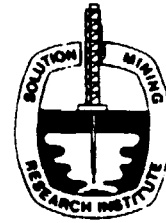


# **SOLUTION MINING RESEARCH INSTITUTE**

**812 MURIEL STREET  
WOODSTOCK, ILLINOIS 60098  
815-338-8579**

**MEETING  
PAPER**



## **THE GLOBAL POSITIONING SYSTEM (GPS) AND ITS APPLICATIONS FOR SUBSIDENCE MONITORING**

**STEPHEN W. SWARTS, R.L.S.  
WESTERN GEOPHYSICAL COMPANY, A DIVISION OF  
WESTERN ATLAS INTERNATIONAL, INC.  
3600 BRIARPARK DRIVE HOUSTON, TEXAS 77042  
TEL: (713) 974-3194 FAX: (713) 964-6373**

**SOLUTION MINING RESEARCH INSTITUTE  
SPRING 93 MEETING  
SYRACUSE, NEW YORK  
APRIL 26, 1993**

**THE GLOBAL POSITIONING SYSTEM (GPS)  
AND ITS APPLICATIONS  
FOR  
SUBSIDENCE MONITORING**

**Stephen W. Swarts, R.L.S.  
Western Geophysical Company, a division of  
Western Atlas International, Inc.  
3600 Briarpark Drive Houston, Texas 77042  
Tel: (713) 974-3194 Fax: (713) 964-6373**

**ABSTRACT**

The Global Positioning System (GPS) has become the system of choice for a myriad of position determination applications due to its speed, accuracy and economic savings.

GPS offers a low cost, rapid, and highly accurate alternative to conventional surveying methods for monitoring subsidence. With GPS, geodetic surveyors are able to determine the relative positions of points many kilometers apart with very high accuracy. This is particularly useful when reference measurements must be made from stable points far from the suspected localized movement. Relative accuracies in three dimensions (latitude, longitude and height) of better than one tenth of a part per million (0.10 ppm) of the length of the lines measured can be achieved, plus a small fixed error of a few millimeters. Repeating these measurements at scheduled intervals allows detection of very small movements.

©2023 – Solution Mining Research Institute  
Full Paper is Available in the SMRI  
Library([www.solutionmining.org](http://www.solutionmining.org))