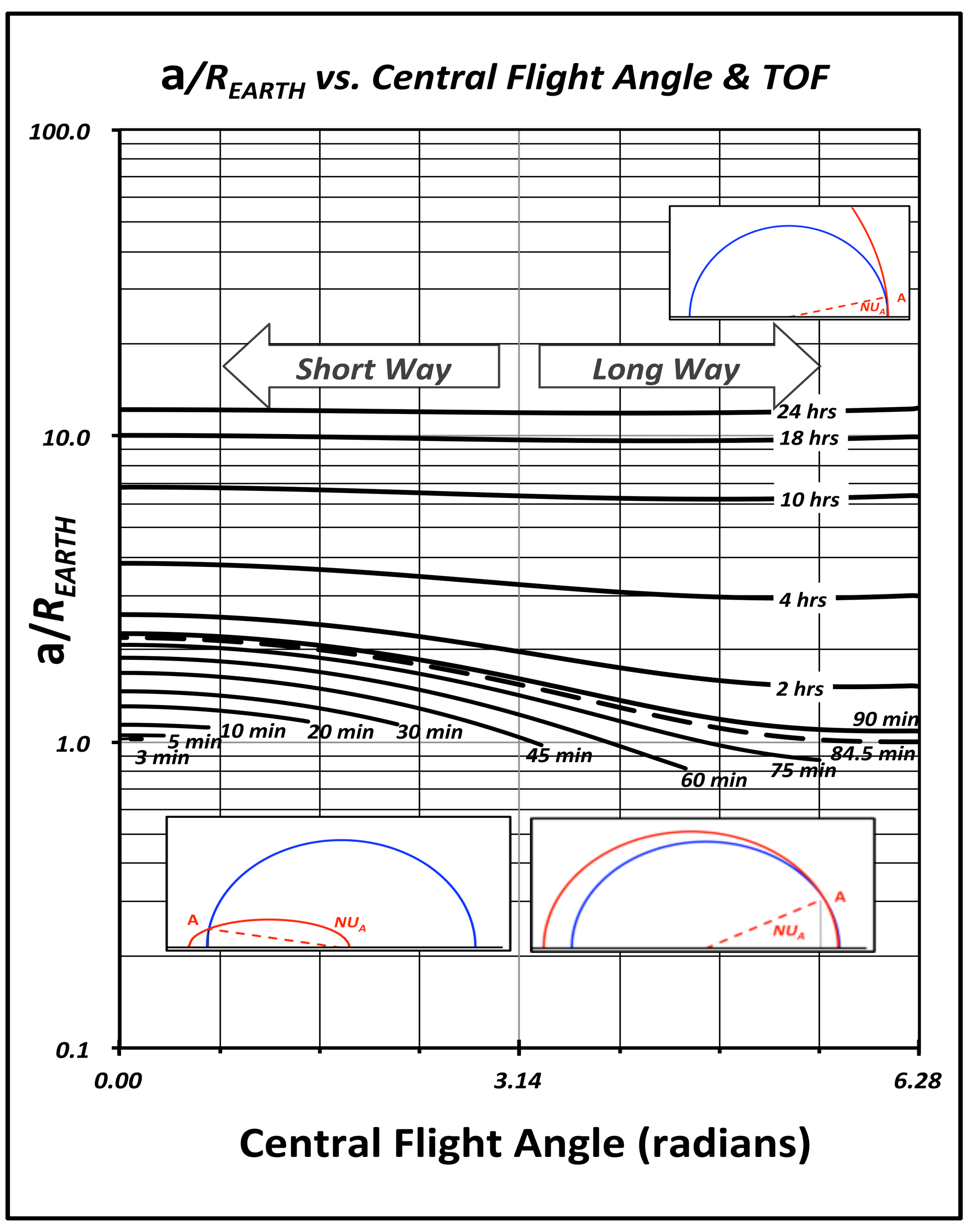
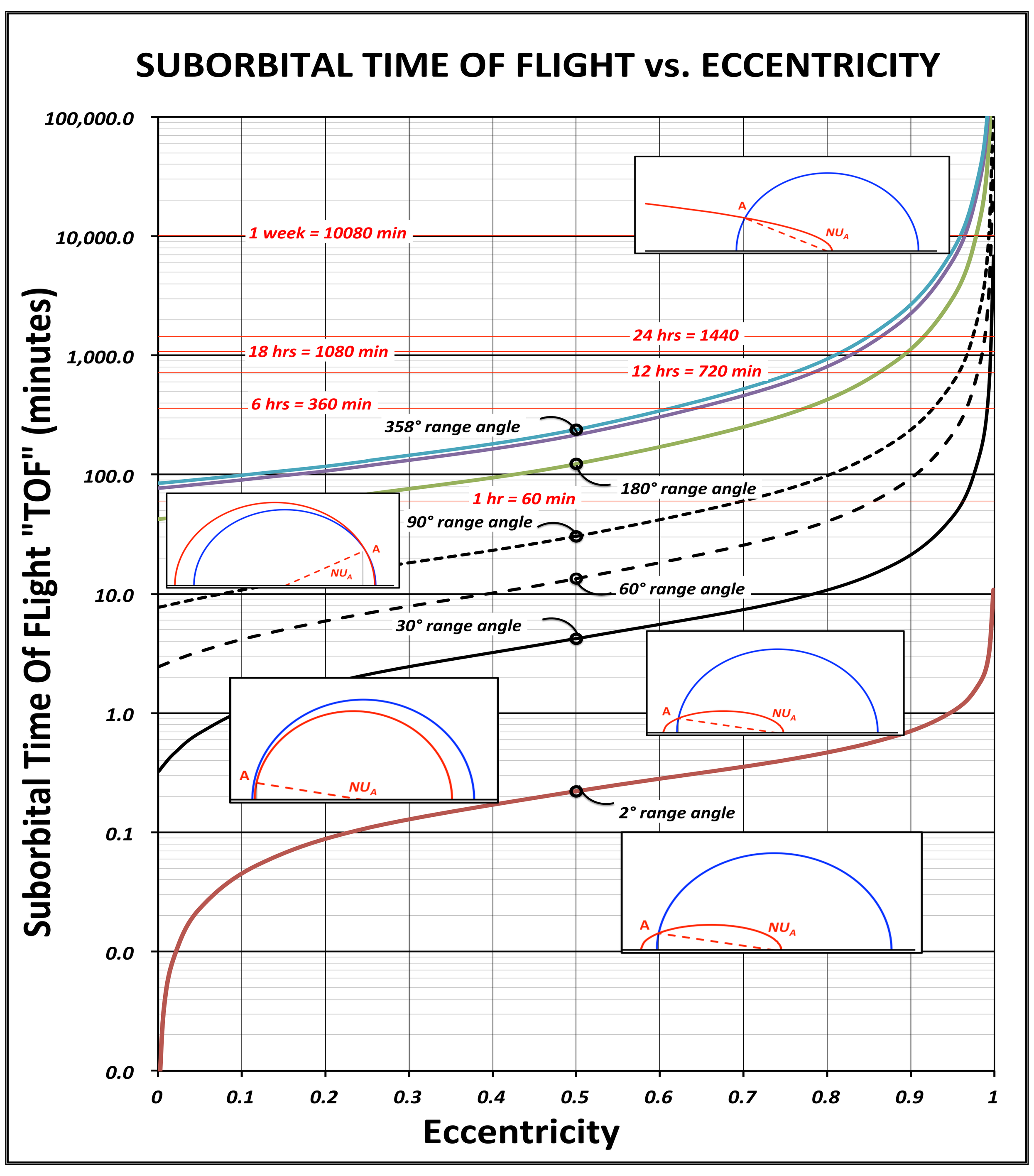
SUBORBITAL ANALYSIS: THE A-to-B PROBLEM IN PLANETARY SCIENCE

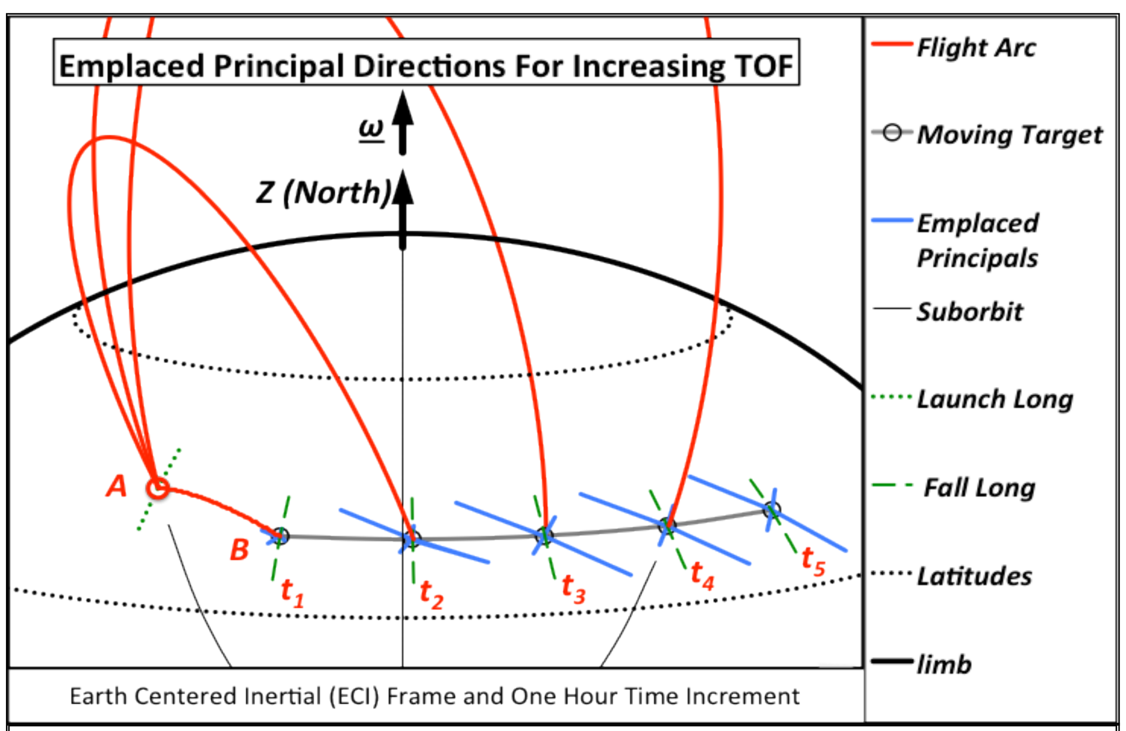
TIME OF FLIGHT (TOF): CORRELATING EJECTA & STREWN TO SOURCE

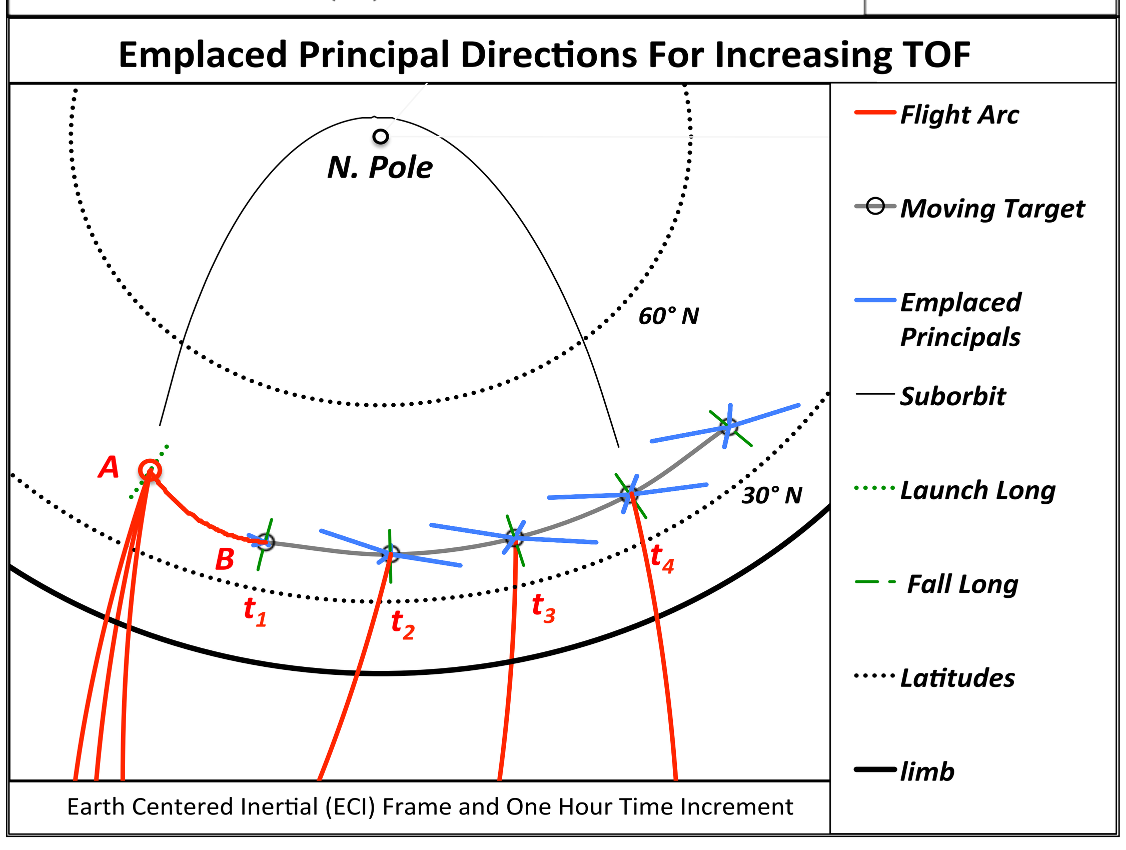
