Development and Assessment of Controls Session

Surface Drill Rigs

David K. Ingram

Mining Hearing Loss Prevention Workshop
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Rubber Tire Rigs

Track Mounted Rigs

Examples:
Air Rotary A-weighted Sound Levels
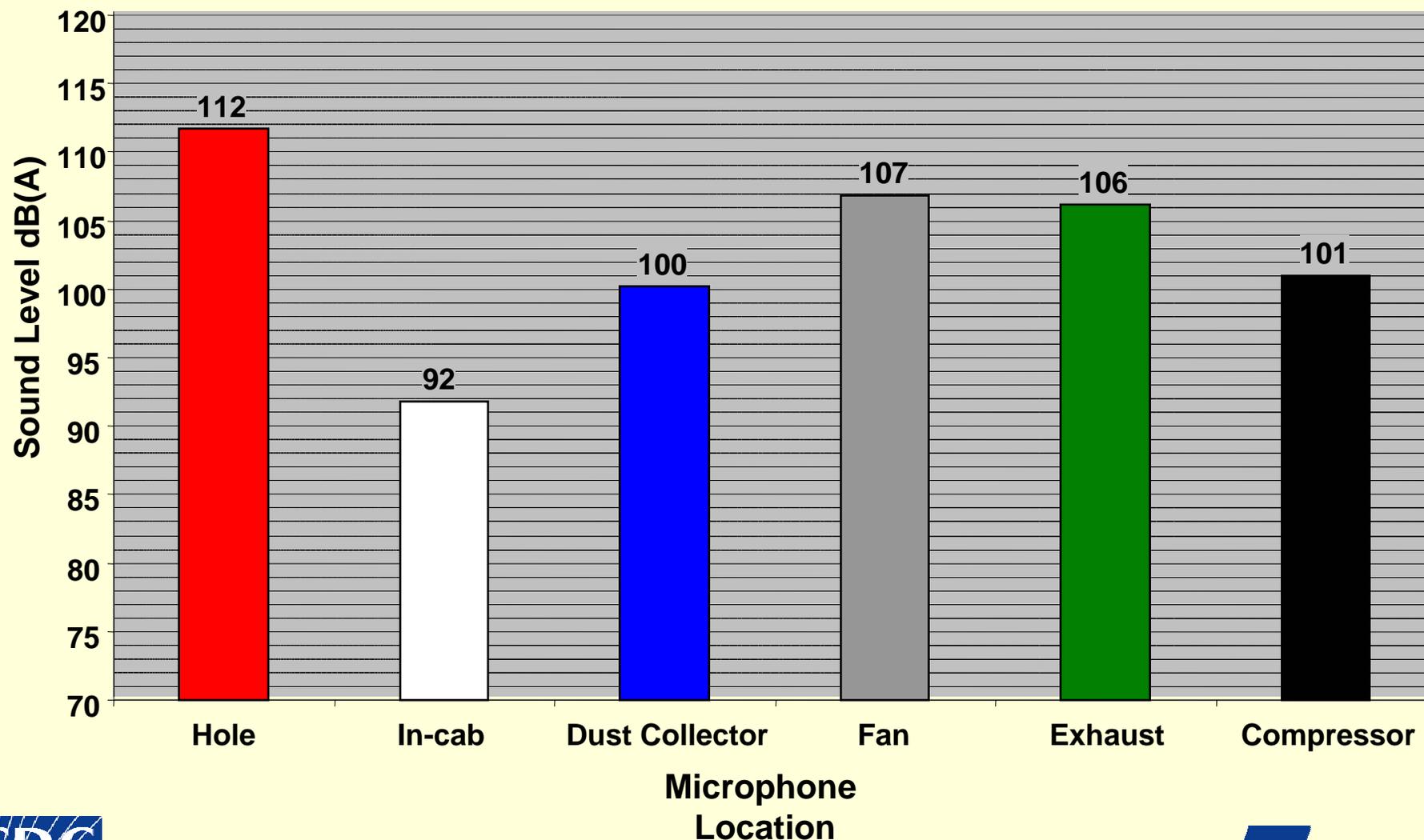
Engineering Controls for Two Types of Air Rotary Rigs

1) Cab Mounted Rigs

2) Non-Cab Mounted Rigs

What can be done to make the Cabs Quieter?

