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Joint Venture

Unearthing Black Gold – a geotechnical hazard awareness training video and language support materials for open pit mine workers
By Ross Seedsman, director, Seedsman Geotechnics

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Pit-slope design is a specialised activity requiring anticipation of variable geological conditions and the application of engineering analyses. Greater levels of safety and productivity can be achieved if the knowledge of how pit slopes behave can be transferred to the operators at the coalface. Any training needs to keep a focus on the practical issues, with just the right amount of technical content and jargon to allow recognition of the hazards and efficient communication back to management. “Unearthing Black Gold”, a training package for the surface coal mining industry, gets that balance right.

Unearthing Black Gold was produced by the Australian Centre for Geomechanics with the script written by leading geotechnical consultants to the Queensland coal industry, and edited by mining company personnel from New South Wales and Queensland. The training package consists of 2 CDs: a 42 minute training video, and comprehensive training and language support materials. The script is written for the layperson, and uses high quality video footage from mining operations and excellent graphics to explain pit slope failure modes. The script moves effortlessly from explaining the hazards to identifying the warning signs and then the importance of controls that the workforce can implement. There is an emphasis on the importance of following the site’s procedures and controlling water.

The video has eight chapters, stepping logically through definitions of terms, the mining cycle, general pit slope hazards, hazards in excavated rock walls, hazards during stripping, hazards in spoil and waste slopes, and hazards in coal stock piles.

For excavated rock walls, the identified hazards are falls of isolated rocks, planar failure, wedge failure, toppling failure and composite failure. Computer graphics are used to illustrate each of these mechanisms. Failures of boxcuts and dragline benches are also included. The importance of good blasting practices, excavation to the design limits, wall trimming, water control, and following site procedures are all stressed.

For spoil piles and waste dumps, the hazards are rolling of isolated rocks, skin slippages and deep-seated slips. The role of poor floors, weak base material, weak spoil material, dumping into water/mud and control of surface water are all

mentioned. Monitoring systems are introduced in this section, on the basis that the deep-seated slips are usually the slowest moving and hence the easiest ones to monitor. Hazards associated with the construction of stockpiles and waste dumps and reclamation of coal stockpiles are covered.

To quote from the video: “We can’t rely only on monitoring systems. The eyes and ears of a committed workforce are the most valuable assets mines have for monitoring hazards”. The reviewer is in total agreement with this: recently there has been too much emphasis on monitoring in the guise of risk management, almost to the exclusion of the fundamentals of good design and the hazard reduction potential of a trained and committed workforce. *Unearthing Black Gold* will assist in achieving the latter.

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