11. DETECTION

Briefing

1. In order to fire upon an enemy piece, an attacker must first detect it. Once an enemy piece is successfully detected, the firing piece may then bring any or all of its available weapons to bear upon that piece.

2. Detection enhancement systems increase the probability of detecting an enemy piece and hitting it.

3. Detection systems such as field scanners, proximity scanners and mine detectors perform special functions on the battlefield.

Detection procedure

1. A piece must always detect an enemy piece in order to fire upon it, even if it has successfully detected and fired upon that piece in previous turns. This represents the fact that battlefield conditions are never static. Explosions, drifting smoke and dust cause obscuration; lighting may shift due to clouds or the time of day; and the troops themselves are engaged in the myriad activities of combat and survival that constantly demand their attention.

2. The process starts with a **base number** of **10**. Conditions that affect the ability to detect the target are factored as numbers, which are added to or subtracted from the base number to arrive at a total.

a. The total is the chance to successfully detect the target.

b. A ten-sided die is then rolled; if the number rolled **is less than or equal to** the total the target is detected. For example, if the number needed to detect the target is 7, the player must roll a 7 or less.

3. The conditions that are factored into the detection determination are: target concealment, target movement and weapon signatures. These conditions are discussed below and are listed with their numerical ratings on the **Detection** chart.

Note: In order to keep the detection process quick and simple, target size and range have not been factored in. This would have made the detection process nearly identical to hit/miss determination.

4. Target concealment – The following table gives the die rolls needed to determine if a piece can detect a target in order to fire upon it.

Target concealment	Die roll needed to detect
None	1 to 10
Less than one-third	1 to 7
One-third to two-thirds	1 to 5
More than two-thirds	1 to 3
Total	No detection

a. Devices that are totally buried in the ground, such as mines, are considered to have total concealment. They can only be detected using the mine detection rules below.

b. Spymines and spyshells have a surface component that may be detected. An enemy piece within 4 inches of a deployed spymine or spyshell can detect it on a die roll of 1 to 5. Refer to Rule 21. Spotting, for a fuller description of spymines and spyshells.

5. Movement – A piece that is moving or firing is much easier to detect than one that is inactive. Movement or fire by a piece makes it detectable at the next lower concealment level. For example, when a tank, which is half-hidden by a wall, moves along behind the wall, its concealment level changes from "One-third to two-thirds" to "Less than one-third."

6. Weapon signatures – Some weapons are particularly easy to detect when they fire because they have a characteristic signature such as a large backblast or a brilliant beam of light.

a. These weapons have a "+1" or "+2" given

in the "Detection effect" column of the weapons charts. When attempting to detect the weapon after it has fired, add the +1 or +2 to the die roll needed to detect the enemy piece.

Example: A walker tank positioned behind a building has more than two-thirds concealment when viewed by opposing forces. The enemy would need a die roll of 1 to 3 to detect it.

If the tank fires a laser cannon the enemy will need a die roll of 1 to 7 to detect it. (A starting die roll of 1 to 3 due to concealment; raised to 1 to 5 because the tank fired, making it detectable at the next lower concealment level; and then raised to 1 to 7 because the laser cannon adds +2 to the chance to detect.)

b. Weapons that have less of a signature or no obvious signature have a "0" given in the "Detection effect" column of the weapons charts. No additional points are added to the chance to detect these weapons when they fire.

7. A piece can try to detect an enemy piece more than once in a turn only if the chance of success becomes greater with each succeeding attempt.

Example: A grav tank needs a die roll of 1 to 3 to detect an enemy mortar team with more than two-thirds concealment. The tank attempts to detect the team and fails. As it advances, the tank has a better view of the mortar team. It may make a second attempt to detect the mortar team if it reaches a point where the concealment of the team is less than two-thirds. The tank could make a third attempt if it reached a point where the mortar team's concealment is less than one-third.

8. Each member of a weapon team or a crew-served weapon can try to detect an enemy piece. Each member may make a separate detection die roll. If a member of the team is equipped with enhanced optics (such as a scope or binoculars), only that member may add the applicable factor.

