



## ORION, NM and Washington, D.C.

*New Contract: Modernization and Further Development of the NIOSH Mine Emergency Response Training System (MERITS), Phase I*

Grey: That's the color of the worn Formica tabletop, the walls of the room, and the cold, wet sky outside. You and your group have spent the day in a small office in a Pennsylvania coal mine grouped around a table covered with maps, data sheets, roughly scrawled calculations, surrounded by a growing detritus of empty Styrofoam coffee cups. Four men are trapped a mile down in the Bottleneck #1 coal mine, and you are their only help. In turn, they have become the sole focus of your life. You scarcely notice the lights flicker as the mine machinery switches on. The phone rings repeatedly, interrupting the intense conversations and debates filling the room. You quickly delegate someone to handle the increasing flood of calls, only to be interrupted again by a knock on the windowless door. It's someone bringing in sandwiches, and you realize that you had forgotten about lunch, and have no idea what time it is.

Your group is in a mine office, but the telephone, Bottleneck #1, and the miners exist only within the confines of MERITS, a Mine Emergency Rescue Interactive Training System being developed by ORION for the National Institute of Occupational Safety and Health, using the Umbra simulation and integration platform co-developed by ORION and Sandia National Laboratories. Within MERITS, an agent-based Umbra simulation keeps track of people, objects, smoke, and gas concentrations in the mine. Voice synthesis and digital recordings impersonate the telephone and mine phone, giving you the same access to information that you would have during a real mine emergency. An experienced mine rescue trainer has come to your mine and is using MERITS to turn what would otherwise be an ordinary "table top" exercise into a realistic, compelling investigation

into the dynamics of an underground accident and its safe resolution.

Paul Hamilton (Principal Investigator), Robert Brittain, and Phong Nguyen, of ORION, assisted by nationally known mine rescue expert, Don Eppley, are developing this simulation tool that prepares managers to cope with a coal mine emergency. This effort is Phase I of a three-part program. Phase II will use the federation facilities of Umbra to connect MERITS to immersive, video game-based simulations that will allow miners and rescuers to play their parts in the exercise, and Phase III will generalize MERITS to other types of mines, both underground and aboveground. By employing advanced methodologies to the challenges of workplace safety, the MERITS project manifests the ORION motto of "Excellence in Technology for a Better Future."

## ORION, ALBUQUERQUE, NM

Mark Winscott, ORION Staff Augmentation contractor to Sandia National Labs, is working on a project with global implications for the future of space technology and exploration. He is currently working on the LRO (Lunar Reconnaissance Orbiter) project, which is part of NASA's Vision for Space Exploration. Not only is this project bringing exploration back to the moon, but it is among the first steps to exploring other planets, like Mars, and eventually planets beyond our solar system. NASA has several goals for this project, which is currently scheduled to launch later this year. Its objectives include finding safe landing sites on the moon, determine the radiation environment, and finding safe resources for human use.

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"What ever the mind of man can conceive and believe, it can achieve."

- Napoleon Hill