Sensitivities 2 – adjusting the front shape

The latest runs show that we're approaching a match, but still the shape of the oil production curve during the rate decline period could be improved.

So far we have only varied the KV3-parameter (the constant tem), so now we'll study how variation of KV1 and KV2 may influence results (KV1 was the 1/p-term, so we don't expect we can modify this much.)

Runs:

Testcase: KV2 = 1.0 (KV3 unchanged):

  A. KV2 = 0.05, KV3 = 2.7555
  B. As A, except KV1 = 0.001
  C. KV2 = 0.001, KV3 = 2.7555 (KV1 back to zero)
  D. KV2 = 0.0001, KV3 = 2.5
  E. KV2 = 0.0006, KV3 = 2.5

First observation: KV2 zero or nonzero makes the big difference, even a very small nonzero value of KV2 changes the shape of the curve significantly, and as the "change" moves the curve towards the IMEX curve, we see that a non-zero value of KV2 is needed to improve the match of the results.

Secondly, when KV2 ≠ 0, KV3 is less important (meaning that with a nonzero KV2, variation of KV3 didn't change the curve shape noticeably).

Third, it appears that the decline curve gets steeper when KV2 is increased.

GOR was far too low in all these cases, and was attempted increased by reducing oil molecular weight (as seen before). This changes GOR, but not the oil rate curve.

Pressure development was similar within acceptable variation for all cases.

The final run (E) was accepted as being "close enough" to IMEX, after adjusting the *Rs*-value in IMEX to 16.