

Boost-Phase Defense Timeline

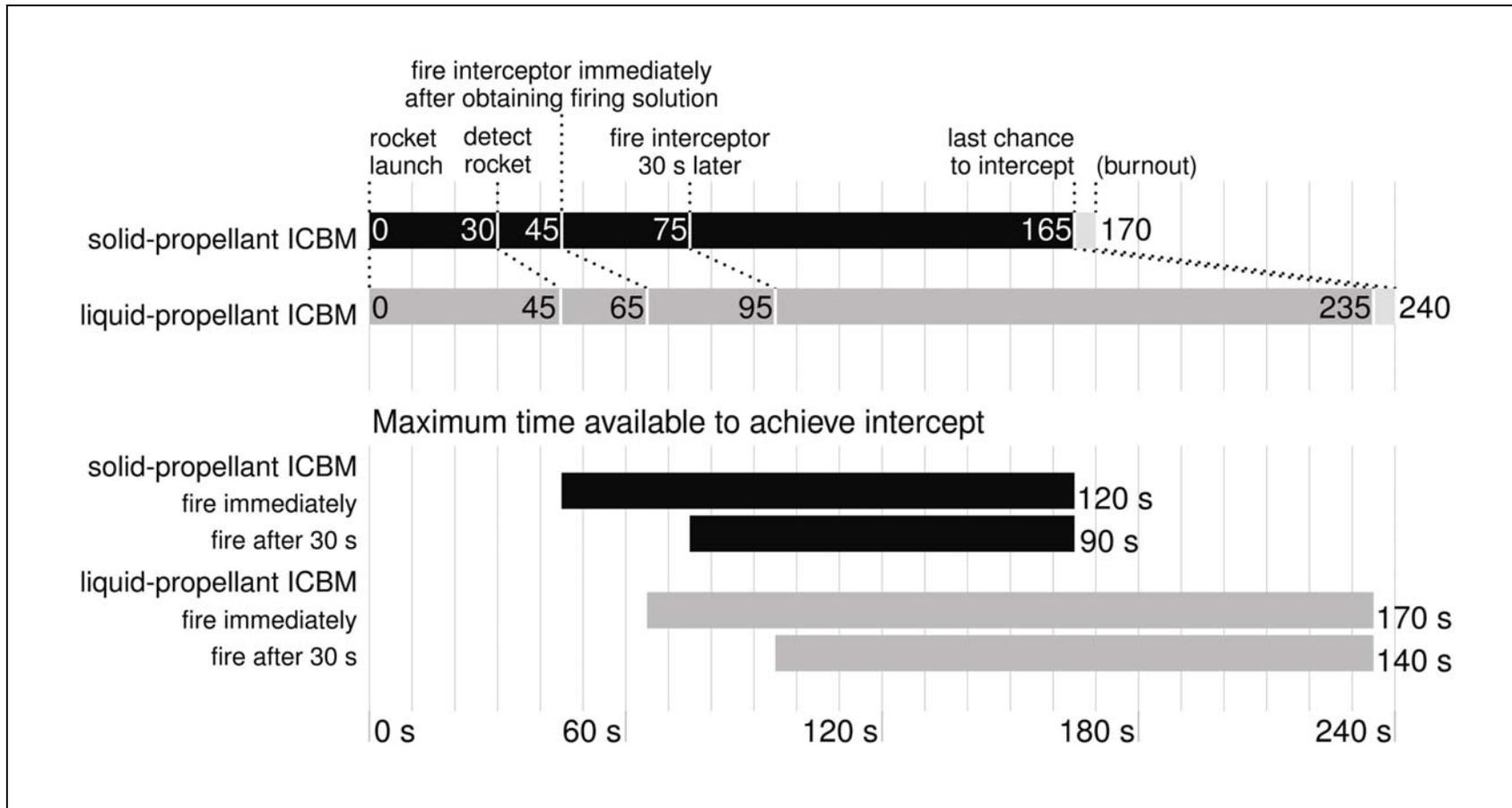


Figure 2.2: ICBMs would need to be engaged on a very compressed timeline. The upper half of the figure shows the stages of the intercept process for both solid- and liquid-propellant ICBMs launched from Iran. The right hand end of the solid bars indicates when the ICBM stops burning. The last chance for intercepting the ICBM is five seconds before that, as indicated.

In the lower half of the figure, the lengths of the solid bars show how long the interceptors have to reach the ICBM, from interceptor launch to intercept. The left hand end shows the earliest possible launch of the interceptor after the ICBM launch taking into account the time needed for tracking the ICBM, determining a firing solution, and deciding whether to intercept.