- Install sound proofing material

- Replace worn out door or window seals

- Replace broken, cracked or missing glass

- Repair the air conditioner or heater

- Encourage the operator to close the door

- Make sure the cab's mounting brackets prevent structural vibration

- *Isolate the hydraulic control lines from the control panel*

How do we isolate hydraulic control valves?

Solution to Hydraulic Line Vibration

Hydraulic Pump 'Ripple' → Hydraulic Line Vibration → Control Panel Vibration

NOISY CAB
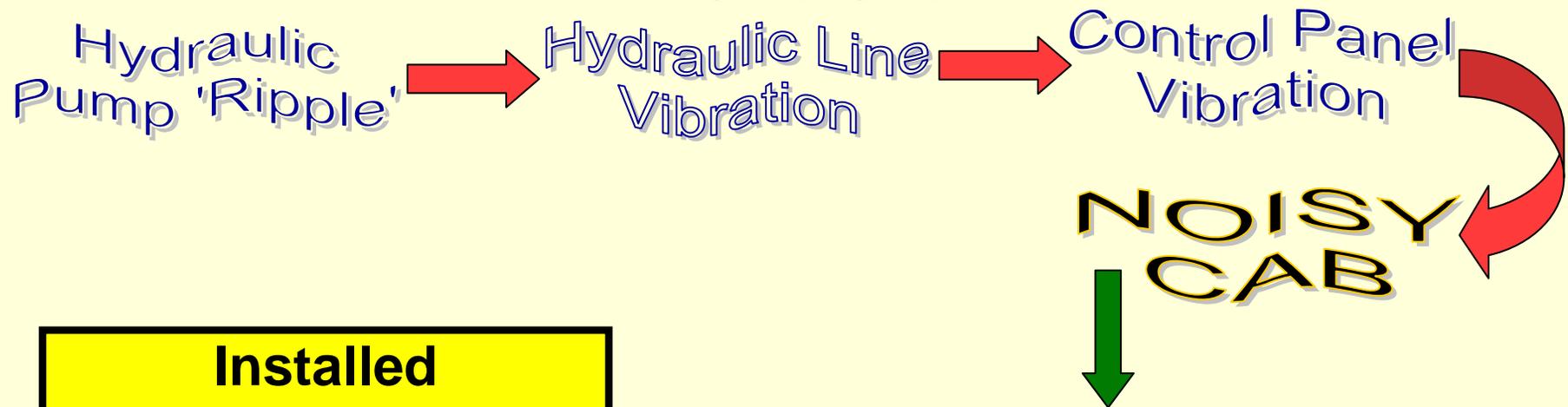
Installed Hydraulic Mufflers:

Idle:

91 → 86 dB(A)

Drilling:

98 → 94 dB(A)

