

Flowmeter Survey – May 2, 2011

A Flowmeter Survey was conducted May 2, 2011, by Weatherford Wireline to document the flow profile within the injection wellbore on. A copy of the Weatherford interpretation report is attached. The Flowmeter Survey was run at injection rates of 250 gallons per minute (gpm) and 475 gpm. Results of the 2011 Flowmeter Survey are listed below and compared with the Flowmeter Surveys conducted subsequent to the original completion and stimulation operations in February 2002.

Flowmeter Survey Results

	February 4, 2006		May 2, 2011	
	820 GPM	425 GPM	250 GPM	475 GPM
Perforated Interval	Post Stimulation	Spinner Survey	Spinner Survey	Spinner Survey
(ft - RKB)	Flow %	Flow %	Flow %	Flow %
4566-4596	37.8	37.1	1.4	1.4
4670-4738	25.7	38.5	24.6	31.0
4800-4864*	9.4	12.5	16.0	17.5
4915-4950*	12.4	11.9	33.6	26.9
5116-5259	8.2	No flow	2.7	2.8
6120-6230	6.5	recorded below	13.5	12.8
6278-6302	0.0	4950' @ 425 GPM	2.9	2.6
6402-6512	0.0		3.8	3.8
6619-6721	0.0		1.5	1.2
Total	100.0	100.0	100.0	100.0

The most significant change in the flow profile is the decrease in flow percentage from the uppermost perforated interval at 4,566 to 4,596 feet. Flow volumes into this interval decreased from approximately 37 percent of the total flow in 2002, to 1 percent of the current total flow. Additionally, the total flow into the intervals below 6,000 feet increased from no flow in 2002, at 425 gpm to the current flow of approximately 20 percent at 475 gpm.