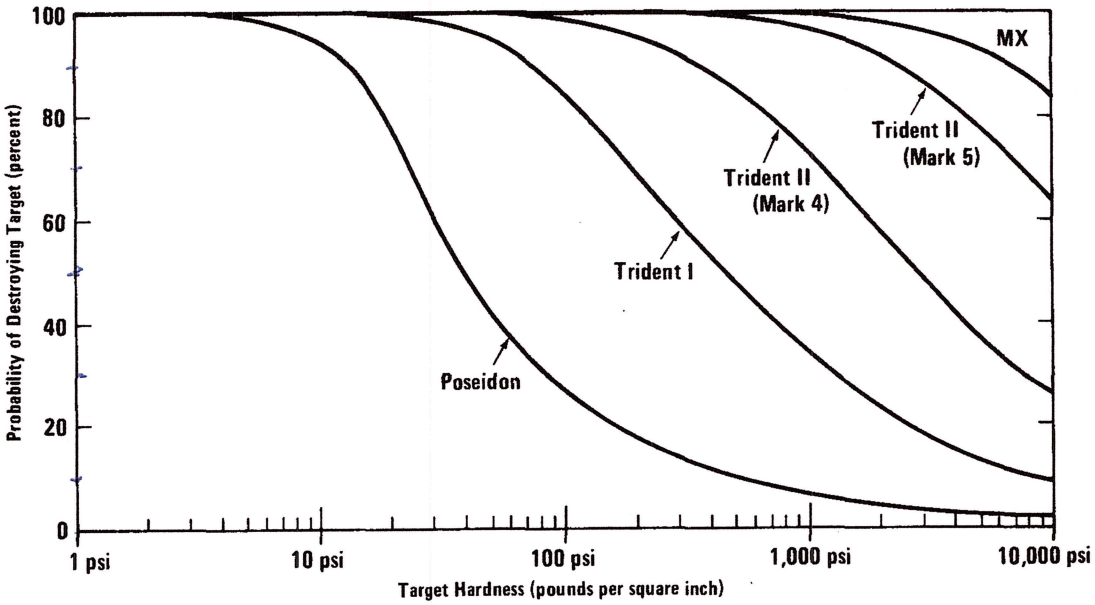
Figure 1.
Capability of Ballistic Missile Warheads Against the Target Spectrum



SOURCE: Congressional Budget Office.

NOTE: Warhead capability is measured here by Single Shot Kill Probability (SSKP)—the probability that an arriving warhead will destroy a target of given hardness. For the method used in calculating the SSKP, see Appendix A.

The greater accuracy and higher yield of the Trident II equipped with Mark 5 warheads would greatly improve the effectiveness of the missile against targets hardened to withstand a nuclear attack. Consider the ability of warheads to destroy a very hard facility such as an ICBM silo that has been strengthened so it has only a 50 percent probability of suffering major structural damage if exposed to 5,000 pounds per square inch (psi) of overpressure. 2/ If a Mark 4 warhead on a Trident I missile reaches the 5,000-psi target and detonates, the probability that it will destroy the target--known as the Single Shot Kill Probability (SSKP)--is about 15 percent. The SSKP of the Mark 4 and Mark 5 warheads on the Trident II missile against a 5,000-psi target is about 40 percent and 80 percent, respectively (see Figure 1 above). The Mark 5 warheads on the Trident II missile are, therefore, nearly as effective against most hardened targets as the warheads on the MX ICBM.

2. Overpressure is pressure exerted on a surface in excess of standard atmospheric pressure, which is 14.7 pounds per square inch. Overpressure can knock down buildings and--if the overpressure is high enough--shake, deform, or crush underground structures.

CRS page a TRI 2