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The second explanation is that BOP resistance and the effective resistance of the reservoir and wellbore both varied in just such a manner that their ratio remains unchanged. For example, the PI might have increased over this time such that the effective resistance of the reservoir and wellbore fell by half. But this would have to be accompanied by a reduction of resistance in the BOP by the same factor of two, and this change in the BOP would have to match that in the balance of the well to within a few percent. This seems highly fortuitous. Further, the ratio remains relatively constant over all of the intervening period, save for the oscillations, so whatever changes might have been taking place in the reservoir or wellbore would have to have been matched by changes in the BOP of just the right sort on a continuing basis throughout the period. This seems to me even more unlikely given that the reservoir and BOP are independent systems containing distinctly different materials, having very different fluid speeds, and are separated by roughly three miles. Finally, if the proposed change in the reservoir or wellbore is large, then the change in the BOP required to maintain a constant ratio of the two resistances is also large. Large changes that just offset one another is still less believable.

Finally, I will discuss briefly the oscillations in Fig. 3 and the period before May 19. Between May 8 and May 14, the ratio of pressure drops falls very significantly, and this indicates that the resistance in the BOP fell relative to that in the reservoir and wellbore. This conceivably resulted from some sudden and real change in either resistance or might conceivably result from expected inaccuracies in the BOP pressures. If real, this sudden fall could represent a drop in BOP resistance or sudden increase in the reservoir and wellbore resistance. The first of these seems most likely. In this case, the drop in BOP resistance might be, for example, the drop in the pipe below the BOP or sudden failure of the seal in one of the rams. The problem with both of these is that they are irreversible, while the ratio of the pressure drops largely recovers on May 19. As such, I can offer no physical reason for this behavior.

I do find it peculiar that the May 8 value of the ratio is well above the trend line, the May 14 values is well below, and the May 19 value lies very close to later values. And, the average of the May 8 and May 14 values also lies close to the later trend. This suggests that these might result simply from expected and bounded inaccuracies in the BOP pressures.

To explore this possibility, I have calculated the ratio of pressure drops using additional BOP pressure corrections of ± 130 psi and ± 200 psi to represent uncertainties. The first of these is my estimate of the accuracy in my original report; the second has been proposed by others, including Dr. Truster. The results of this are shown in Fig. 4. Here my values from Fig. 3 are shown along with several lines. These lines represent average values of the resulting ratios for the nominal values and the two corrections of ± 130 psi and ± 200 psi.