

# Lab Test

## WEATHERFORD SCALING TESTS

Date: 2005

Country: US Keywords: Limescale, Oil industry Non-carbonate

Filename: LabTest Weatherford.pdf

Weatherford International are a large company providing products and services to the oilfield industry. Laboratory tests were performed in order to determine if Hydroflow could be used to prevent scaling in oil wells. Weatherford have since purchased a license to manufacture the technology and have exclusive rights to treating limescale in “up-stream” oil and gas field applications.

### Method of Testing

Water was passed through narrow tubes and simultaneously heated. The pressure due to blockages was measured and the tubes examined by eye. The water contained ions that cause both barium sulphate ( $\text{BaSO}_4$ ) scale and calcium carbonate scale (limescale). Tubes of different diameter were used and the flow rate was altered.



Figure 1 The scaling of an untreated pipe (left) compared to a pipe treated with Hydropath (right) (page 10).

### Results

Without treatment, the pipe became blocked in just seven minutes (test 1A, page 4). The blockage was solid and it took a high pressure to clear it (page 4). The Hydropath unit used was shown to cause the scale to form in suspension rather than on the surfaces of the tubes. In tests 1 and 2, the tubes used for testing were very narrow and the water had a very low flow rate, so a small pressure increase can be seen in the treated system until the water washes away the precipitate (page 5). Test 3 used a 1 inch tube with a higher flow rate.

The difference in the amount of scale formed on the pipes with and without Hydropath was observed visually. Not only was there significantly more scale on the untreated system, but it could easily be seen that the scale was hard and required manual scraping, unlike in the treated system, where the deposits were soft, powder-like and easily brushed away.