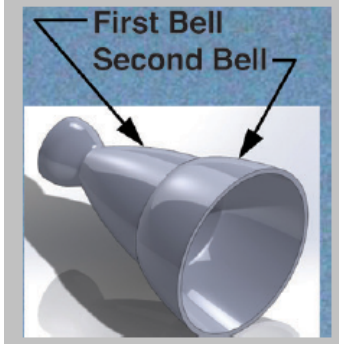
The Dual-Bell (DB) Nozzle



◆Several Types of Altitude-Compensating Nozzle (ACN) concepts have been studied over the years.

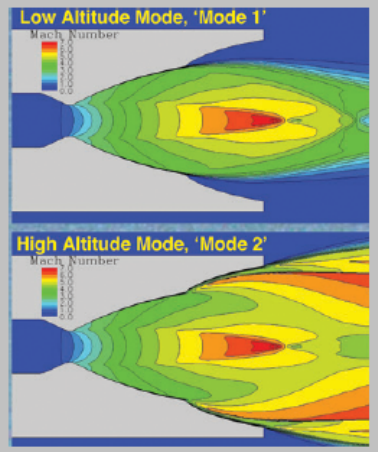
◆The DB nozzle is one type of ACN, and is predicted to have a higher nozzle efficiency than a CB nozzle

◆The DB has a distinct "Dual-Bell" shape

How it works:

DB Mode 1 operation (low altitude)
--Nozzle flow expands out to the end of the first bell, optimized for lower altitudes

DB Mode 2 operation (high altitude)
--Nozzle flow expands out to the exit plane, at the end of the second bell



Flight Testing the Dual-Bell Nozzle

◆Although predicted to be higher performing, the DB nozzle must be proven in a relevant flight environment

◆Captive-carry flight testing will enable a more detailed investigation into the nozzle plume behavior and performance at several conditions
--Captive-carry flight-testing will also enable the propulsion assets to be protected for future testing

◆The NASA F-15B Propulsion Flight Test Fixture (PFTF) was developed for captive-carried flight tests with advanced propulsion systems
--DB nozzle testing can leverage this flight-proven capability