Hydraulic Muffler
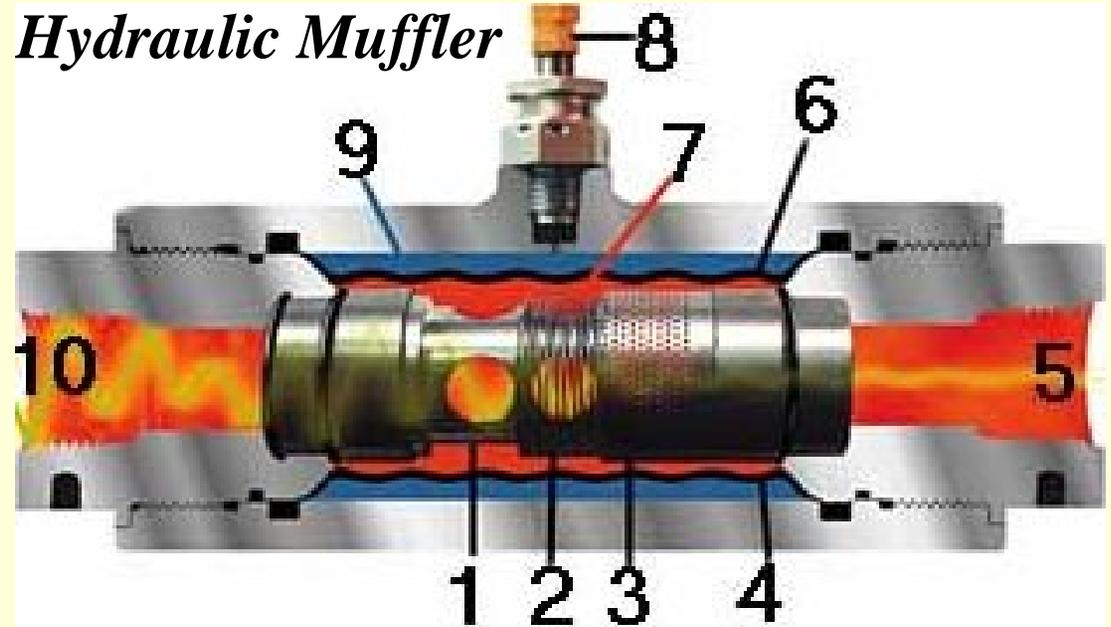
What About Rigs Without Cabs?
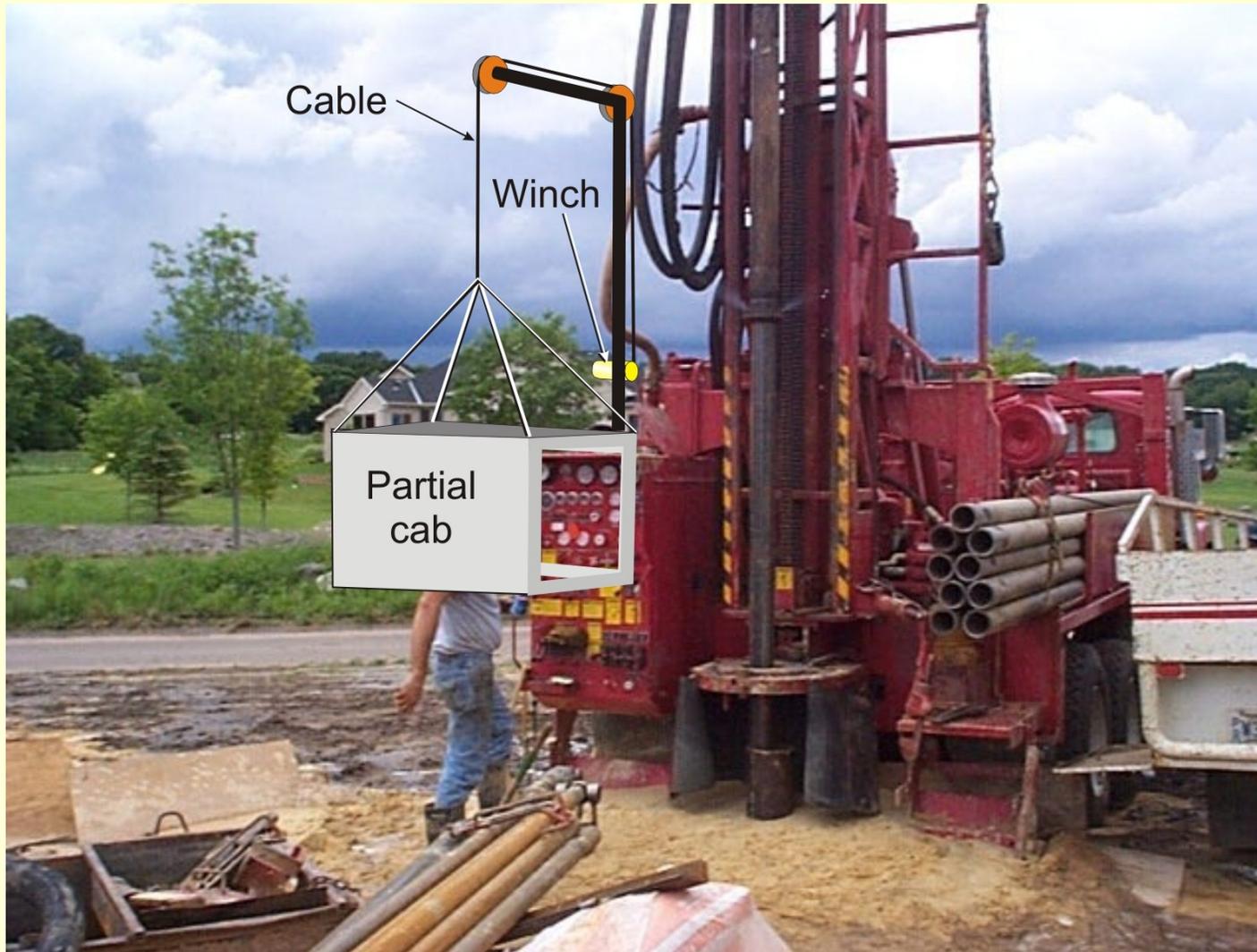
