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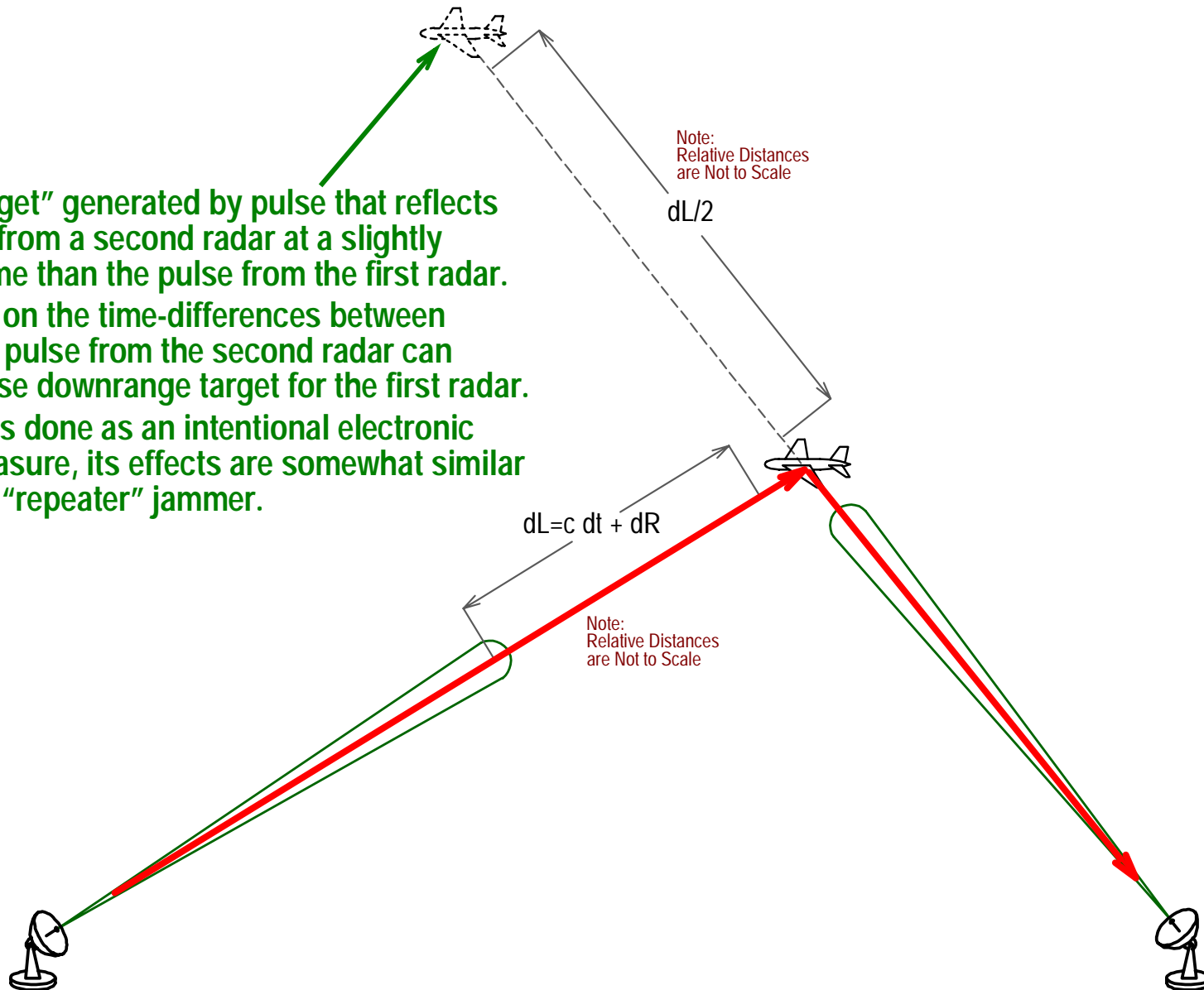
An Informed Guess About Why Patriot Fired Upon Friendly Aircraft and Saw Numerous False Missile Targets During Operation Iraqi Freedom

