CASE HISTORY
MPNN WATER SHUT-OFF SUCCESS

APPLICATION
Reservoir Evaluation

TECHNOLOGY
MPNN

LOCATION
North Sea

CUSTOMER CHALLENGE

An operator's gas producer well was producing at a progressively higher water/gas ratio (WGR), with a water rate of 189 sm3/d. In order to reduce the water production and extend the production lifetime of the well, the operator planned water shut-off activities. To determine the source of water production, a pulsed neutron log was required to be run for comparison with a baseline log run several years previously. Much of the borehole was now gas-filled meaning that pulsed neutron gamma (detector) technology would be unreliable. For cost-effective operations, the client preferred slickline as the method of conveyance.

SCIENTIFIC SOLUTION

Scientific Drilling's MPNN provided the data gathering solution to the customer's challenges. With neutron detectors as opposed to gamma-ray, the tool is highly reliable in gas environments. The memory mode of the tool provided the cost-effective option of slickline conveyance. Two passes were completed across the interval of interest and the data stacked for enhanced statistical accuracy. A comparison with the baseline pulsed neutron log data clearly indicates the water saturated zone providing confidence to the operator for the subsequent remedial WSO activities. This was confirmed with the updated water saturation results, which showed that the bottom perforated zone had become completely water saturated.

CUSTOMER VALUE

A plug was set above the main water-producing zone (at the depth indicated) and the subsequent well test revealed that the water rate had reduced by 42% to 110 sm3/d. This extended the lifetime of the well, significantly enhancing its monetization potential. In addition, the reduced water production eased the burden of dealing with the produced water, reducing cost and saving time.

All was achieved without having to resort to expensive electric-line and its associated pressure control risk factor and environmental impact.