Potential Missile Impact Sites

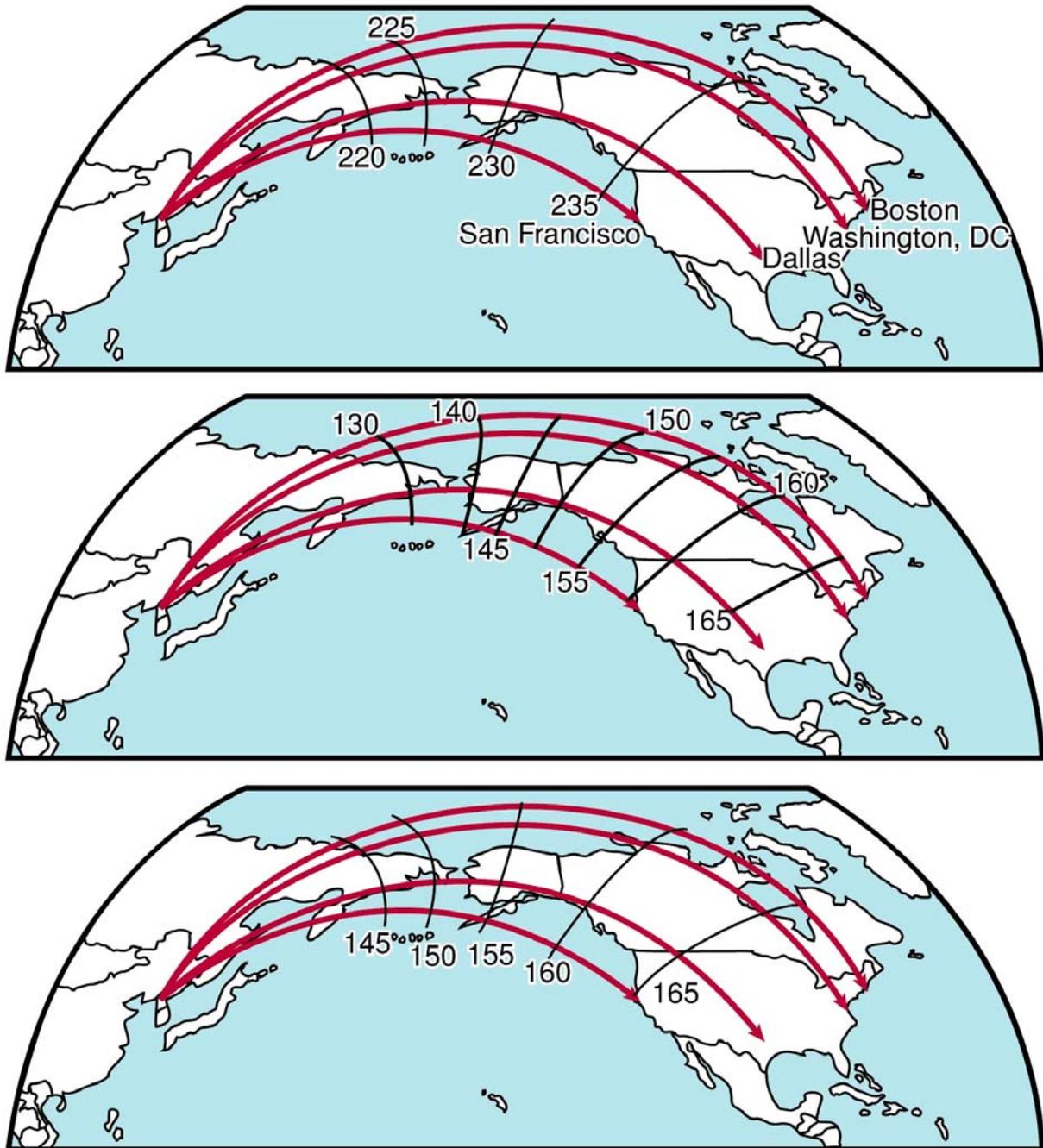


Figure 5.3: The point of impact of an ICBM depends on the duration of its rocket boost. The trajectories on this map show where a missile from North Korea would land if the rocket booster were disabled by an intercept at various times after launch (in seconds). This illustration shows the problem of shortfall, whereby disabling the rocket booster may still result in the missile landing on friendly territory.