Partial Cab Design to Completion
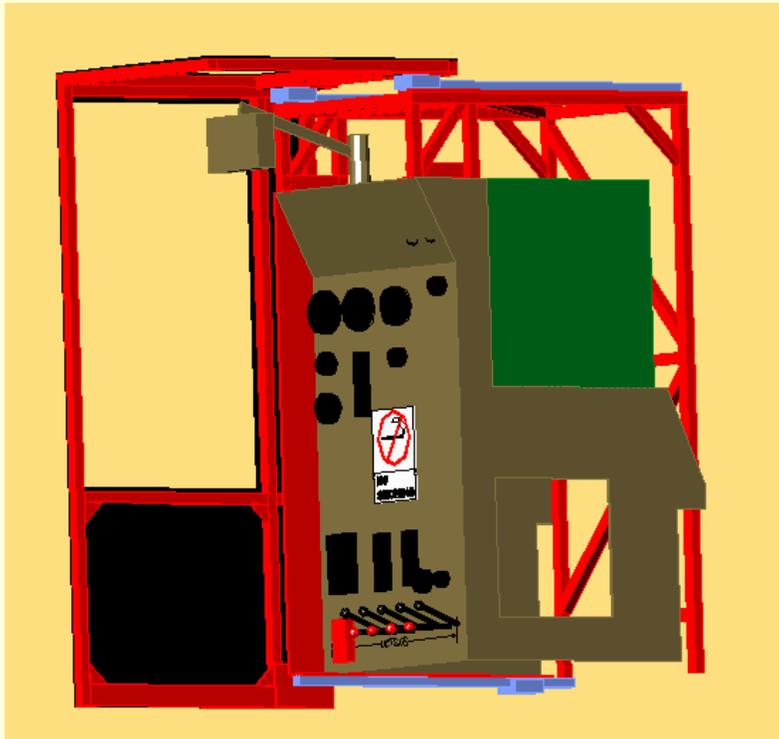
Sound Level Measurements: Partial Cab Engaged vs Disengaged

