Development of Fire Control Computer for Rocket Launch

Vertical:
Aerospace & Defence

Service:
Customized CAE Software

Technology:
Controls & Dynamics

Our customer is responsible for delivery of unguided rockets to intended target. Customer was faced with a practical problem of training the user in operation of firing mechanism such that the rocket can be launched to hit within the circular error probability (CEP) of the target. Zeus Numerix was required to develop software for fire control logic that would immediately give the user desired direction of firing.

Various external factors affecting the setting for firing that needed to be included in the study were effect of wind, range and position of the target, elevation of the firing mechanism above the reference line and elevation/depression of the target w.r.t. reference line. Zeus Numerix had already estimated the aerodynamic data of the rocket using CFD analysis for full flight envelope. Using these coefficients and in house 6DOF code, a firing logic was prepared. It gave the user desired azimuth and elevation angle for the given set of field conditions.

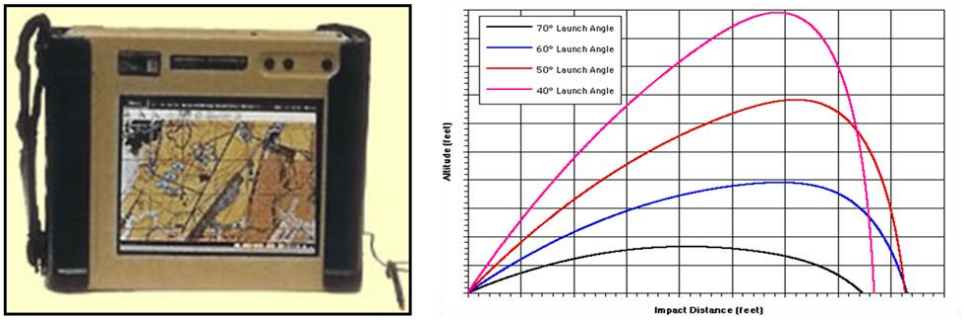

Figure 23: (a) Firing logic installed on FCC (b) Rocket trajectory for various launch angles

Customer tested this fire control computer in the firing range for various firing angles and the software got validated from the data for actual firing. Software gives the desired result in runtime as the user will have to make quick decisions in field. Software has now become part of the firing mechanism.

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