The upper figure shows where a liquid-propellant ICBM would land depending on intercept time. Impact at the targeted destination occurs if the missile is not intercepted within 240 seconds from launch. The lower two figures show the impact points for two different types of solid-propellant missiles. They would hit their targets if not intercepted within 170 seconds from launch.

Interceptor Basing Areas

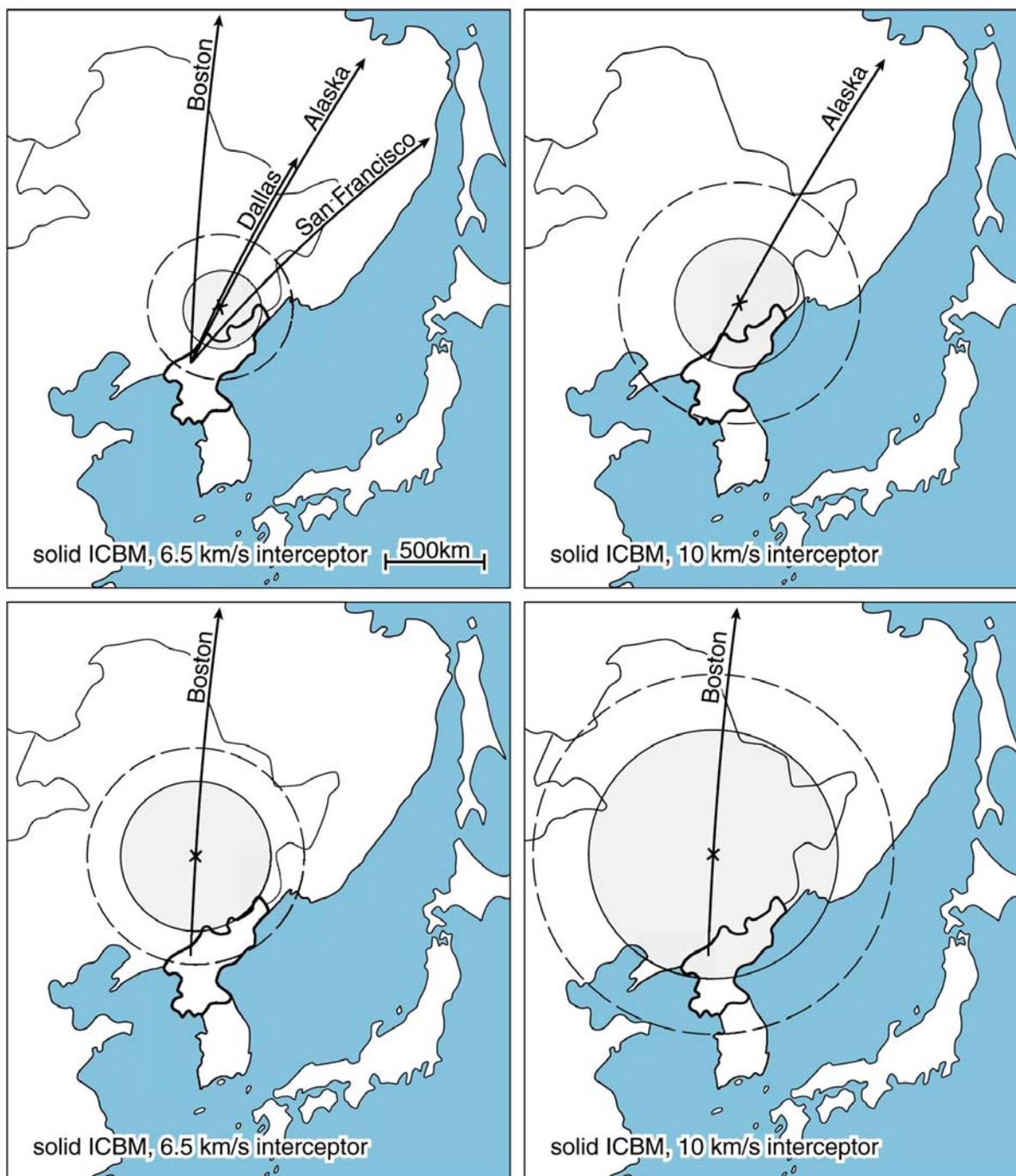


Figure 5.10: These figures show where an interceptor would need to be based to successfully reach a solid-propellant ICBM launched from North Korea. Missile trajectories for different targets in the United States are shown. The left hand figures show basing areas if the interceptors are capable of achieving speeds of 6.5 km/s. The right hand figures correspond to a hypothetical interceptor capable of 10 km/s, which is beyond current capabilities.

