

Paper to present at technical session
SMRI Brussels Spring 2006 Conference April 30 to May 3 2006

Volume Calculation of Caverns

author: Dr. Klaus Maas

Institute for Geotechnical Engineering and Mine Surveying,
Clausthal Technical University,
Erzstrasse 18, 38678 Clausthal-Zellerfeld, Germany
phone: +49 5323 723515, fax: +49 5323 722479
klaus.maas@tu-clausthal.de

abstract

In 2005 the Institute of Geotechnical Engineering and Mine Surveying of Clausthal University of Technology, Germany, has done a study on different methods for volume modeling and volume calculation of sonar measurement data of leached caverns were analyzed and compared.

About 150 sonar data sets belonging to 75 caverns were applied and computed by 6 different volume and 8 different surface based models. Because the real volume of a cavern is unknown the methods must be compared relatively.

Based on study results and further considerations the paper gives an overview of possible procedures for volume calculation of cavern related sonar data. It will be differentiated between surface based and three-dimensional modeling. In addition an outlook onto alternative statistical and stochastic methods is given.