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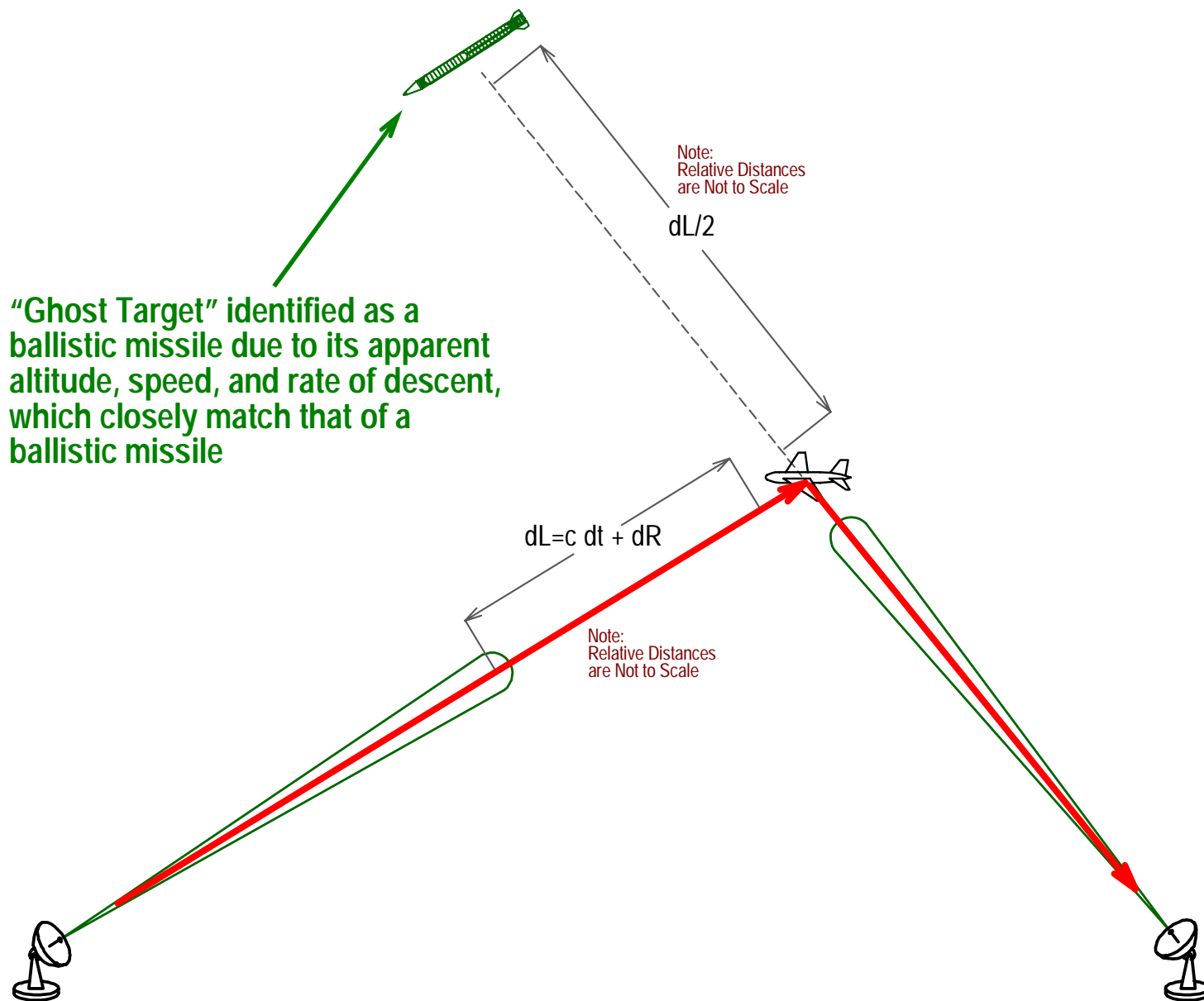
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How Ghosting (False Ballistic Missile Targets) Can Occur When Two Similar Radars in the Same Operating Mode Track a Single Target

"Ghost Target" generated by pulse that reflects off aircraft from a second radar at a slightly different time than the pulse from the first radar. Depending on the time-differences between pulses, the pulse from the second radar can create a false downrange target for the first radar. When this is done as an intentional electronic countermeasure, its effects are somewhat similar to that of a "repeater" jammer.



