Contract No.: **B2532534**
Technology: **Look-Ahead-Radar (LAR)**
Contractor: **Stolar Research Corporation**

Summary of technology:

Look-Ahead-Radar (LAR) is an in-seam geophysical method that detects underground mine voids by transmitting electromagnetic waves through a coal seam. At this time, the method involves deploying a portable radar antenna against a coal seam, transmitting electromagnetic waves through the coal, and recording wave reflections indicative of a void. The distance to the void is determined by the velocity of the wave and the time between transmission and reflection. The company intends to ultimately develop and mount such device on the cutting-head of a continuous mining machine. The technology has not been sufficiently developed for such application.

Stated limitations of technology:

LAR is intended for in-seam use to detect mine voids at distances of approximately 30 feet. This method is experimental and currently not commercially available.

Field demonstration results:

Field Demonstration Conditions	Goal of Demonstration	Results of Demonstration
Underground coal seam crosscut; void height 8 to 10 feet; void distance 30 feet; void was air filled.	Real time detection of air- and/or water-filled voids immediately ahead of mining. The ultimate goal is to develop a device that can be mounted to the cutting head of a continuous mining machine to monitor for voids in real time with no post-processing of data.	LAR unable to be mounted on cutting head of continuous mining machine due to large size of radar antenna. Data required post-processing. One successful LAR test was completed. During this test, the LAR detected an air filled mine void at a distance of approximately 30 feet.