To the Editor:

Regarding "Nontraditional Constant Pressure Filtration Behavior" by Strickland et al. (pp. 2481-2488, Sept. 2005), we would like to offer the following remarks:

1. The statement ". . . filtration time t, is quadratic with specific volume, V,. . .", strictly speaking, is incorrect. The so-called parabolic behavior does not apply initially, and is only approximately observed as filter cake thickness becomes substantial (see Tien and Bai[1]).

2. According to the authors, the purpose of their work is to dispel "the myth that the nontraditional behavior cannot be predicted by the traditional approach". This is rather odd. As far as we know, there is only one rational approach for analyzing cake filtration and related processes, namely, the solution of the volume averaged continuity equations, which has been used since the earlier work of Atsumi and Akiyama[2], by all investigators (including Landman and White, on whose work this article was based).

The dynamic behavior of any dewatering process can be obtained from the solution of the relevant volume-averaged continuity equation with appropriate initial and boundary conditions. The pattern of the behavior, of course, depends on the operating conditions and the specific system involved. A particular algorithm may not be suitable for the solution of the equations under certain circumstances. However, this does not invalidate the volume-average continuity equation in describing filtration and related processes. A different algorithm may do the trick.

3. The problem given by Eq. 13 is identical to Eq. 25 of Ramarao et al.[3]. The solution presented by Strickland et al., however, is more restrictive since Ramarao et al. did not use the assumptions of $R_m = 0$ and $\phi_o < \phi_g$. Furthermore, no cake growth results were given in this work although as shown in Figure 3, filter cake was formed over $0 < x < z_c$ (t).

The reason that this information was not given, we suspect, was that the problem as formulated and solved was not capable of yielding such results without additional assumptions. Considering that ϕ is an increasing function of x, ϕ at z_c must be within ϕ_g and $\phi\infty$ (which, in turn, depends on p_o). This value must be known if the cake growth can be determined.

Physically speaking, $\phi(z_c)$ is a threshold concentration characterizing the presence of filter cakes. However, what is this value and how can it be determined?

4. The puzzle mentioned previously can be easily resolved by following the commonly accepted convention of solid-liquid separation. Recognizing that the compressive cake stress at the cake/suspension interface during cake formation being zero, the corresponding cake solidosity, ε_s (or particle volume fraction ϕ) should, therefore, be ε_s^0, the value of ε_s at the zero-stress state (or ϕ_g); ε_s^0 is a threshold value distinguishing cake from suspension.

Shirato et al.[4] defined expression as a dewatering operation by subjecting solid-liquid mixtures to mechanical forces. If the initial solid concentration ε_{s_0}, is less than ε_s^0, the process proceeds in two stages; cake filtration followed by consolidation. For $\varepsilon_{s_0} > \varepsilon_s^0$, dewatering takes place as consolidation only. The so-called parabolic law of constant pressure filtration applies to the first stage. The problem considered by Strickland et al. is consolidation and not filtration. During consolidation, cake thickness decreases with time, which is in contradiction to what is shown in Figure 2.

5. It is, therefore, not surprising that nontraditional behavior of constant pressure filtration was found in the authors' results since the problem considered by them was not filtration but consolidation.

AIChE Journal, Vol. 52, 1971 (2006)

DOI 10.1002/aic.10792
Published online February 21, 2006 in Wiley InterScience (www.interscience.wiley.com).

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