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Reply by Author to K. F. Stetson

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All of the questions raised by Mr. Stetson in regard to my paper¹ are based on the false premise that a viscous flow phenomenon, such as boundary-layer transition, cannot be controlled by inviscid flow characteristics. Except for the effects of nose roughness and similar viscous flow phenomena unique to the blunted nose itself, the effect of the geometric change from a sharp to a blunted cone is inviscid in nature, occurring

via the change in the boundary-layer edge conditions through the "entropy wake" generated by the curved bow shock. This change of inviscid flow characteristics is well predicted by the embedded Newtonian theory,^{2,3} as has been demonstrated recently.⁴ Changes in wall temperature and unit Reynolds number do, of course, affect the viscous flow characteristics for both the sharp and the blunted cone. However, the effect of a geometric change from a sharp to a blunted cone is still inviscid in nature.

Keeping the above in mind, a careful reading of Ref. 1 will provide all of the answers to the questions raised by Mr. Stetson, keeping in mind that the ratio d_N/d_B tells whether the conic frustum is long enough to experience the inviscid flow effects imprinted on the boundary layer by the "entropy wake."

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