

## Notes on the Well Completion Logs in Attachment D6-3 (Page 1 of 2)

### Well Completion:

For several wells, the log indicates there is an open hole (or 'rat hole') between the bottom of the screen and the total drilled depth (TD). If there is no record of the rat-hole having been backfilled, it can be assumed the hole below the screen is either open or caved naturally. As long as the TD is still within the target sand for the screened interval, the presence of an open or partially caved 'rat hole' is not of concern.

For a drill hole or well, the TD that is recorded in the LC ISR, LLC database is the total depth penetrated by the driller when drilling the 'pilot' hole and as recorded on the log header. At the time some of the wells were installed, the field geologists thought that the screen liner had to be landed *right on* the hole bottom. Therefore, it was common for the drillers, just prior to underreaming and screening, to clean out the hole to a depth a few feet deeper than the original TD (but still within the target sand), in case there was any caving into the hole. This results in a discrepancy regarding TD in some holes. The following table provides additional information on the discrepancies.

<b>WELL #</b>	<b>Total Depth shown on the Well Completion Log (feet below surface)</b>	<b>True Total Depth (feet below surface)</b>
HJMP-105	460	465
HJMU-101	535	539
HJMU-104	550	552
HJMU-107	855	Backplugged with grout 580-855
UKMO-101	488	490
UKMO-103	438	439
UKMP-101	575	577

In one of the DE wells (MB-1), the drilling may have penetrated the EF shale below the DE Sand. However, the EF shale is not a true confining shale because it splits in several areas. As is discussed elsewhere and illustrated in Cross Sections F-F', G-G' and H-H' (Plates D5-1e through D5-1g), the EF aquitard represents not a single ubiquitous shale, but a shaly, low permeability sequence which may contain multiple overlapping shales. In MB-01, the portion of the EF shale penetrated by the drill hole is underlain by an associated shaly interval which can be observed at depths of 307'-317' in the log for well MB-04. This shaly interval is associated with the EF aquitard sequence and serves as a supplementary overlying aquitard at the top of the FG Horizon.

## **Notes on the Well Completion Logs in Attachment D6-3 (Page 2 of 2)**

### Well Development:

All monitor wells were airlifted with the drill rig after placement of the screen. No additional efforts were made to develop wells with poor yield from airlifting for the following reasons:

- Wells such as HJT-106, MB-7, MB-10 barely penetrated the static water table. Therefore, additional efforts to produce more water from these wells would be unproductive.
- Some wells are completed in shaly sands and therefore are expected to not yield additional flow.
- Some wells produced flow rates which were low, yet sufficient for the intended purposes.

Before sampling, each monitor well was swabbed to provide further development. Finally, wells were purged of at least three casing volume prior to collecting a baseline sample.