Ghost Targets Can Appear to be on Ballistic Missile Trajectories for Certain Aircraft Altitudes and Distances Between Radars



Estimated Locations of Patriot Batteries

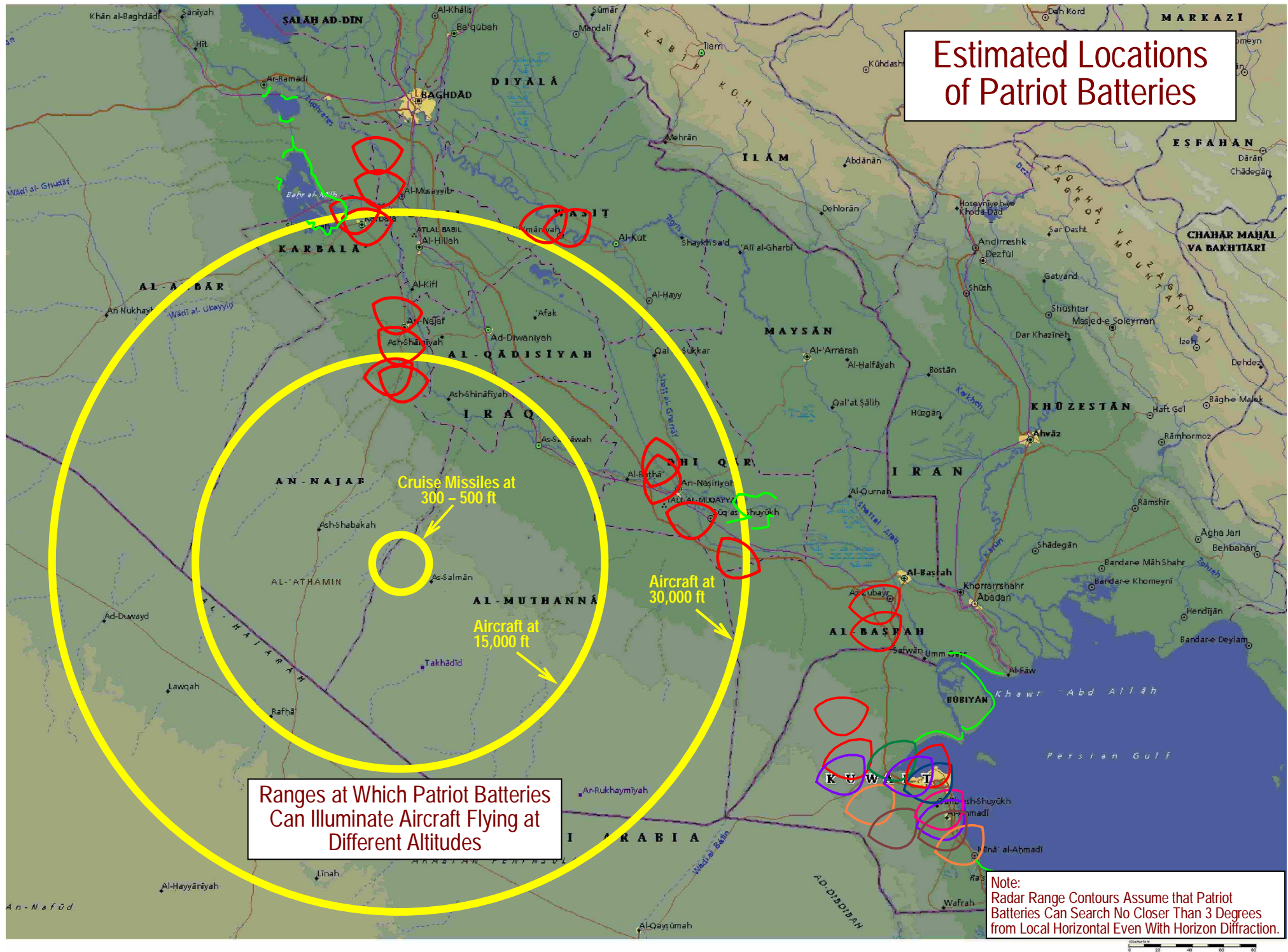
Ranges at Which Patriot Batteries Can Illuminate Aircraft Flying at Different Altitudes

