

Rocketeers:
 Trevor Foster TRA #7081 L2
 Proposed launch date: 9/09/00

Calculation for: **Level 3 Rocket**
 Manuf./Model **RDS Hercules**
 Casing **98mm/10240**
 Motor **M1939W**

Enter	Calc'd boost phase		Calc'd coast phase
Weight in ounces (no propellant) 880 Est. propellant weight (below) / 2 90.4	26.28409091	M(ass)	25
Diameter (in.) 7.75	0.03043322	A(rea)	0.03043322
rho (air density, 1.2kg/m^3) 1.2			
Cd (drag coeff., standard=0.75) 0.75	0.013694949	k (coeffic.)	0.013694949
Total impulse (I) 10240	10240	actual impulse (impulse * rating %)	10240
Average thrust (T) 1939	5.281072718	(t) burn time	5.281072718
rating impulse (%) 100	257.5840909	M*g (gravitational force)	245
thrust:weight 6.6	350.3945671	q=sqrt([T-M*g]/k)	351.7033383
	0.365136143	x=2*sqrt([T-M*g]*k)/M	0.385324747
exhaust velocity (m/s) 800	261.44	v (velocity at burnout, m/s)	261.44
estimated propellant weight (oz.) 180.8	584.84	velocity at burnout in mph	584.84
	780.67	yb (boost distance, m)	780.67
		yc (coast distance, m)	1435.66
		total altitude (meters)	2216.33
		total altitude (feet)	7313.87

This spreadsheet was developed using
 equations by Randy Culp:
 culp@execpc.com
http://www.execpc.com/%7Eculp/rockets/rckt_eqn.html

137.1447875	qa = sqrt(M*g/k)	133.7527838
0.071457328	qb = sqrt(g*k/M)	0.073269503
15.2	time from burnout to apogee (sec)	15.0
20.5	total time launch-to-apogee (sec)	20.3