Abstract

The monitoring of storage caverns in salt deposits laid down by the mining authorities requires that cavern surveys are carried out in the individual caverns at fixed time intervals. The sonar surveys in such cases are carried out either as full or partial surveys. It is moreover necessary for operational reasons to perform extra surveys in addition to those at the fixed time intervals.

When storage caverns for oil and other products are to be fully surveyed it is usually necessary to remove both of the moveable operating casing strings because caverns in Germany have only one access borehole. In order to be able to run the sonar tool into the cavern for partial surveys up to now the brine pressure in the cavern had to be reduced and the 2 3/8“ freshwater injection string removed. To avoid the involved extra operating costs (in the form of a workover) as well as stress on the cavern (in the form of convergence) the new BSG sonar tool has been developed. Having a diameter of just 42 mm it is possible to run the tool through a 2 3/8“ casing string.

Partial surveys can now be carried out without having to perform a workover, i.e. the installed casing string does not have to be removed and the operating head pressure can be maintained. This new development enables operators of storage caverns to carry out the necessary monitoring surveys at short notice without having to perform extensive operating procedures and with a minimum of convergence.

It is described how cavern operations are affected when carrying out partial sonar surveys applying the previously available equipment as well as applying the new tool technology. In conclusion the concept of the sonar tool is introduced and an account is given of survey results that have been obtained.