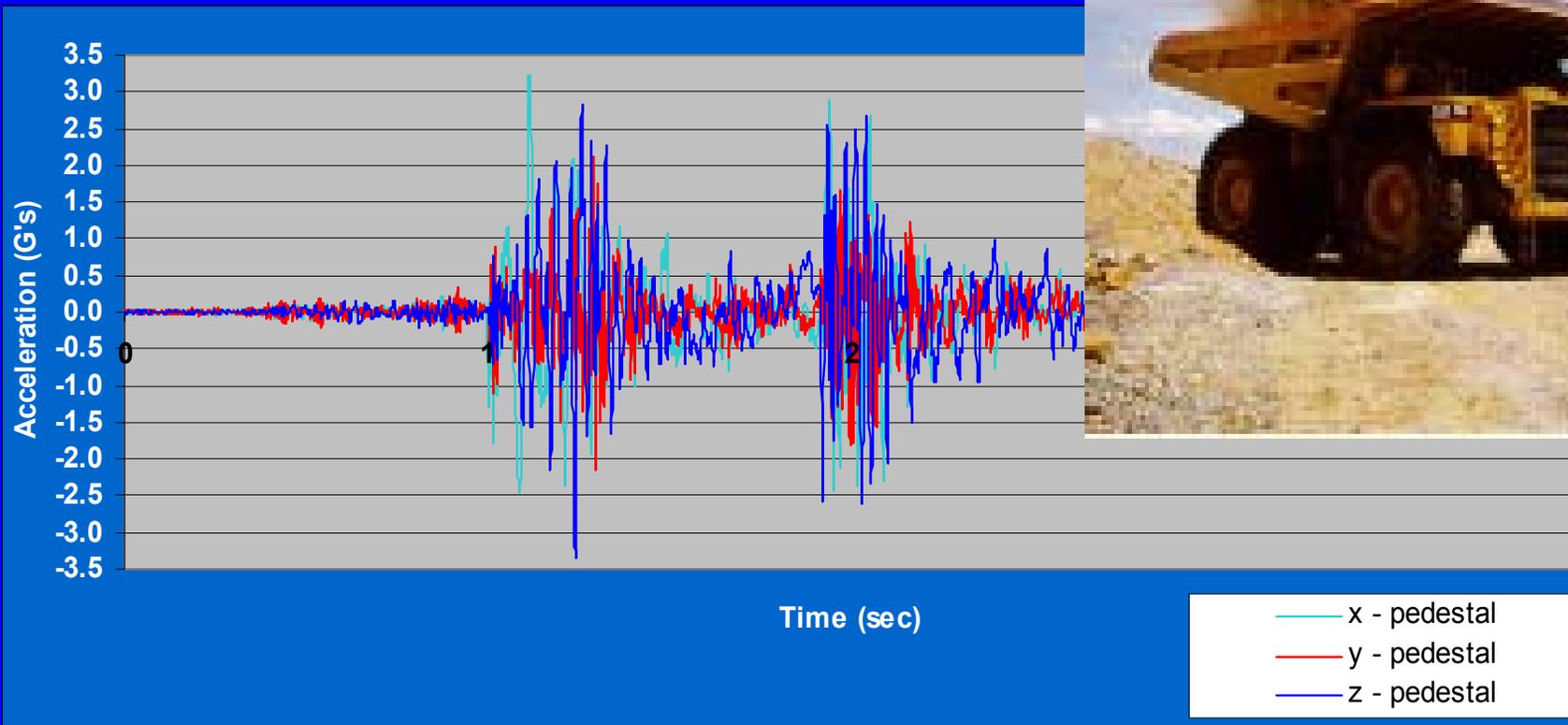
- Full-scale fire and ventilation simulations
- Full-scale emergency escape simulations

