ALPHA FOUNDATION

for the Improvement of Mine Safety and Health, Inc.

The Alpha Foundation is pleased to present its 2023 Annual Report.

The report provides a summary of activities directed toward the realization of the Foundation's mission to improve mine health and safety through funding research and development projects by qualified academic institutions and other not-for-profit organizations.

Grantmaking Summary

Grant activity is maintained on the Alpha Foundation website (https://www.alpha-foundation.org). The following 13 grants completed their research efforts this year.

- AFC113FO-12 - Application of Pressure Balancing Techniques at the West Elk Coal Mine (University of Utah)
- AFSTI14FO-81 – Early-Warning System Prototype Tests for Real-Time Intervention and Optimum Ventilation Control Assistance (University of Nevada, Reno)
- AFC316FO-84 - Refining Silica and Other Dust Particle Classification by Optical Light Microscopy (Virginia Tech)
- AFC417-21 - Autonomous Underground Mining Systems to Improve Safety - Intelligent Coal Mining (University of Kentucky)
- AFC518SP-89 - Collecting Mine Dust Particles with Liquid-Coated Vibrating Meshes (Virginia Tech)
- AFC820-14 - Opioid Hazard Awareness Training for Sand, Stone, and Gravel Workers (University of Massachusetts, Lowell)
- AFC820-15 - Reducing Mortality Risks in the Extended Diesel Exhaust and Miners Study (DEMS) (University of California at Berkeley)
- AFC820-68 - Roof Bolting Module Automation for Enhancing Miner Safety (University of Kentucky)
- AFC820-69 - Autonomous Robotic Early Warning System for Underground Stone Mining Safety (West Virginia University)
- AFC820-43 - The Effect of Coal and Mine Respirable Dust Size on Lung Cells and Exposure Assessment (University of California, Los Angeles)
- AFC719FO-100 - Research and Refinement of a Methane Watchdog System to Improve Longwall Mine Safety (West Virginia University)

- AFC719FO-101 - Mine-Specific, Geology-Dependent Pillar and Standing-Support Design Tools (West Virginia University)
- AFCTG20-104 - Exploration of Temporal Changes in Respirable Coal Mine Dust Characteristics (Virginia Tech)

As the Foundation is nearing the end of its grant funding, only 3 new grants began research studies in 2023.

- AFCTG22R2-158 - Symptoms of Depression, Anxiety and Post-Traumatic Stress among Coal Miners Compared to Other Occupational Groups in a Population Survey in the Appalachia Region (University of Illinois at Chicago)
- AFCTG22R2-160 - Development of A Stability Mapping Platform for Stone Mines That Will Combine Numerical Modeling and Empirical Criteria (University of Kentucky)
- AFCTG22R2-161 - A Strong and Ductile High-Performance Pumpable Roof Support (University of Arizona)

Since its beginning in 2011, the Alpha Foundation has supported a portfolio of research that comprises 114 projects awarded to 35 institutions totaling 45.8 million dollars. There are 32 active grants in 2023. Overall, the grants address the four major focus areas of the Foundation, with award percentages as indicated:
- Safety and Health Interventions - 56%
- Mine Escape, Rescue & Training - 7%
- Safety & Health Management & Training - 9%
- Injury & Disease Exposure & Risk Factors - 28%

Future Considerations and Planning

In the coming year, the Foundation plans to examine our remaining funding and potential closeout costs to determine if any additional grant awards can be made. All active grants are currently scheduled to be completed by the end of 2025.

Alpha Foundation Board of Directors
Dr. Michael Karmis, Director and President
Dr. Keith Heasley, Director and Secretary
Dr. David Wegman, Director and Treasurer

Alpha Foundation Staff
Dr. Thomas Barczak, Executive and Technical Director
Dr. Michael Silverstein, Technical Associate (Deceased)