Angelfire Flight Data

Date:  May 28, 2006  
Location:  Mansfield Washington  
Elevation:  2262 feet MSL  
Temp:  approx 65 F  
%RH:  
Wind:  Approx 5 mph at ground level

Motor:  Aerotech M1419W  
LO weight:  48 lbs

Comments:  Good vertical launch trajectory!

Flight Event Timeline

<table>
<thead>
<tr>
<th>Time (Sec)</th>
<th>Event</th>
<th>Altitude</th>
<th>Speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00</td>
<td>Motor Ignition</td>
<td>0.0 ft</td>
<td>0.0 ft/sec</td>
</tr>
<tr>
<td>2.56</td>
<td>Peak Acceleration = 5.29 G's</td>
<td>314 ft</td>
<td>361 ft/sec</td>
</tr>
<tr>
<td>4.05</td>
<td>Altitude = 1000 feet</td>
<td>1,000 ft</td>
<td>601 ft/sec</td>
</tr>
<tr>
<td>6.44</td>
<td>Peak Velocity = 526 mph</td>
<td>2659 ft</td>
<td>771 ft/sec</td>
</tr>
<tr>
<td>6.48</td>
<td>Motor burnout (Accel = 0)</td>
<td>2688 ft</td>
<td>771 ft/sec</td>
</tr>
<tr>
<td>26.68</td>
<td>Barometric apogee detection</td>
<td>9965 ft</td>
<td>98 ft/sec</td>
</tr>
<tr>
<td>29.02</td>
<td>Drogue chute ejection charge fires</td>
<td>9775 ft</td>
<td>43 ft/sec</td>
</tr>
<tr>
<td>30.22</td>
<td>Accelerometer apogee detection</td>
<td>9700 ft</td>
<td>0.0 ft/sec</td>
</tr>
<tr>
<td>118.82</td>
<td>Main chute ejection charge fires</td>
<td>982 ft</td>
<td></td>
</tr>
<tr>
<td>123.50</td>
<td>Main chute inflated</td>
<td>740 ft</td>
<td></td>
</tr>
<tr>
<td>157.50</td>
<td>Touch down</td>
<td>0.0 ft</td>
<td></td>
</tr>
</tbody>
</table>

Drogue chute sink rate  100 ft/sec  
Main chute sink rate   24.4 ft/sec

Time to apogee  26.7 sec  0.45 min 
Time on drogue  89.8 sec  1.50 min 
Time on main   38.7 sec  0.65 min 
Total flight time  157.5 sec  2.63 min

NOTE
MissileWorks Altimeter #1:  10,435 ft (MissileWorks altimeters were responsible for drogue and main parachute ejection charge firings.)
MissileWorks Altimeter #2:  10,808 ft
Avg:  10,622 ft
Peak acceleration = 5.29 G's

Motor burn out (approx)

Drogue ejection charge fired

Max Baro Alt 9,965 feet
Max Acc Alt 11,109 feet
Angelfire Velocity  May 28, 2006  M1419 motor

Drogue ejection charge fires at 43 feet/sec

Peak Velocity = 771 feet/sec (526 MPH)
Calculation of drogue parachute descent rate:
- 8955 feet at 37 sec
- 2659 feet at 100 sec
Descent rate = 100 feet/sec

Main chute deployment was set for 1000 feet.

Calculation of main parachute descent rate:
- 714 feet at 125 sec
- 105 feet at 150 sec
Descent rate = 24.4 feet/sec
Angelfire Acceleration  May 28, 2006  M1419 motor

Peak Acceleration = 5.29 G's

Averaged Acceleration

Accel = 0 G's

AeroTech M1419 Nominal Thrust Curve