Hydrogen Vehicle

Zero
Emissions
Utility
Solution

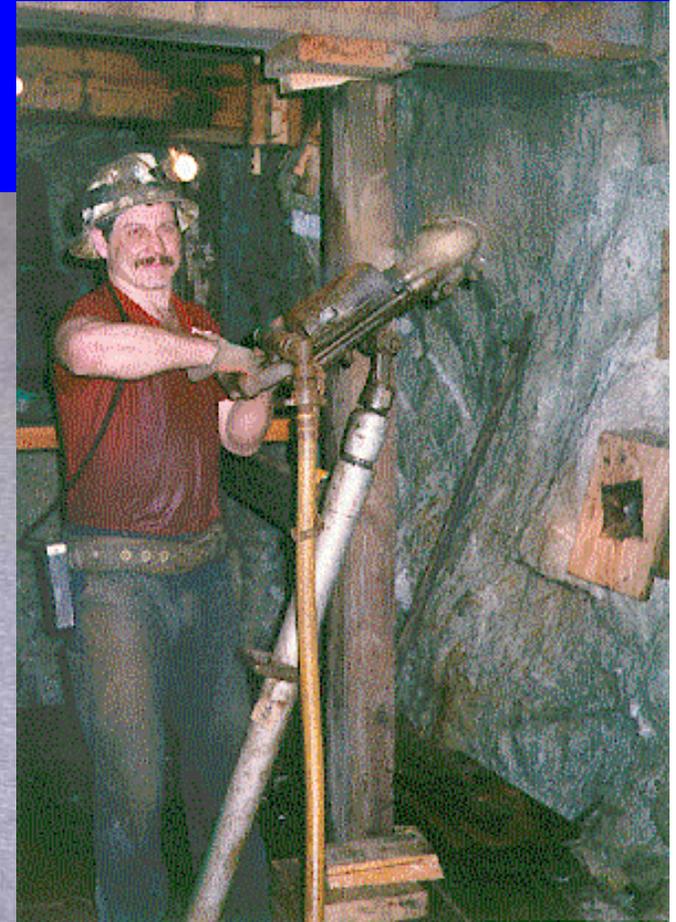
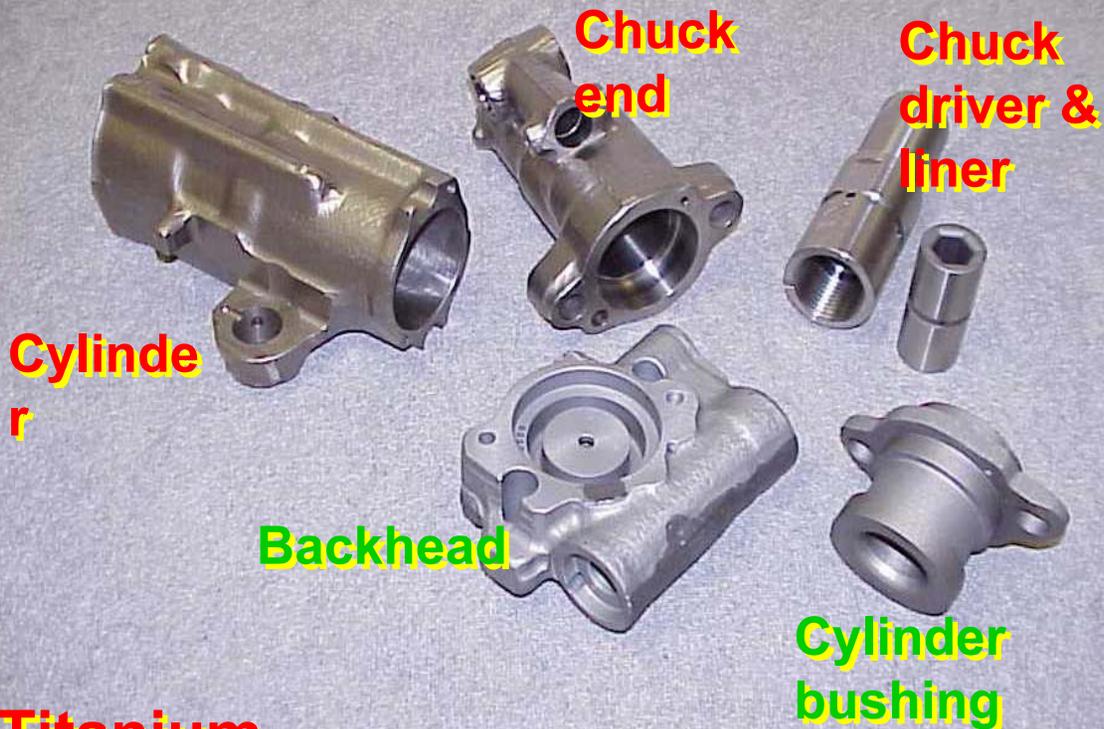


