

A Comparison between Traditional Timbers and Rescue Struts for Mine Rescue Ground Control

Colorado School of Mines Mine Safety and Health Program

Outline

- Background
- Basis for the study
- How the study was conducted
- Study results
- Comments/Additional Information
- Questions

Background

- Used in the fire service for stabilization of vehicles, buildings and trenches



Basis for the Study

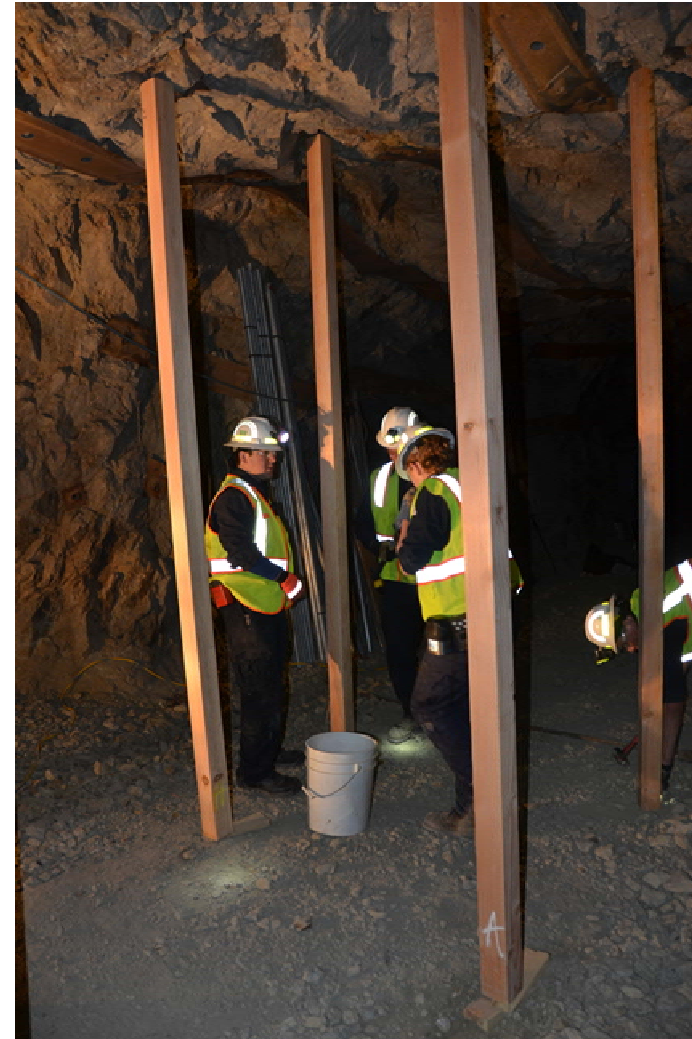
- Achieving competent ground control in mine emergency situations
- Alternatives to traditional wooden timbers
- Overall efficiency of each method



How the Study was Conducted

- Two areas of the Edgar Experimental Mine
- Timbered three times followed by using struts three times
- Scores based on time, spacing and stability of support
 - Stability was scored based on how vertical the posts were as well as how structurally sound they were.

Douglas fir timbers after being fully set in place. Note the wooden wedges at the base of each post.



How the Study Was Conducted (Cont'd)

