



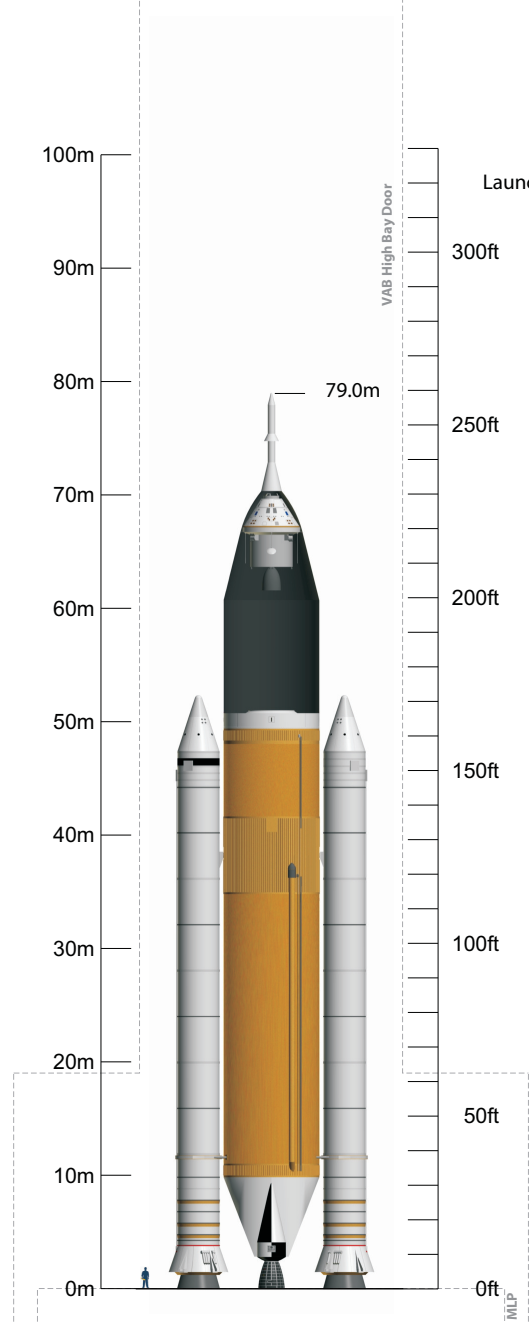
### Vehicle Concept Characteristics - LV 41.5000.08100

**Launch Site** KSC LC-39 (Latitude: 28.6084°)

**GLOW** **5,477,330lb (2,484,475kg)**  
 Payload Fairing 27.6 x 32.8ft (8.4 x 10.0m)  
 Payload Envelope 25.0 x 32.8ft (7.6 x 10.0m)  
 Payload Fairing Jettison Mass 12,365lb (5,609kg)  
 Payload Fairing Jettison After Orbital Insertion  
 Launch Abort System Jettison Mass 16,083lb (7,295kg)  
 Launch Abort System Jettison 257.5s @ 61.8nmi

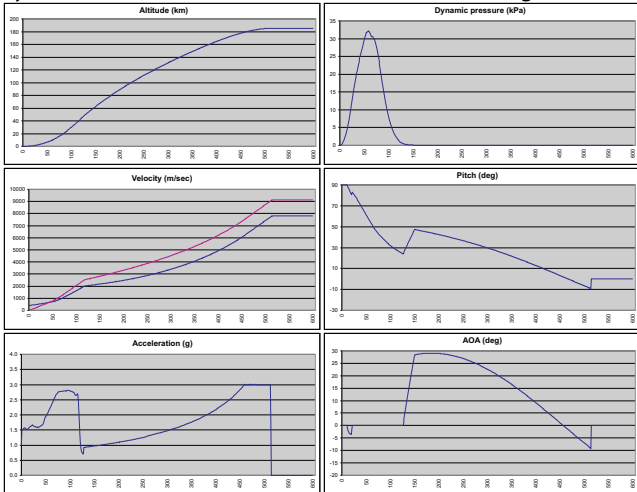
**BOOSTERS (each)**  
 Design Heritage Shuttle-derived 5-segment RSRMV  
 Propellants PBAN  
 Usable Propellant 1,380,873lb (626,353kg)  
 Stage pmf 0.8656  
 Dry Mass 228,620lb (103,700kg)  
 Burnout Mass 232,608lb (105,509kg)  
 # Boosters / Type 2 / 5-segment RSRMV  
 Booster Thrust (@ 0.7s) SL 3,510,791lbf (1,592,468kgf / 15,616,776N)  
 Vac 3,510,791lbf (1,592,468kgf / 15,616,776N)  
 Booster Isp (@ 0.7s) SL 237.0s  
 Vac 267.4s  
 Booster Burn Time 126.6s

**CORE STAGE**  
 Design Heritage Shuttle Super Light Weight Tank ET  
 Propellants LOX / LH2  
 Gross Propellant 1,621,191lb (735,360kg)  
 Usable Ascent Propellant 1,604,979lb (728,006kg)  
 Unusable Residuals 16,047lb (7,279kg)  
 In-Flight Losses 325lb (147kg)  
 Propellant Offload 0.00%  
 Stage pmf 0.9107  
 Dry Mass 140,489lb (63,725kg)  
 Burnout Mass 156,536lb (71,004kg)  
 # Engines / Type 3 / SSME-Block-II  
 Engine Thrust (@ 104.5%) SL 392,326lbf (177,956kgf / 1,745,155N)  
 Vac 490,847lbf (222,644kgf / 2,183,396N)  
 Engine Isp (@ 104.5%) SL 361.4s  
 Vac 452.2s  
 Mission Power Level 104.5%  
 Core Burn Time 514.1s



**DYNAMICS** Blackzone Safe Trajectory  
 Thrust : Weight @ Liftoff 1.516 : 1  
 Max Dynamic Pressure 671.6psf (32,155Pa)  
 Max g's During Ascent 3.00g  
 Insertion Altitude 100.0nmi (185.2km)

**ASCENT PERFORMANCE**  
 Delivery Orbit 100.0 x 100.0nmi, 29.0°  
 Payload w/ regular NASA GR&A's 196,641lb (89,195kg)  
 Payload w/ additional 10% Reserve **176,977lb (80,275kg)**



\* ASE is part of the Payload, not additional