The solid inner circles indicate the required basing area if 30 seconds of decision time is allowed. The outer dashed circles show the basing area if interceptors are fired as soon as a firing solution is obtained, with no decision time. The crosses show the position of the last chance to intercept, in Chinese airspace in all cases.

Hypothetical Model Interceptors

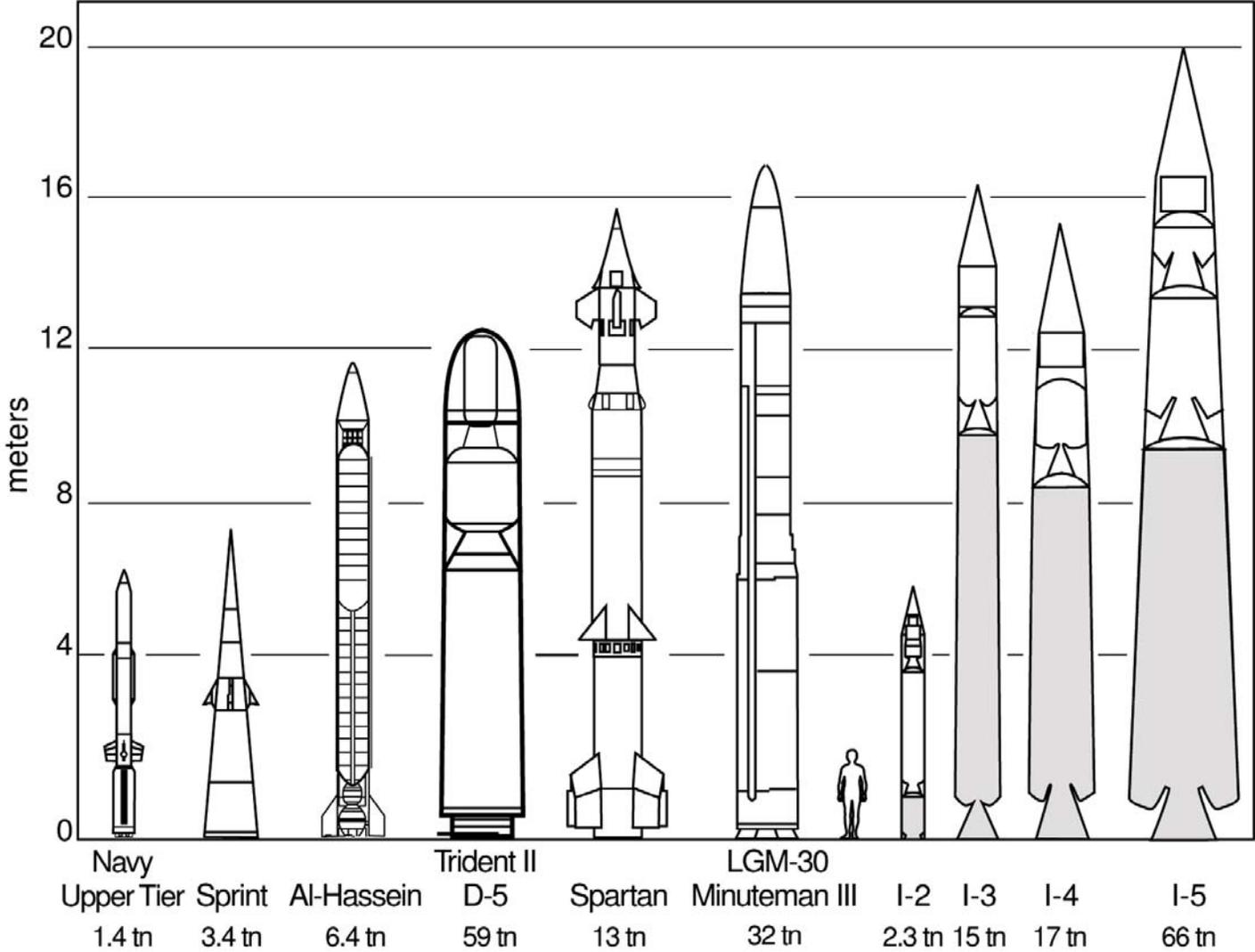


Figure 16.9: Comparison of hypothetical model interceptors with various existing missiles. The estimated liftoff mass of each interceptor in tonnes (1 tn = 1000 kg) is listed beneath the name of the interceptor or missile. Interceptors I-2, I-3, I-4 and I-5 are hypothetical interceptors modeled in the report.