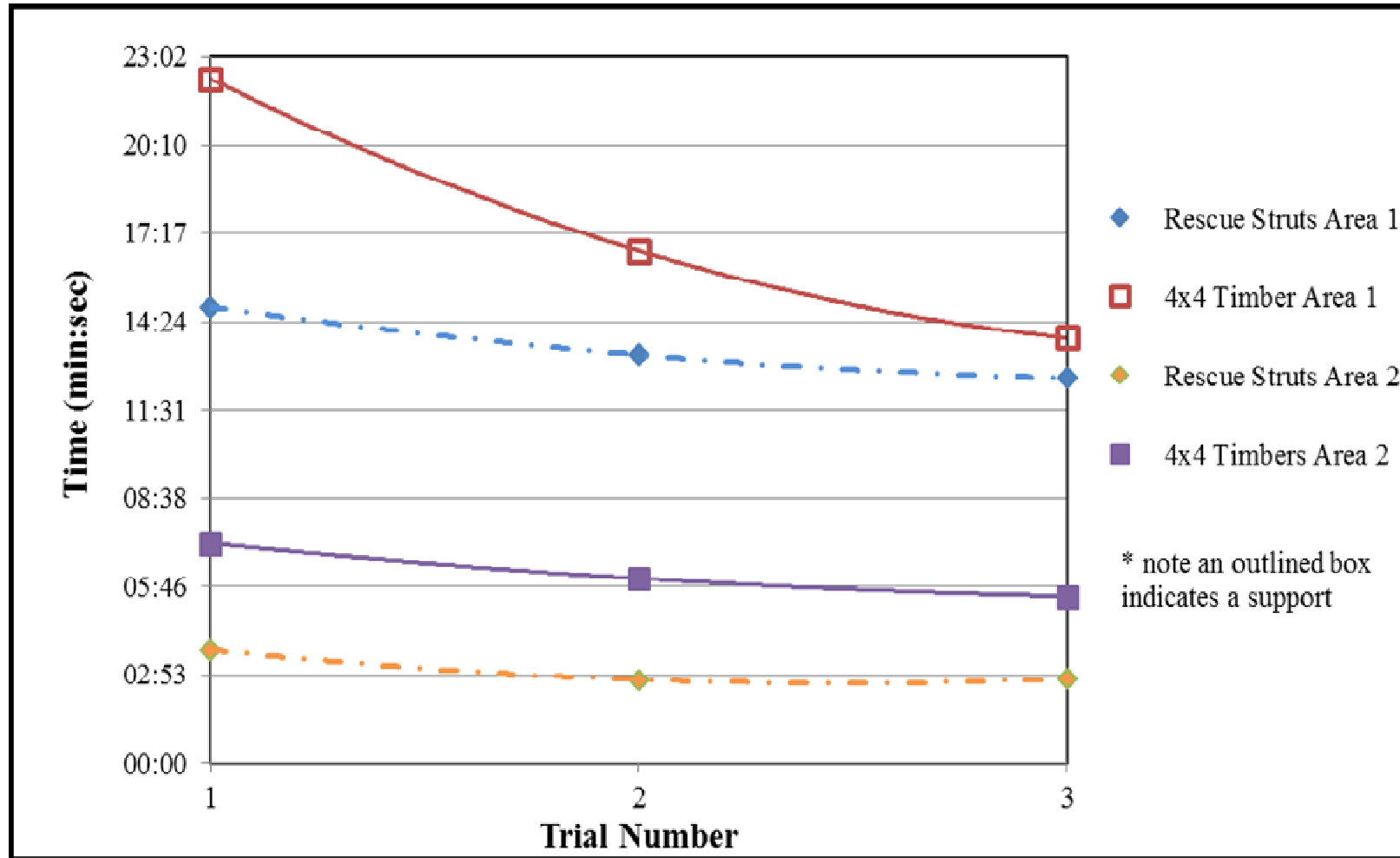


Full set up of the rescue strut system that shows both horizontal and vertical setups



Placing struts in the testing area of the Sunshine Mine

Study Results



Time Trial results for both timber and struts

Study Results (cont'd)

- Times continued to decrease as the study continued
 - Timbers always took longer to install
 - Mandatory rest periods were taken between each iteration to decrease the effect of fatigue
- Spacing was consistent between struts and timbers
- Stability of support
 - Timbers: 83% (Area 1) and 96% (Area 2)
 - Struts: 94% (Area 1) and 100% (Area 2)

Additional Information

- Struts can also be used in combination with heavy lift air bags



A rescue strut and heavy lift bags stabilizing an overturned ore cart

Comments/Survey Responses

- High capital cost for struts but it is an investment
- Struts can be re-used
- Struts can be stored anywhere
- Struts are fast, strong and easy to use

Questions?

Any additional questions or comments, please contact me at
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