

# 2025 SME/CAS Spring Meeting

Friday, March 21, 2025  
WV Training & Conference Center – Julian, West Virginia

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| 7:00 a.m.  | <b>Registration and Full Breakfast</b> (sponsored by Virginia Department of Energy)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 8:00 a.m.  | <b>Welcome</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 8:05 a.m.  | <b>Keynote Address – TBA</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 8:40 a.m.  | <b>Networking Break</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 8:55 a.m.  | <p><b>Application of Geosensing to Underground Directional Drilling – A Case Study in Western US Coal</b><br/>Alex Greenblatt and Daniel Brunner, REI Drilling Inc.</p> <p>The Yabby Geosensing System was recently introduced into the US at a western underground coal mine to aid in defining the location of water and gas bearing fractures and faults, the characteristics of the offset and extent of these features, and quantifying their contribution to water and gas inflow, with the intent to develop accurate geologic models for safe mine planning of a new deep district of longwall panels. This presentation provides a description of how the Yabby Geosensing System integrates with directional drilling, including comparisons of interpreted plots of actual data gathered from the directional LWD/MWD system and driller logs with the models developed in conjunction with the data obtained from the Yabby Geosensing System.</p> |
| 9:20 a.m.  | <p><b>Buchanan No. 1 Mine - Historical and Future Design Modifications</b><br/>Steve Hicks, Coronado Global Resources, Inc.</p> <p>This presentation will cover the history of Buchanan No.1 Mine and the design of the retro fit and construction of a second set of skips in the Vent Shaft 1, Raw coal scaping system, Construction of a 100,000-ton raw coal storage area and the integration of the reclaim system into the existing preparation plant at the Buchanan No1. Mine. We also cover planned modifications to the preparation plant to handle the future increase in raw coal capacity of the Buchanan Mine to accommodate the next twenty years of mining.</p>                                                                                                                                                                                                                                                                                |
| 9:45 a.m.  | <p><b>ACNR – Reclamation Efforts in Western Kentucky</b><br/>Bryant Arnold, American Consolidated Natural Resources (ACNR)</p> <p>In this presentation, we will explore the significant reclamation efforts undertaken by ACNR in Western Kentucky, showcasing the organization's commitment to restoring and revitalizing impacted landscapes. ACNR has invested substantial resources into these initiatives, demonstrating a strong dedication to environmental sustainability and community well-being. Join us as we discuss the strategies implemented and the positive outcomes achieved through these vital reclamation projects.</p>                                                                                                                                                                                                                                                                                                                  |
| 10:10 a.m. | <b>Networking Break</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

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| 10:35 a.m. | <p><b>An Overview of the WV Office of Miners' Health, Safety, and Training AND West Virginia Training and Conference Center Capabilities, Training Activities and Support</b><br/>Frank Foster and Kimberly Bradley, West Virginia Training &amp; Conference Center</p> <p>The first part of this presentation will give a comprehensive overview of the West Virginia Office of Miners' Health, Safety, and Training, highlighting key safety topics, mine rescue, and valuable resources. Attendees will gain insight into the office's critical role in fostering safety standards and miner education. The second part of this presentation will explore the full range of capabilities offered by the West Virginia Office of Miners' Health, Safety, and Training's facility, the West Virginia Training and Conference Center, showcasing how the industry utilizes this space. Participants will gain insights into our advanced facilities, as well as the training and certification support we provide. Discover how our dedication to excellence meets the needs of the industry.</p>                                                                                                                   |
| 11:00 a.m. | <p><b>Advancing Mine Safety Through Real-Time Atmospheric Monitoring and Data Analytics</b><br/>Kermitt Melvin, Arch Leer Mine</p> <p>Innovative Wireless Technologies (IWT) has developed the Wireless Gas Monitor (WGM), a cutting-edge multi-sensor platform for real-time atmospheric monitoring at Arch Leer North mine. Designed to meet regulatory standards, the WGM ensures the health and safety of mining personnel. It utilizes infrared and catalyst-based sensors for accurate gas detection, is easily portable, and is battery-operated. The WGM integrates seamlessly into Leer's large-scale mesh communication and tracking system, eliminating the need for additional infrastructure and speeding up deployment. Through a collaborative partnership, IWT and Arch Leer North are enhancing technological innovation, combining IWT's advanced gas and atmospheric sensors with Leer's deep-rooted proficiency in ventilation monitoring. This integration into C&amp;T and FactoryTalk systems, facilitated by IWT's ServerLink OPC interface helps identify additional data that enhances safety. Advanced data analytics on atmospheric readings are then used for actionable insights.</p> |
| 11:25 a.m. | <p><b>Effects of Primary Sources and Engineering Controls on Respirable Coal Mine Dust</b><br/>Emily Sarver, Virginia Tech</p> <p>The continued push to reduce health hazards associated with respirable dust exposures have emphasized a growing need to understand 'what's in the dust?' and 'where is it coming from?' This presentation will highlight a recent field study designed to compare dust generated when mining in the target coal seam versus the surrounding rock strata.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

