Application of Omani Local Sands in Gravel Packing

Marwa AL Fahdi

Abstract

Several Hydrocarbon reservoirs has been effected by sand production while petroleum production process. This production of sands particles affect the well production and the subsurface services equipment lifetime as well as pumps and flow lines pipes. Many Companies use different techniques to control sand production. One of the main techniques is the gravel packing. Sand used as a gravel pack should be within certain criteria to sustain its ability in preventing sand production.

In this thesis, local sand samples are tested to be potentially used in gravel packing by conducting several tests. Sand samples have been collected from several locations in Wahiba sands in Sharqiya region in Oman. These tests cover; particals size distribution, roundness and sphericity, acid solubility, turbidity, crush resistance and density. Ottawa Gravel used in PDO (Petroleum Development Oman) in gravel packing has been also tested to see its general feature.

Experimental results of Wahiba's sands met required specifications as the particals size distribution of size 40/70 has been reached after using the additional process of sieving analysis. Other tests of sphericity, roundness, acid solubility, turbidity, crush resistance and density met the International Standards Organization (ISO) which decide the ability of Wahiba sands to be used in the gravel packing. Wahiba's sands ability to be used in gravel packing will help to reduce the project cost. Finally, recommendations have been presented to be used in the future that will help researchers continuing studies on this area.