Cruise Missiles at 300 - 500 ft

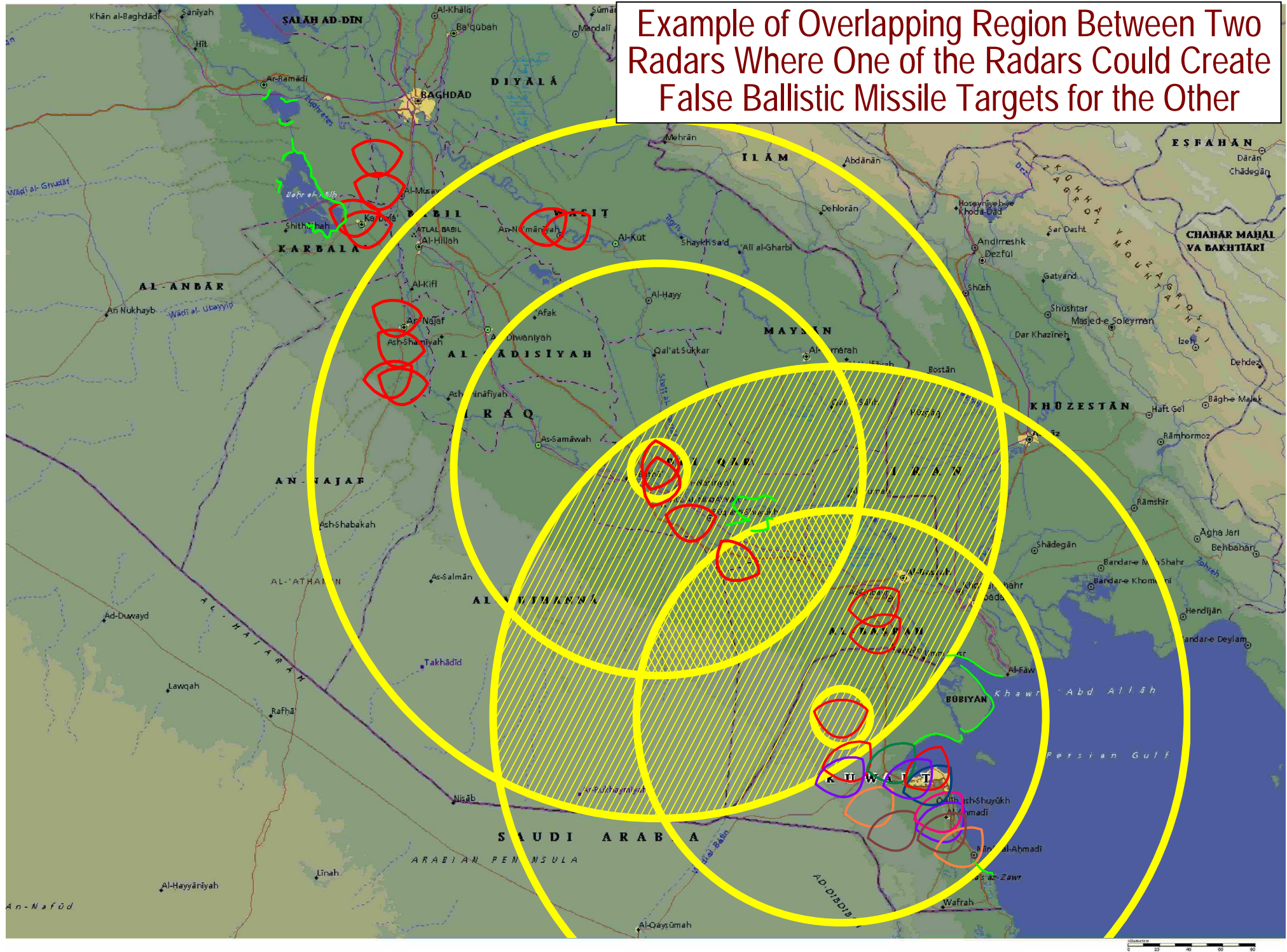
Aircraft at 15,000 ft

Aircraft at 30,000 ft

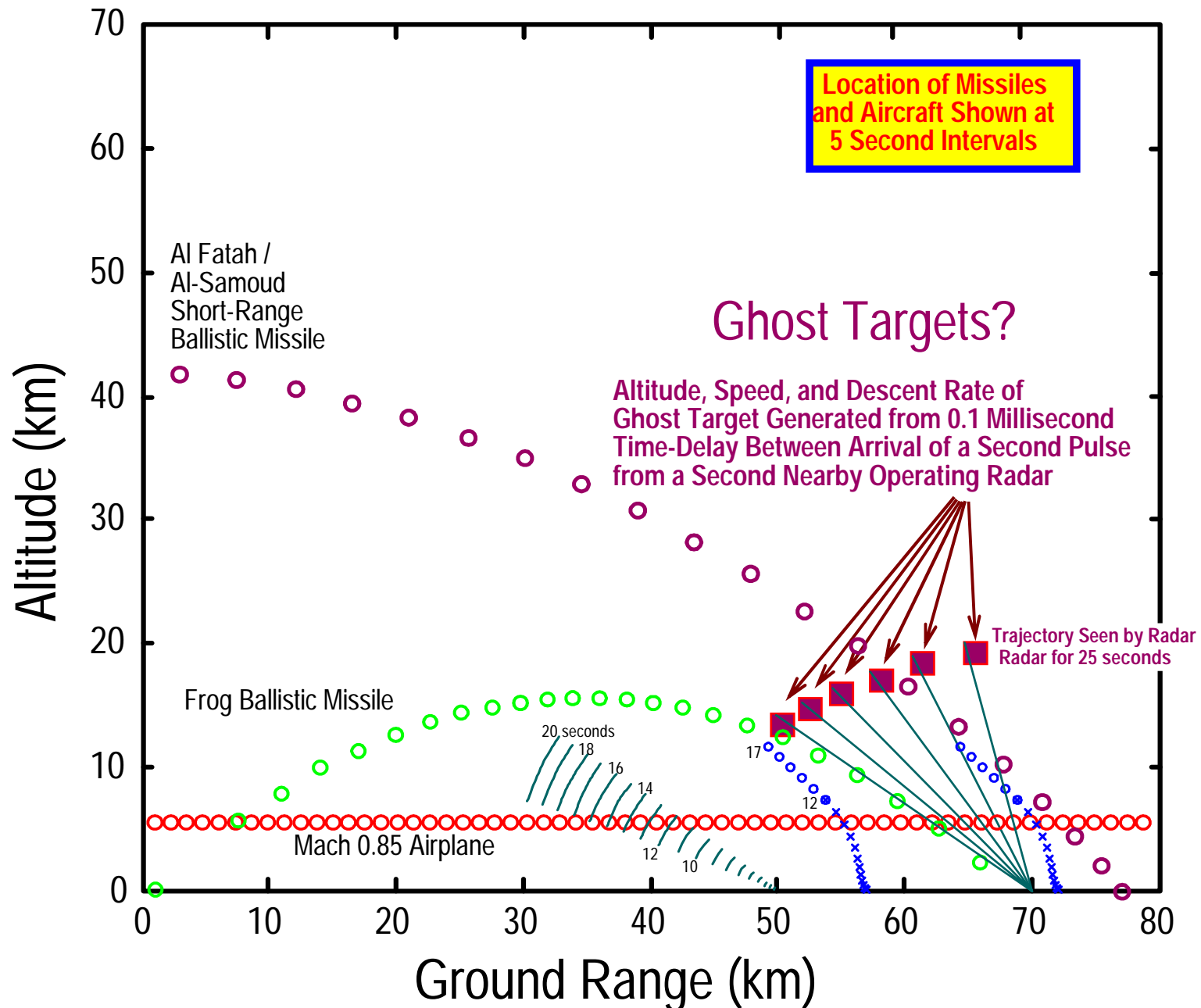
Note:
Radar Range Contours Assume that Patriot Batteries Can Search No Closer Than 3 Degrees from Local Horizontal Even With Horizon Diffraction.



