260” Data

SL-1/2/3 test chamber often called “half length” is the shortest of 3 stages

260-SL-1	TCC Brunswick, GA	11 Apr 65	Monolithic, 18% Ni steel	N/A	N/A	685	N/A	1,040 psi design burst, 540 psi burst
260-SL-1	AGC Dade County, FL	25 Sep 65	Monolithic, 18% Ni steel	External, fixed, 71-in. throat, 6:1 expansion ratio	None	969	1,676,000 lbm, PAN, 84% solids	3,567,000 lbf, 602 psi, 113.7 sec
260-SL-2	AGC Dade County, FL	23 Feb 66	Monolithic, 18% Ni steel	External, fixed, 71-in. throat, 6:1 expansion ratio	None	969	1,673,000 lbm, PBAN, 84% solids	3,564,000 lbf, 601 psi, 114 sec
260-SL-3	AGC Dade County, FL	17 Jun 67	Monolithic, 18% Ni steel	Partially submerged, fixed, 89-In. throat, 4.1:1 expansion ratio	None	924	1,654,000 lbm, PBAN, 84% solids	5,884,000 lbf, 643 psi, 70.2 sec

Higher thrust = shorter burn time somewhat obviously. The cause of the difference is a change to the grain in the rocket itself. SL-3 was a “Maximum Thrust” effort and has slightly less fuel than SL-1/SL2.

For purposes of performance. I suggest both the burn rate SolidFuel = 1 get bumped to Solidfuel = 1.5

And thrust be greater. At 1.65x I am not 100% certain what the result would be, more for a JSO calculation and balance sheet. But that is closely approximating Real World performance of both grain types as I understand it.

However based on these numbers we can extrapolate some data for the High thrust and low thrust. Call it MANRATE or NOMANRATE in B9PS?

		Pounds of fuel	LBf	Seconds	LBf	Seconds
AJ260 Calcualtor		RW Fuel load	Low thrust	Man Rated	High Thrust	Max Acceleraton
Half Lengt	1x size	1.7m	3560000	114	5900000	70
Full length	2x size	3.4m	5340000	125.4	8850000	77
Extra Full	3x size	5.1m	6942000	144.21	11505000	88.55

The above, Half Length is based on the first table. Full Length and Extra Full Length are based on guestimation/extrapolation