8 dB(A) Reduction with the Partial Cab

Disengaged, 104 dB(A)
Engaged, 96 dB(A)

A-wtd Sound Pressure Level, dB(A)

1/3-Octave Band Center Frequency (Hz)

Disengaged

Engaged

Stop
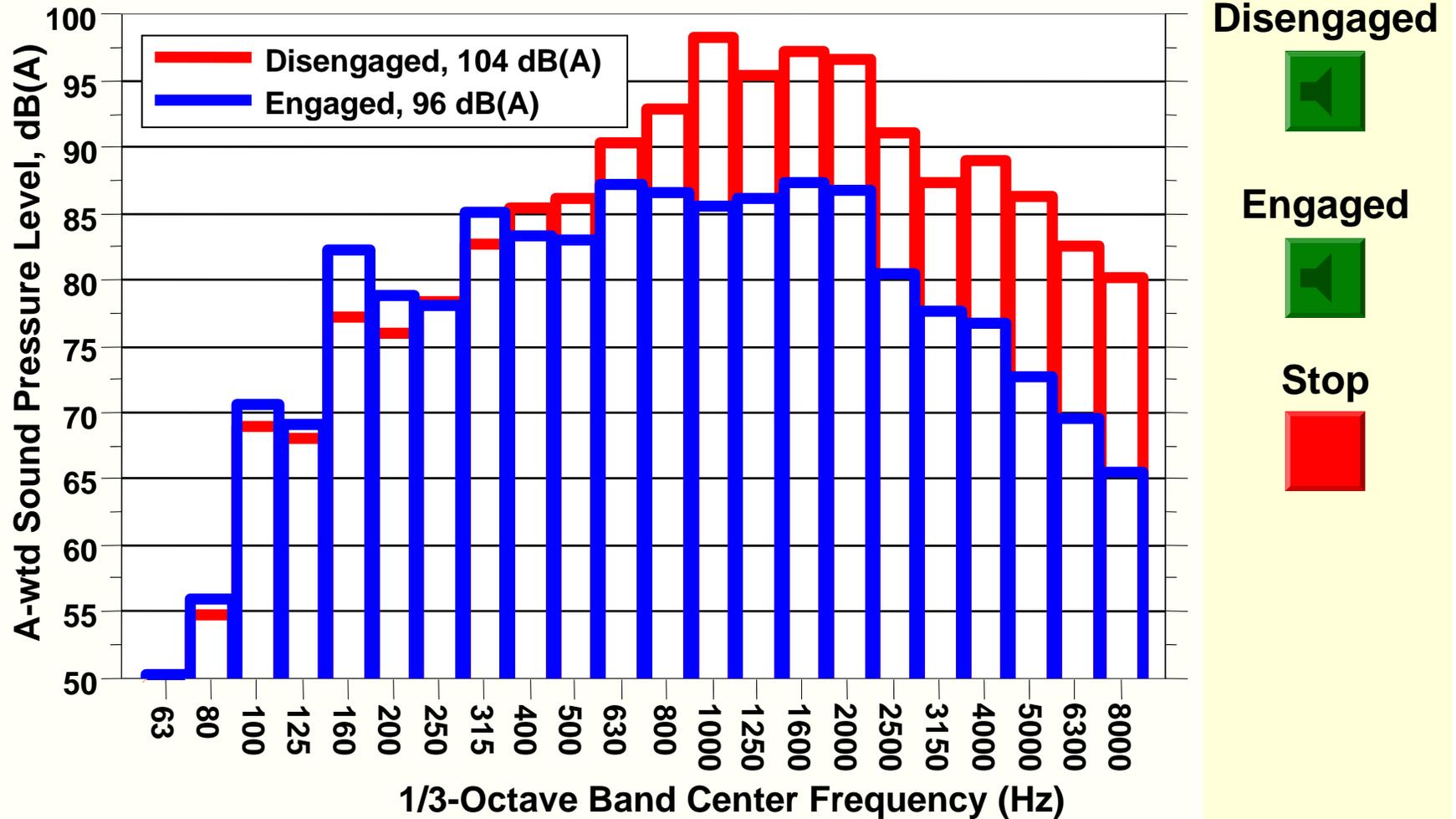
Driller's Comments: Partial Cab

- **<u>Design</u>**
- "Looked better than expected"
- **<u>Usability</u>**
- "Cab blocks dirt when setting the surface." The driller said he would have a hard time staying/seeing/breathing at the control panel during this process. The cab blocks the dirt coming directly at him during the initial drilling into the surface.
- **<u>Problems with Cab</u>**
- Around midday there is glare off the window panels and he can't see the drill steel because of the control panel reflection.

Driller's Comments – Cont.

- **<u>Cleaning the Partial Cab Window Panels</u>**
-     Used the air line to blow off the dirt from the window panels.
- **<u>Changes in rig sounds</u>**
- "Can't hear the drill steel sounds behind the cab. Rig sounds different". We talked about how he would get used to the sound changes, similar to the changes when wearing HPDs.
- **<u>Overall thoughts</u>**
-     "I like it. Other drill operators will want it (the partial cab) as well"

For more information

David K. Ingram

Phone: 412-386-6547   Fax: 412-386-4865

Dai6@cdc.gov

www.cdc.gov/niosh/mining

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