

TABLE B

Suitability of Different Sensors for Various Functions

FUNCTION	SENSOR			DATA PROCESSING
	VISUAL	INFRARED	RADAR	
<ul style="list-style-type: none"> Detection and tracking of aircraft 	Only at very short ranges. Unable to penetrate weather and darkness.	Spaceborne IR promising. Unable to detect below clouds. Airborne IR tactically very useful, but weather limited.	Ground based very good against high targets within LOS. Low targets within FOV for short time. Airborne (AWACS) very good against high and low targets. Difficult to detect moving targets with Spaceborne SAR. Spaceborne PD has potential but requires very high power levels.	Modern technology is adequate. Data can be transmitted electronically to a remote location for display and control. Maximum data processing at the sensor location preferred.
<ul style="list-style-type: none"> Detection and tracking of cruise missiles 	Target too small and too low for useful visual detection or tracking.	Potential for airborne or spaceborne, but weather limited.	Target too low for effective tracking from the ground. AWACS has potential with PD. Spaceborne potential with PD but requires very high power levels.	Detection more of a problem than data management.
<ul style="list-style-type: none"> Detection and tracking of long range ballistic missiles 	Airborne optical adjunct for late phase tracking and discrimination.	Spaceborne IR very effective during boost phase. Spaceborne LWIR promising for mid course tracking.	BMEWS effective for high altitude, mid-course portion of trajectory. Ground based radar good for discrimination and terminal phase.	Could be saturated by decoys or have communications blacked out by nuclear detonation.
<ul style="list-style-type: none"> Air traffic control 	Not useful.	Spaceborne IR has potential but only when targets are above clouds.	Ground based radar satisfactory where available but limited by LOS. AWACS could supplement but not continuously. Spaceborne SAR may have potential but PD requires high power levels. Greatly aided by IFF beacons.	Modern technology is adequate. Information may be relayed to a remote location for display and control.
<ul style="list-style-type: none"> Search and rescue 	Visual search is primary means for final detection of a downed aircraft or ship in distress.	Spaceborne and airborne IR has potential but weather limited.	Ground based radar is very useful to provide latest position when available. Spaceborne radar would greatly assist depending on revisit times.	Modern technology adequate. Information can be relayed for control at a remote location, as now successfully done with ELT and Sarsat.
<ul style="list-style-type: none"> Drug interdiction, illegal immigration control, and fisheries surveillance 	Airborne surveillance useful over limited area.	Airborne IR would be a valuable addition to visual at night, but subject to weather restrictions. Spaceborne IR has potential, but subject to weather and false alarms.	Shore and ship-based radar useful when available. AWACS very effective when located in right area. SAR in aircraft or satellite has potential against boats and perhaps small aircraft.	Would require information similar to ATC flight plans on ship movements. Identification difficult.
<ul style="list-style-type: none"> Agricultural, forestry, ice reconnaissance, oceanography, prospecting, pollution detection, surveying, weather 	Airborne and spaceborne photography very useful. Time delay to receive information is acceptable.	Airborne and spaceborne multi-spectral imaging very useful. Commercial applications.	Airborne and spaceborne very useful with high resolution imagery radars. Able to penetrate weather.	Highly developed. Great resolutions impose significant demand on processing capacity.