Because So Many Trajectories Are Possible For Every A-to-B Pair, We Need Perspective On How Suborbital Analysis May Help Correlate Both Regional And Global Strewn & Ejecta. Two Master Plots Are Very Helpful For Such Perspective, Allowing Quick Reference For Most Related Problems. On The Left, "Iso-TOF" Contours Are Shown Vs. Central Flight Angle & Normalized Semi-Major Axis. On The Right, Central Flight Angle Contours Are Shown Vs. Eccentricity & TOF.





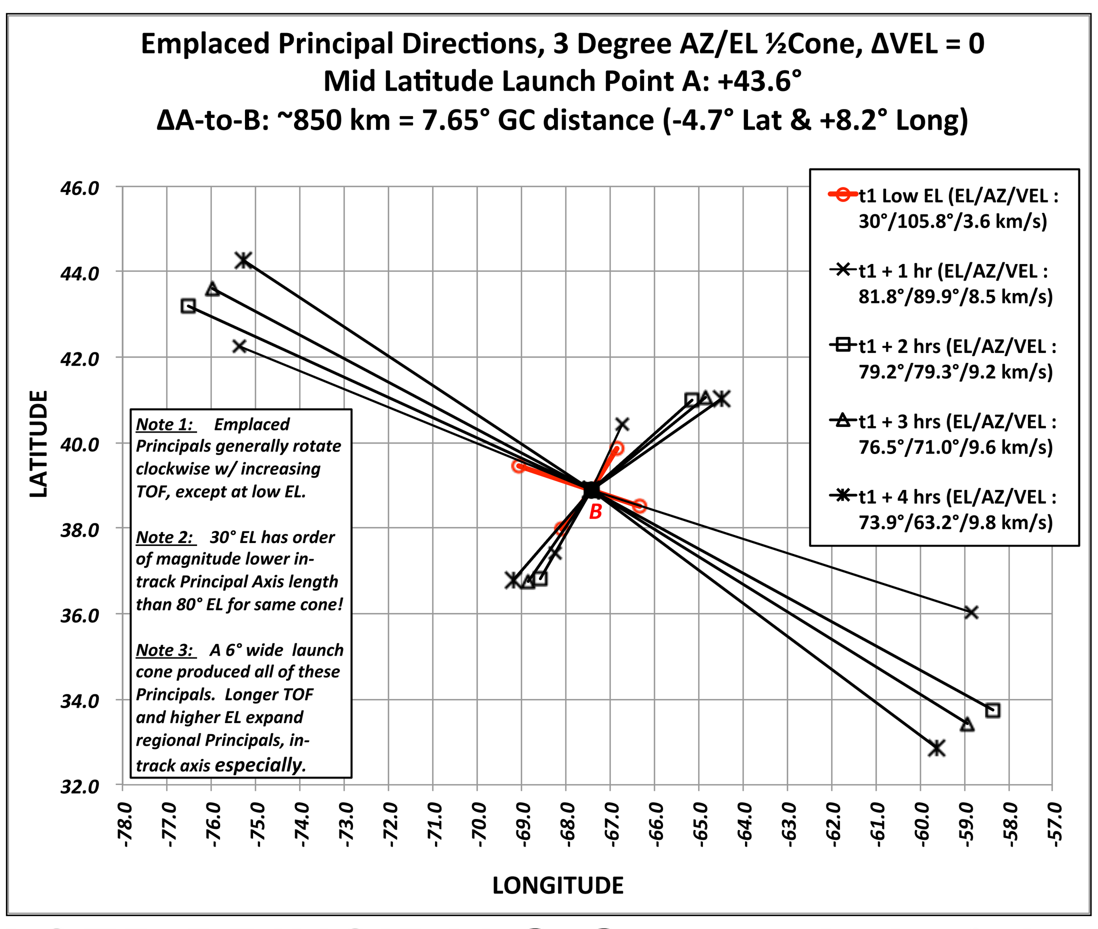
REGIONAL EXAMPLE: Since The Launch Solution Helix Has A Fairly Vertical Leg For Close A-To-B Range, Emplaced Principal