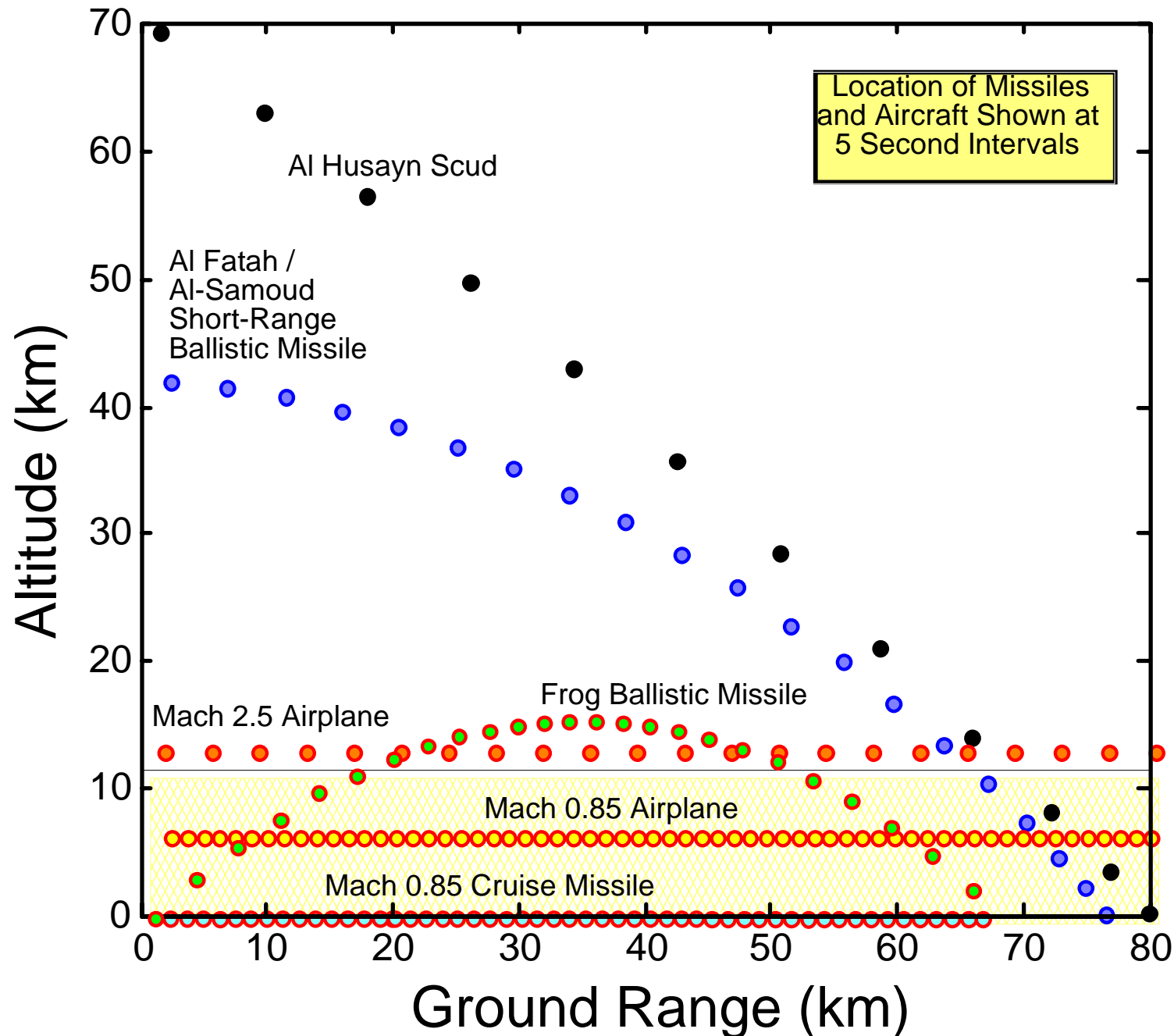
Example of Overlapping Region Between Two Radars Where One of the Radars Could Create False Ballistic Missile Targets for the Other



