model of the interaction to account for the effects of shock penetration and lateral pressure gradient.

It is the purpose of this Comment to bring to the reader's attention the fact that in Refs. 2 and 3 (not referenced in Inger's Note) both of the effects in question are taken into account correctly in the first order as well as higher order approximations, i.e., in a systematic fashion. In addition, several authors (e.g., Refs. 4-6, not referenced in Inger's Note) have performed numerical computations in which these effects are included.

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[6] Deiwert, G. S., "Computation of Separated Transonic Turbulent Flows," *AIAA Journal*, Vol. 14, June 1976, pp. 735-740.

Reply by Author to Adamson et al.

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DETAILED treatment of the incident shock penetration into a turbulent boundary layer considerably complicates the analysis of the attendant interaction problem[1]; an appraisal of its practical significance is therefore of interest to engineers. The unpublished Refs. 2, 3, and 5 cited in the Comment, while indeed including this penetration, do not give results showing its effect per se on the overall flow properties of physical interest; hence they do not compromise the main objectives of my Note to show explicitly this effect and its parametric dependence in the unseparated case. For transonic flows, the results indicate that the detailed shock penetration has in fact a negligible effect on the interactive pressure and skin friction at the very high Reynolds numbers required by the asymptotic limits used in the theories of Refs. 2 and 3 of the Comment, whereas at Reynolds numbers of practical interest ($10^6 \lesssim Re_L \lesssim 10^8$) the effect becomes significant (especially regarding C_f) and can be estimated conveniently by the approximate method given in the Note.

Regarding the $\partial p/\partial y$ effect across the interacting boundary layer, it is pointed out that the original interaction theory[2] includes this both upstream and downstream of the incident shock position, as clearly indicated by Figs. 2a and 2b of my Note (Fig. 3 also includes this); the *increment* of this effect due to shock penetration per se is also shown explicitly in Fig. 2.

Concerning Refs. 4 and 6 cited in the Comment, the former deals with laminar flow, while the latter is concerned with separated flow, both of which were specifically excluded from this Note. Moreover, it is noted that since the numerical solutions involved do not employ a triple-deck scaling on y and x in the local interaction zone and in the light of Werle and Bertke's experience,[1] it is not clear whether the shock penetration structure down to the sonic line in a turbulent boundary layer is in fact properly resolved by such codes in spite of their otherwise impressive global performance.[3]

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Index categories: Jets, Wakes and Viscid-Inviscid Flow Interactions; Transonic Flow.

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