Clocking Stays Relatively Constant For Elevations Below The Knee Of The Helix, While Emplaced In-Track Length Increases With Elevation. This Pronounced Separation Of Effects Allows Range-&-Radial Source Location For Repetitive Emplaced Morphometry That Has Systematic Alignment By Geographic Location (i.e. The Carolina Bays).





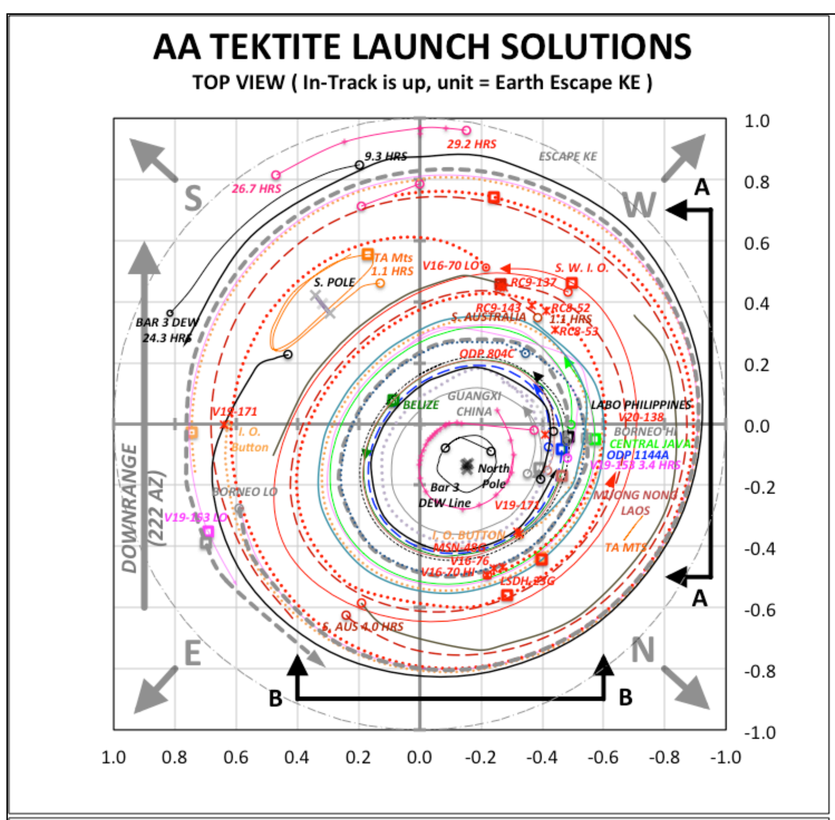
EMPLACED PRINCIPAL DIRECTIONS

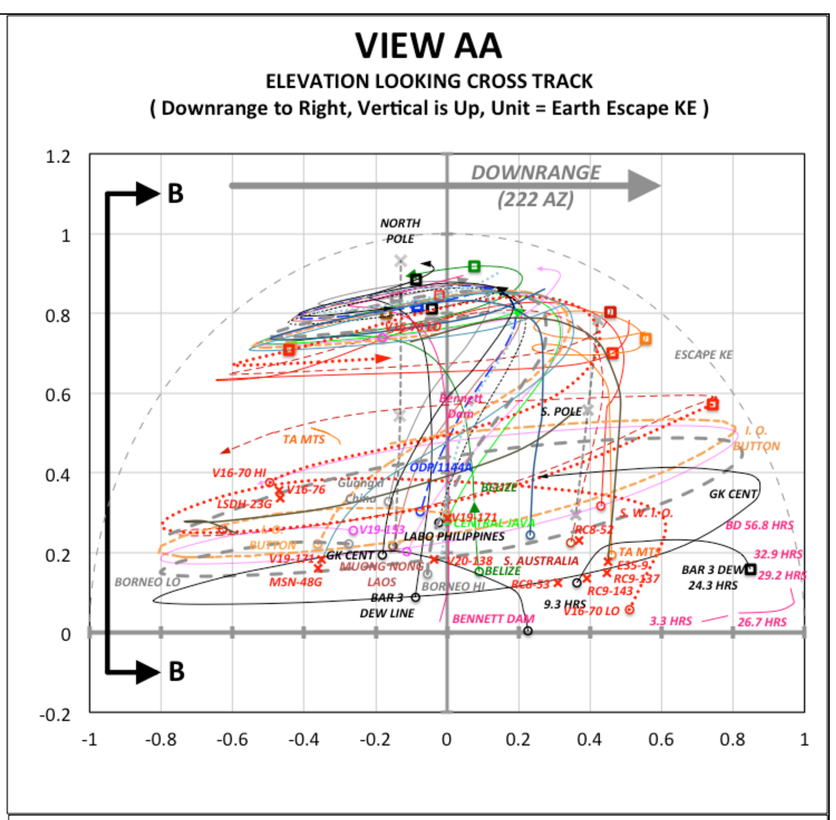
Infinite A-to-B Trajectories Yield A Continua Of Downrange & Cross-Range Principals At Point B: Different EMPLACED PRINCIPALS For Each TOF.

