

# Dynamic vibration cementing technology (DVCT) by using a vibratile rubber plug

## Proceeding

Dynamic vibration cementing technology (DVCT) is a method for improving cementing quality which has already been industrialized and applied in oilfield. However, the design of a simple-operation and high- adaptability vibration device which can make casing string vibrate economically and effectively the vibrator have become a problem to be urgently solved in heavy oil reservoir thermal recovery production.

Unlike ordinary cementing stoppers an oval vibratile rubber plug for vibration cementing consists of a wireless remote control rubber wing, a body structure which houses a high power source a motor, an eccentric with four round holes, a control circuit board. The device can produce vibration by controlling the remote and is designed to be having the same vibrational natural frequency. Therefore, the phenomena of resonance between casing string and the rubber plug begin as the plug start to vibrate. In this process, vibration of casing string can easily be control by the remote.

By lab experiments and the oilfield pilot test, vibratile rubber plug have shown to be practical and can remarkably improve cementing qualities. The compressive strength and sealing performance during vibration of rubber plug was tested. The lab experiment results show that the device can bear 70MPa without any crashing and no fluid can flow through the space between the casing string and the rubber plug. The performance of hardened cement paste before and after using this device was compared by lab experiments. The result shows that the compression strength tensile strength and shear stress of hardened cement paste and of hardened cement paste after vibration are remarkable improved.

These results had been validated on site test. Through the

Volume 2 Issue 4 - 2017

Lei Wang, Huiqing Liu, Zhanxi Pang, Xueqi Cen

Department of Petroleum Engineering, China University of Petroleum, China

**Correspondence:** Lei Wang, Department of Petroleum Engineering, China University of Petroleum, China, Email jzwanglei10508@163.com

**Received:** December 16, 2016 | **Published:** May 23, 2017

comparison and analysis of cementing quality of two wells in the same block, it has proved that the well with the device is better quality than the other one. The CBL/VDL test report revealed that almost all of the acoustic amplitude value of the well is less than 10%. The formation wave of the well is clearer than the other and casing wave is weaker.

These successful lab experiments and field cases about the vibratile rubber plug prove its feasibility. The special rubber plug will be able to provide a new promising vibration cementing method to improve cementing quality.

## Acknowledgements

None.

## Conflict of interest

The author declares no conflict of interest.