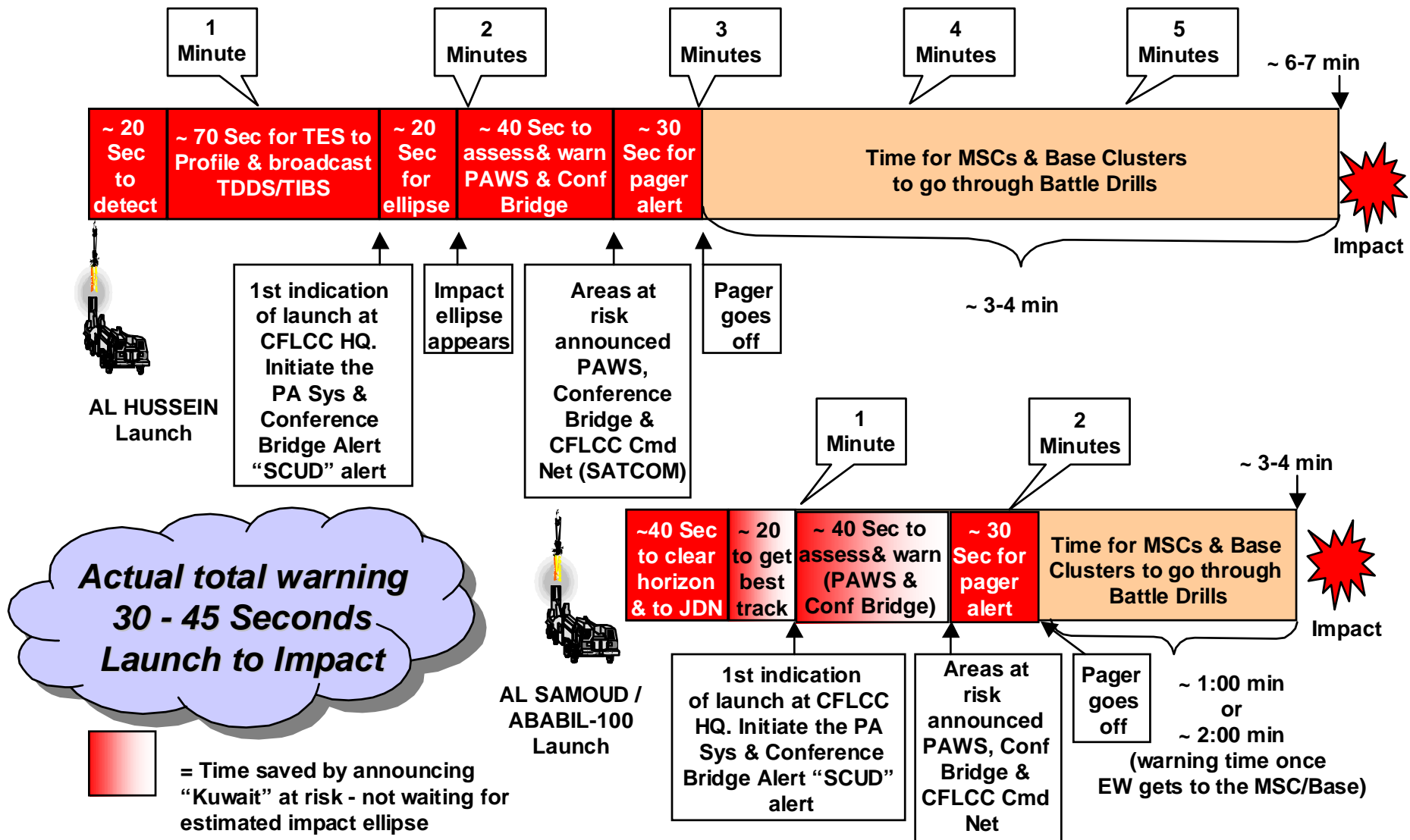
Example of Aircraft-Generated False Al Samoud / Al Fatah Trajectory from Two Similar Tracking Radars in the Same Operating Mode