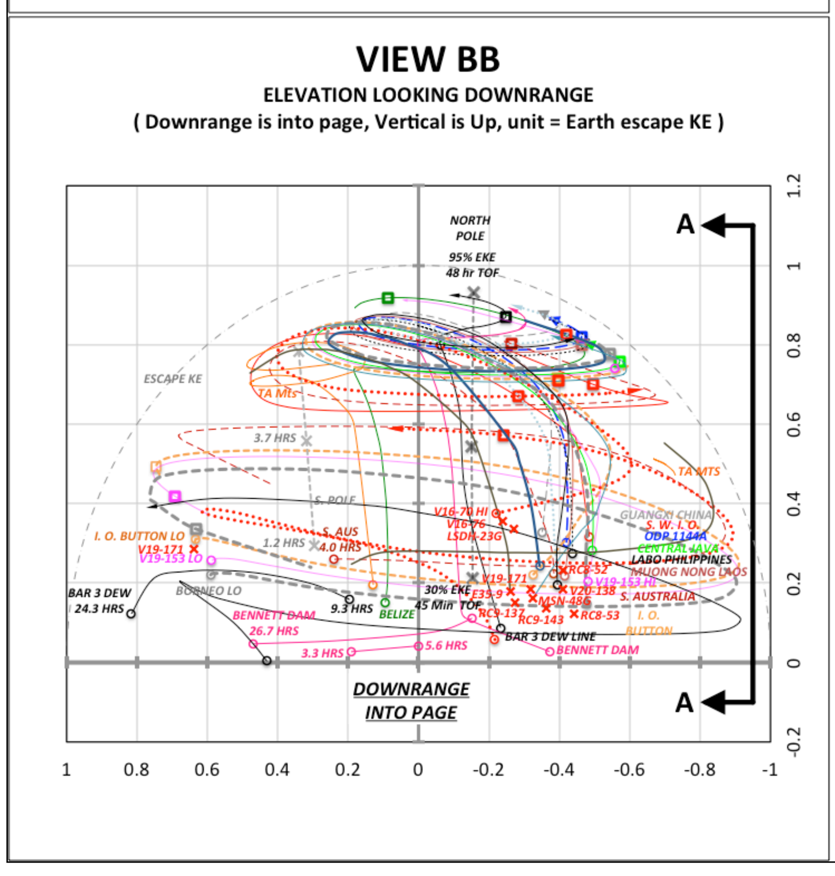


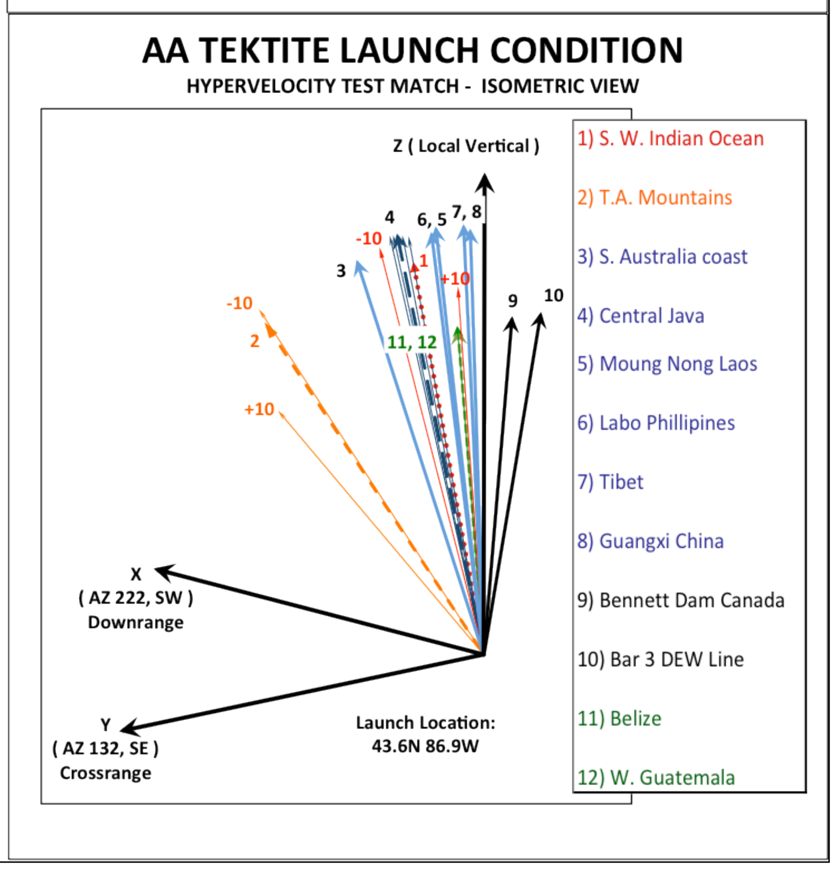
EMPLACED PRINCIPALS Shown At Left In Blue & Above In Red & Black. At Launch Elevations Near Or Above The "Knee" Of The Helix, The In-Track Principal Extends Radically (Black) Vs. Below The Knee (Red).

GLOBAL EXAMPLE: For Strewn Distribution, Launch Solution Helices Of Each Fall Site May Be Collated In KE-Space For Any Possible Launch Point A, And The Group Compared To Hyper-velocity Test Results For Ejection Trends Matching Specific Test Conditions (i.e. Volatiles, etc.)









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