

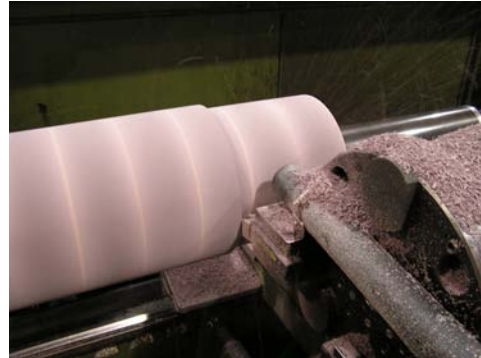
## ***Mach 6.5 Hypersonic Shock Tunnel Nozzle for Scramjet Testing***

Dewey was contracted by GASL, part of ATK Tactical Propulsion and Controls, to machine this nozzle from a mandrel over 100 inches in length with an extremely tight finish tolerance of  $\pm 0.010$  on the nozzle radius. The mandrel was fabricated using high-density polyurethane foam boards with good machining qualities. The required length was achieved by bonding cut boards with epoxy to the final length prior to machining.

The machining was accomplished at Dewey using a large CNC lathe requiring four days of lathe time to turn the mandrel to the required finish dimensions. Inspection at the end of this process showed the mandrel to be well within the tolerances required. The small end was  $+0.001$  inches on diameter and the large end was  $+0.002$  on diameter.



**Mandrel Ready for Machining**



**Machining Underway**



**Mandrel Nearing Completion**



**Machining Completed**