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| 11:50 a.m. | <p><b>Virtual Reality Mine Rescue Training Platform: More than Just Mine Rescue</b><br/>Cory DeGennaro, CDC/NIOSH (Invited)</p> <p>The NIOSH Virtual Reality Mine Rescue Training (VR–MRT) platform offers an innovative solution to supplement traditional training and address concerns surrounding preparedness. By simulating realistic emergencies in controlled virtual environments, users can develop critical decision-making and problem-solving skills. Additional use-cases have emerged and been accomplished with customizable environments and built in after-action review. Offering a fresh take on training, this presentation highlights VR–MRTs capabilities, current and future objectives, and its potential impact for mine safety training.</p> |
| 12:15 p.m. | <b>Lunch (provided)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 1:15 p.m.  | <p><b>North Eagle Roof Falls: A Geotechnical Analysis</b><br/>Julia Rundle, Blackhawk Mining</p> <p>Roof instability remains a significant safety concern in underground mining operations, often leading to hazardous roof falls that endanger personnel and disrupt productivity. This presentation explores the critical role of roof geology mapping and historical roof fall analysis in identifying and mitigating potential hazards before they occur. By systematically assessing geological structures, lithology variations, and failure patterns, mining operations can optimize roof bolt packages and support patterns to better address site-specific conditions.</p>                                                                                     |
| 1:40 p.m.  | <p><b>Managing High Horizontal Stress on a Longwall Headgate when Preferred Orientation is Unachievable</b><br/>Joe Wickline, Arch Leer South</p> <p>The mine operator is currently mining a right-handed longwall face subjecting the headgate belt entry to high horizontal stress. Numerous geological and operational constraints forced the operation to mine their 2nd district with the headgates in a high horizontal stress orientation. In preparation of the adverse conditions the operator implemented several operational changes to help manage the anticipated ground control issues associated with high horizontal stress.</p>                                                                                                                        |
| 2:05 p.m.  | <p><b>A Preview of the Features of SDPS v7</b><br/>Ben Diddle, University of Kentucky</p> <p>SDPS has been the go-to software package for subsidence prediction since the late 1980's. In the mid-1990's it was developed in a Windows environment and was made available to federal and state agencies as well as the private sector. SDPS is currently being updated to take advantage of modern software tools that provide users with a much better interface. This presentation will touch on the main features of SDPS version 7.</p>                                                                                                                                                                                                                             |

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| 2:30 p.m. | <p><b>Mining Under Flooded Mine Workings and other Sources of Groundwater</b><br/>Zach Wedding, University of Kentucky</p> <p>Mining under abandoned, flooded mines can present hazards such as inundation of mine workings, and disturbance of groundwater aquifers. Previous mining in the upper seam generates stresses which may produce cracks in the surrounding (upper and lower) rock strata. Development or full extraction mining under a previously mined seam will generate additional stress in the interburden in which the cracks can become pathways for water to inundate the lower seam. This presentation will discuss the application of numerical modeling to assess the impacts mining under bodies of water with a focus on multiple seam mining.</p>                                                                                                                                                                                                                                                                                                                                                                  |
| 2:55 p.m. | <p><b>Networking Break</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 3:20 p.m. | <p><b>Critical Mineral Extraction from Coal Acid Mine Drainage Via Solid-Phase Biochar Adsorption</b><br/>Deniz Talan, West Virginia University</p> <p>Acid mine drainage (AMD), an acidic and metal-rich solution resulting from the oxidation of sulfide minerals, poses significant environmental risks and challenges for mining industries globally. While conventional neutralization methods are cost-effective, they produce large amounts of sludge, which requires disposal. However, AMD contains valuable critical minerals like aluminum, cobalt, and rare earth elements, presenting an opportunity for resource recovery. This presentation will cover the utilization of biochar in a solid-phase extraction process to recover critical minerals. This approach aligns with regulatory and government priorities to develop sustainable, cost-effective remediation solutions and promote domestic critical mineral supply chains. Overall, solid-phase extraction offers a more efficient alternative to current water treatment and critical mineral extraction techniques, reducing chemical use and potential waste.</p> |
| 3:45 p.m. | <p><b>Introducing the Bluefield State University Mining Engineering Technology Program</b><br/>Cary Harwood/Keith Olsen, Bluefield State University</p> <p>Bluefield State University located in Bluefield, West Virginia has just recently reinstated the Mining Engineering Technology program with inaugural classes beginning Fall term 2024. Ten students have entered the program this year and full recruiting efforts are underway for the Fall 2025 term. The program will apply to the Accreditation Board for Engineering and Technology (ABET) during 2025 with expectations that the program will be accredited prior to graduation of the current freshman class in 2028. Numerous mining companies and mining industry support companies have joined the program with financial support and placement of both intern and graduating engineers.</p>                                                                                                                                                                                                                                                                             |
| 4:10 p.m. | <p><b>TBA</b><br/>Casey Adkins, JCS Services, Inc.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

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| 4:35 p.m. | <p><b>A Modular Catalytic System for Methane Mitigation from Mining Operations</b><br/> Hani A.E. Hawa, Timothy LaBreche, and Subir Roychoudhury<br/> Precision Combustion, Inc.</p> <p>Precision Combustion, Inc. (PCI) is testing a modular catalytic system for methane mitigation from ventilation air methane (VAM) exhaust from underground coal mines. The system being tested is based on an advanced contaminant-tolerant catalyst design that enables lower operating temperature while maintaining high methane destruction and removal efficiency (DRE). Long term durability and contaminant tolerance were demonstrated at the lab-scale for 1000's of hours for methane concentrations ranging from &lt;100 ppm<sub>v</sub> to 1% (by vol.) in air. Performance data from operation with high humidity VAM streams, levelized cost of carbon abatement (LCCA), and life cycle impact findings for methane mitigation from mining operations will be discussed. LCCA analysis showed potential revenue generation via carbon credits.</p> |
| 5:00 p.m. | <b>Adjourn</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |