

Appendix: on the trajectory and speed reconstruction

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Rob Matson's contribution to this website covers his analysis of the seismic data pertinent to the location of the explosion point of the fireball. It does not (yet) cover the basics of his trajectory and speed reconstruction. I therefore wish to give a short outline of it here.

The trajectory has been obtained with a variant of the intersecting planes method. The video by Ed Majden from Courtenay provides the altitude and azimuth of beginning- and endpoints of the fireball. A plane can be constructed through these, which has to cross the location of the seismically recorded aerial explosion.

A second plane can be constructed from Mt. Rainier, based on eyewitness sightings. In this particular case, because the X, Y, Z position of the explosion point is already known, and it is required that the Mt. Rainier plane of sight crosses through this explosion point: the position of the Mt. Rainier plane can be fixed simply by an estimate of the apparent fall angle as seen from the latter location!

The cross-line of the two planes, gives the azimuth and angle of the fireball's trajectory. The azimuth lines from the Courtenay video, define the start- and endpoints. Similarly, the movement over time on the video provides information on the distance travelled in time instance (t). This allows to determine speeds at various times: a graphic solution to the measured deceleration provides an estimate of the initial speed.