

Long-term stress measurements in the clay cores of storage reservoirs

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SYNOPSIS. In 1987 push-in spade-shaped earth pressure cells and BRE miniature push-in earth pressure cells were installed to study stresses within the puddle clay cores of Staines South and King George VI storage reservoirs in west London. The spade cells were installed to measure horizontal stress and the miniature cells were installed to measure both horizontal and vertical stresses. In 1998 spade cells were also installed at various sections in the rolled clay cores of Queen Mother and Wraysbury reservoirs. This paper outlines the monitoring programme and briefly describes the instrumentation and installation techniques. Selected data sets demonstrate the reliability and longevity of the instrumentation. The results show that these instruments can provide valuable long-term information on stress levels within clay cores and, in particular, the effects of reservoir drawdown and refilling on the magnitude of these stress levels in relation to reservoir water pressure.