Angelfire Flight Data

Event: Tripoli Idaho Launch
Date: Oct. 27, 2007
Location: Swan Falls Idaho Launch Site
Elevation: 3,105 feet MSL
Temp: 60°F
%RH: 
Wind: 5 mph
Motor: Aerotech M1939W
LO weight: Approx 52 lbs

Launch pad coordinates: N 43º 14.2276' W 116º 19.5019'
Landing site coordinates: N 43º 14.4469' W 116º 18.8580' 0.52 miles away (2,746 feet)

Comments: Very nice vertical boost
Nice clean main chute deploy.
No damage. Good flight!

Flight Event Timeline

<table>
<thead>
<tr>
<th>Time (Sec)</th>
<th>Event</th>
<th>Altitude</th>
<th>Speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0</td>
<td>Motor Ignition</td>
<td>0 ft</td>
<td>0 ft/sec</td>
</tr>
<tr>
<td>2.0</td>
<td>Peak Acceleration = 7.25 G's</td>
<td>265 ft</td>
<td>386 ft/sec</td>
</tr>
<tr>
<td>3.6</td>
<td>Altitude = 1,000 feet</td>
<td>1,000 ft</td>
<td>704 ft/sec</td>
</tr>
<tr>
<td>6.0</td>
<td>Peak Velocity = 661 mph</td>
<td>2,961 ft</td>
<td>970 ft/sec</td>
</tr>
<tr>
<td>6.0</td>
<td>Motor burnout (Accel = 0)</td>
<td>2,961 ft</td>
<td>970 ft/sec</td>
</tr>
<tr>
<td>14.6</td>
<td>Altitude = 10,000 feet</td>
<td>10,000 ft</td>
<td>586 ft/sec</td>
</tr>
<tr>
<td>30.6</td>
<td>Barometric apogee detection</td>
<td>14,605 ft</td>
<td>116 ft/sec</td>
</tr>
<tr>
<td>32.0</td>
<td>Drogue chute ejection charge fires</td>
<td>14,559 ft</td>
<td>86 ft/sec</td>
</tr>
<tr>
<td>34.8</td>
<td>Accelerometer apogee detection</td>
<td>15,613 ft</td>
<td>1 ft/sec</td>
</tr>
<tr>
<td>163.8</td>
<td>Main chute ejection charge fires</td>
<td>1,606 ft</td>
<td></td>
</tr>
<tr>
<td>166.6</td>
<td>Main chute starts to inflate</td>
<td>1,383 ft</td>
<td></td>
</tr>
<tr>
<td>169.2</td>
<td>Main chute inflated</td>
<td>1,355 ft</td>
<td></td>
</tr>
<tr>
<td>185.6</td>
<td>Back up ejection charge fires</td>
<td>996 ft</td>
<td></td>
</tr>
<tr>
<td>223.8</td>
<td>Booster touch down</td>
<td>79 ft</td>
<td></td>
</tr>
<tr>
<td>227.5</td>
<td>Body tube touch down</td>
<td>26 ft</td>
<td></td>
</tr>
<tr>
<td>228.3</td>
<td>All parts at rest on ground</td>
<td>26 ft</td>
<td></td>
</tr>
</tbody>
</table>

Time to apogee 30.6 sec 0.51 minutes
Time on drogue 138.6 sec 2.31 minutes
Time on main 59.1 sec 0.99 minutes
Total flight time 228.3 sec 3.81 minutes

Drogue chute sink rate 97.7 ft/sec
Main chute sink rate 22.8 ft/sec

Deviation from Average

| GPS Peak Altitude: | 14,668 feet | -3.09 % |
| ARTS Accelerometer Peak Altitude: | 15,613 feet | 3.15 % |
| ARTS Barometric Peak Altitude: | 14,605 feet | -3.51 % |
| MissileWorks Altimeter #1: | 15,176 feet | 0.27 % |
| MissileWorks Altimeter #2: | 15,616 feet | 3.17 % |

Average: 15,136 feet
Peak acceleration = 7.25 G's (filtered)

Drogue ejection charge fired

Motor burn out (approx)

Max Baro Alt 14,605 feet

Max Acc Alt 15,613 feet

Peak acceleration = 7.25 G's (filtered)

Drogue ejection charge fired

Motor burn out (approx)

Max Baro Alt 14,605 feet

Max Acc Alt 15,613 feet

Accelerometer Data

Barometric Data

Drogue ejection charge marker
Drogue ejection charge fires at 86 feet/sec

Peak Velocity = 970 feet/sec
(661 MPH)
Calculation of drogue parachute sink rate
12,017 feet at 56 sec
2,347 feet at 155 sec
Sink rate = 97.7 feet/sec

Calculation of main parachute sink rate
1,189 feet at 176 sec
346 feet at 213 sec
Sink rate = 22.8 feet/sec

Main chute deployment charge was set for 1500 feet. This shows it fired at 1606 feet.
Backup deployment charge was set for 1000 feet. The acceleration data shows it fired at 996 feet.
Peak Acceleration = 7.25 G's (averaged value)

Motor Burnout (Approx)

Accel = 0 G's
Angelfire Acceleration       Oct. 27, 2007       M1939 motor

-5
-4
-3
-2
-1
0
1
2
3
4
5

160 165 170 175 180 185 190 195 200 205 210 215 220 225 230 235 240

Time in Seconds

Acceleration in G’s

Main chute begins to inflate
Main chute fully inflated
Backup ejection charge fires
Booster touch down
Body tube touch down
All stop

Main chute ejection charge fires

Backup ejection charge fires