“Reducing Jarring/Jolting Injuries in Surface Mines”



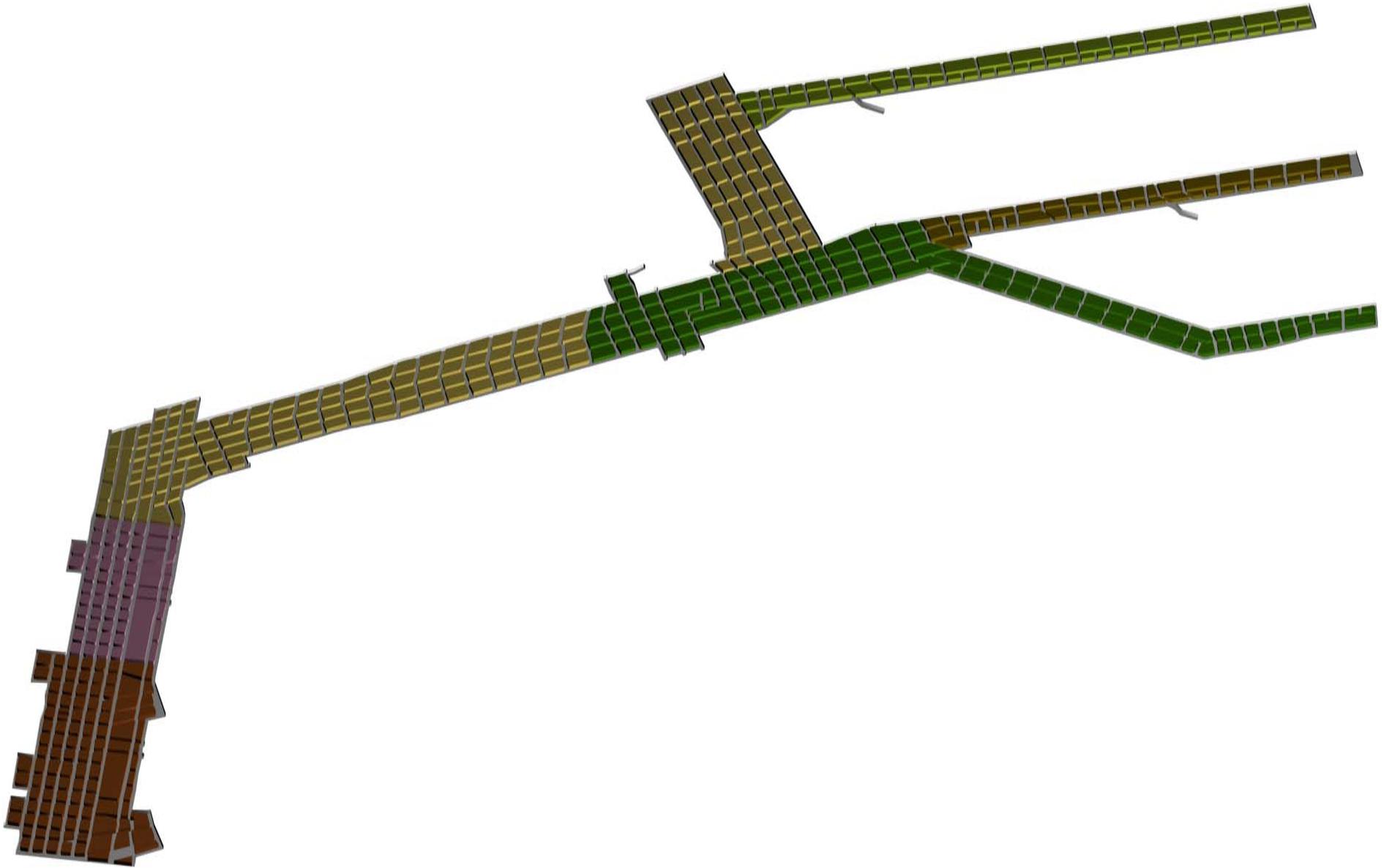
Reducing the Weight of Jack-Leg Drills

Six light-weight parts saved 21.3 pounds
Drill without leg is 28% lighter



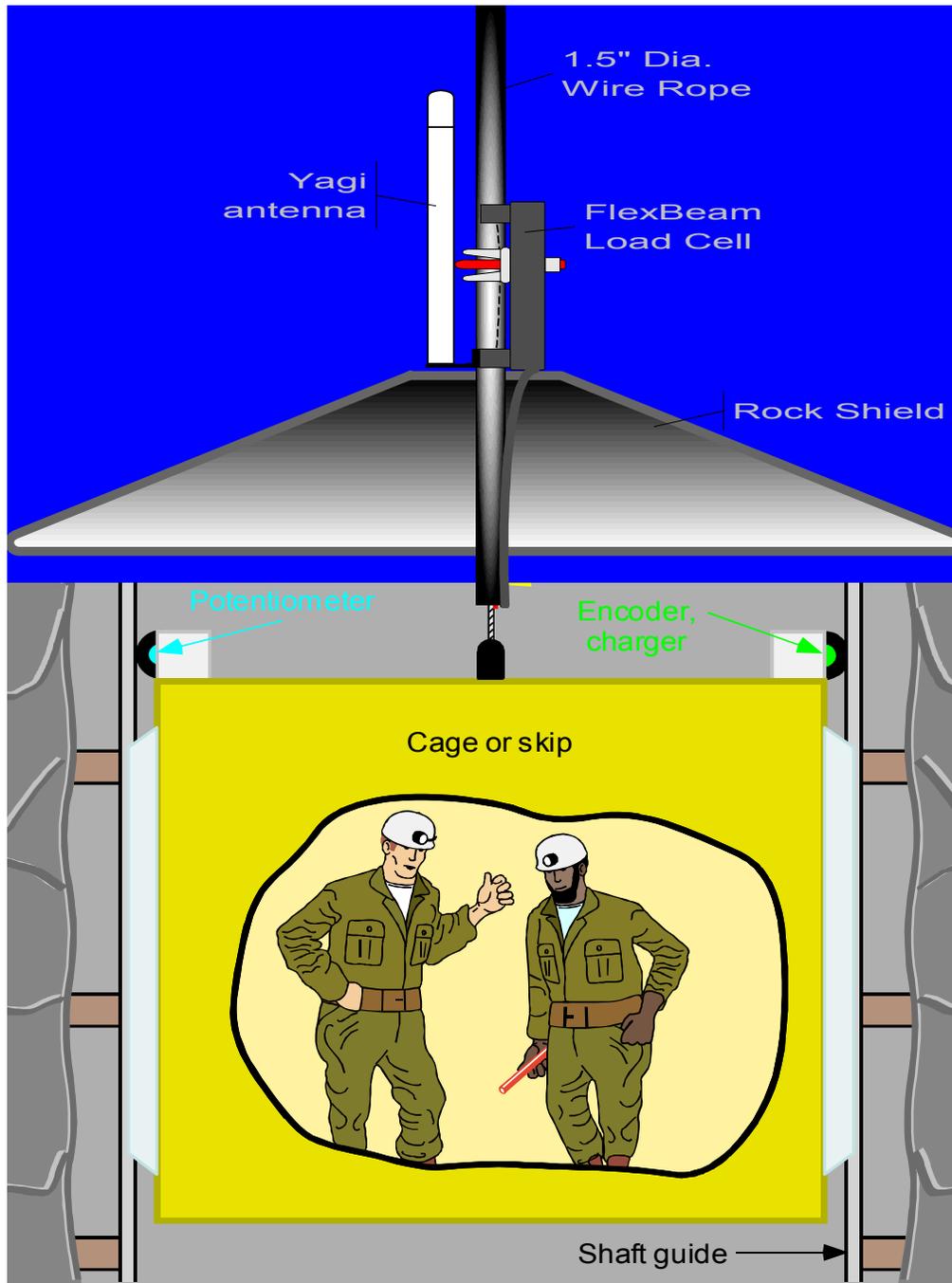
Titanium
Aluminum 356-
T6

Mine Evacuation and Hazard Simulation



Mine Evacuation and Hazard Simulation





The “SHAFT
CONVEYANCE
MONITORING
SYSTEM” (SCMS)
provides warning of

- Stuck Conveyances
- Position Errors
- Slack Rope
- Misaligned or damaged guides