# Missile coverage analysis

Based on the specification for the GFE the sensor range diagram of Figure 1 may be created.



Figure 1: Sensor coverage diagram

Based on the F-16 speed and manoeuvring capabilities, combined with minimum missile speed and lethality and GFE detecting capabilities, it is possible to set up a kill zone, in which detection of an incoming missile becomes irrelevant. This is due to the fact that it is no possible to react before impact, and even if a reaction was made the deployment of chaff and flare will cause immediate detonation of incoming missile, and the shockwave will be sufficient to destroy the plane at this distance. This distance is illustrated in Figure 2.



Figure 2: Aircraft kill zone

Based on this information and an exact number of sensors, it is possible to determine the placement that achieves maximum coverage outside the kill zone.

The placement is shown in Figure 3, and detailed below.



Figure 3: MWS coverage seen from above the plane



Figure 4: MWS coverage seen from below the plane



Figure 5: MWS coverage seen from in front of the plane



Figure 6: MWS coverage seen from the behind of the aircraft



Figure 7: MWS coverage seen from the left side of the POD



Figure 8: MWS coverage seen from the right side of the POD

The exact angle and location of each sensor may be seen in enclosed technical appendix.

From this information it is possible to determine the planes shading effect, which has been minimized by careful placement, but cannot be completely eliminated without mounting two PODs, one under each wing. In all other directions than the right the sensors fully cover the area outside the kill zone, and the focus will therefore be on the uncovered part to the right of the aircraft.