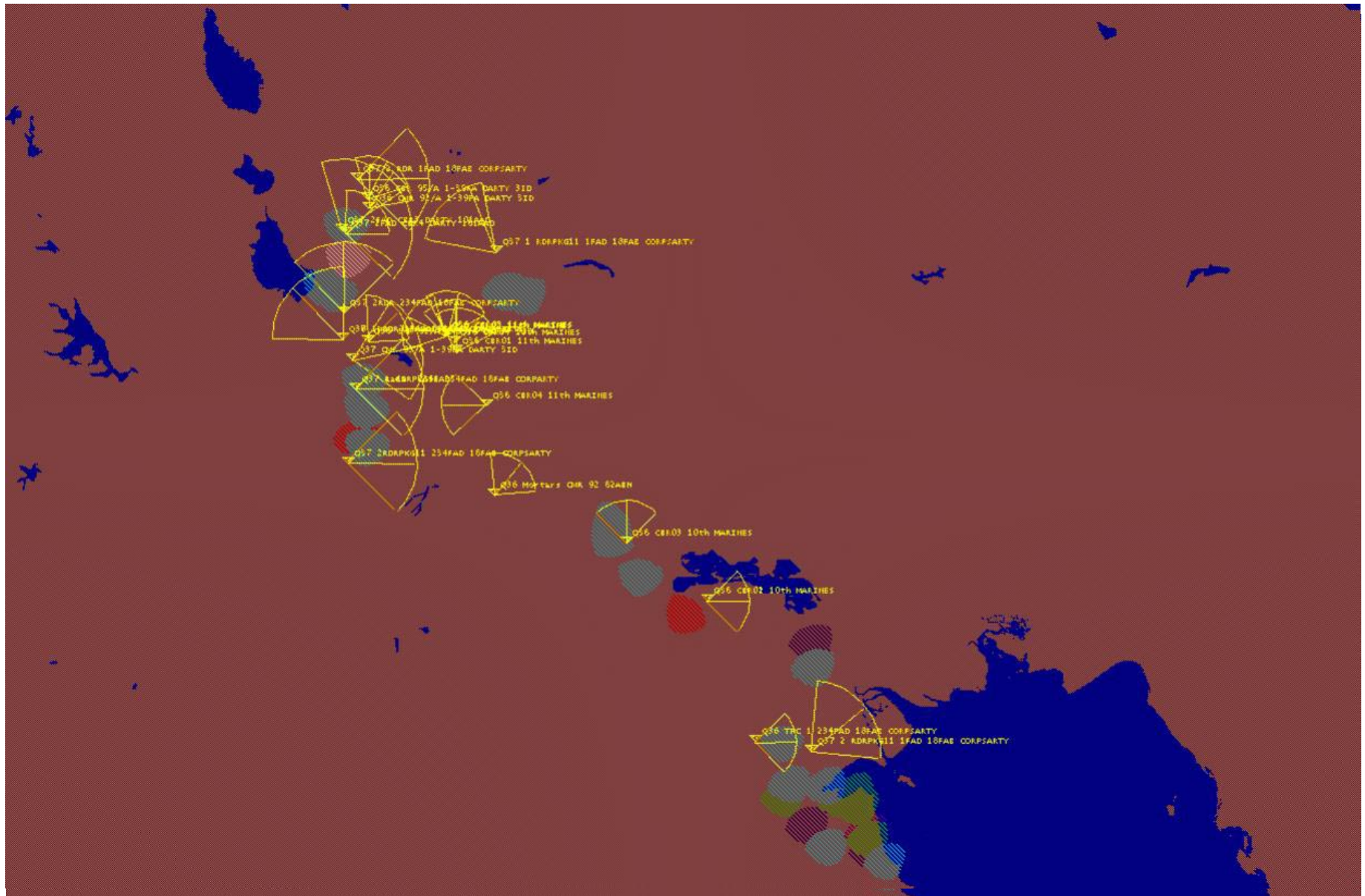
Ballistic Missile and Aircraft Trajectories Expected by Patriot's Artificial Intelligence Software in Operation Iraqi Freedom



Estimated Launch to Impact Timeline



Slide 50 from Briefing by the 32nd Army Air and Missile Defense Defense Command



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