Detection enhancement systems

1. Detection enhancement systems utilize a wide range of sensors to detect enemy forces. These sensors include radar, magnified-image video analysis, light intensification, computer-enhanced imaging, and electromagnetic, infrared, ultraviolet, chemical and acoustic sensors.

2. These systems help pieces detect and target enemy vehicles and troops by sensing their characteristic emanations and activities, such as:

a. chemical emissions, such as exhaust fumes, gases, lubricants, and residues from propellants and explosives

b. motion, including the dust and air effects created by hovercraft and rocket-powered vehicles

c. grav fields and magnetic anomalies

d. electromagnetic fields and pulses, such as those generated by energy weapons

e. heat, ranging from that generated by plasma and fusion weapons, to internal combustion engines, and the body heat of warm-blooded animals

f. heat signatures, including temperature differentials and residual heat patterns left by passing vehicles and personnel

3. Detection enhancement systems affect hit/miss determination by increasing a piece's chance to detect an enemy piece, and by increasing a piece's chance to hit an enemy piece.

4. The detection enhancement systems mounted in infantry helmets should not be factored to provide the bonuses described below. These bonuses should be reserved for the most sophisticated systems, such as those utilized by snipers, forward observers, scouts, commandos and infiltrators.

Detection enhancement system types

1. **Augmented** - A system that increases a piece's chance to detect enemy pieces by +1 and

increases a piece's chance to hit enemy pieces by +1. The maximum range of an augmented detection system is 80 inches.

2. **Extended** - A system that increases a piece's chance to detect enemy pieces by +2 and increases a piece's chance to hit enemy pieces by +2. The maximum range of an extended detection system is 120 inches.

3. **Enhanced** - A system that increases a piece's chance to detect enemy pieces by +3 and increases a piece's chance to hit enemy pieces by +3. The maximum range of an enhanced detection system is 160 inches.

Type	Factor	Maximum range
Augmented	+1	80 inches
Extended	+2	120 inches
Enhanced	+3	160 inches

Low technology (Optional rule)

1. To reflect the impact of lower levels of technology, the players may choose to impose a greater liability on troops that are attempting to detect enemy forces without the aid of a targeting system, heads-up display, vision plate or binoculars.

2. Troops attempting to detect the enemy with unenhanced vision will suffer a -1 penalty.

Example: A guerrilla fighter attempting to detect an enemy soldier with the naked eye will need a die roll of 1 to 2 to detect a soldier with more than two-thirds concealment, rather than a die roll of 1 to 3.

Scanners (Optional rule)

1. Scanning is an attempt to get a general view of enemy activity on the battlefield. Scanners are not targeting or detection systems used to pinpoint enemy troops and vehicles. They provide only a general location of unseen enemy forces, unlike the detection procedure which is directed at targeting a specific enemy piece.

2. **Field scanners** attempt to detect and decode electronic activity of all kinds: signals, transmissions, electro-magnetic signatures and other emissions of military equipment (including vehicles, motors, radios, radar, communicators, monitoring systems, and other technology). Field scanners also frequently employ small bursts of energy to attempt to trigger IFF (identification friend or foe) systems. Field scanners may be mounted on vehicles or buildings.

a. Field scanner systems can perform a broad area scan, scanning a circular field 12 inches in diameter directly out from the scanner in the direction the scanner is facing. The scanner sweeps this circle at short, medium or long range.

b. The scanning range is determined by the range factor of the scanner. For example, a medium scanner has a range factor of 16. If the scanning template is placed 16 inches or less from the scanning piece, the range is short. If the scanning template is placed more than 32 inches from the scanning piece, the range is long. No part of the scanning template can be placed beyond 48 inches for a medium scanner.

c. The player rolls one 10-sided die for the scanning area. A die roll in the range indicated below means that the area is scanned successfully.

Scanning area	Die roll needed for success
short range	1 to 9
medium range	1 to 6
long range	1 to 3

d. The opposing player must indicate the number of target signatures in the circular scanning area when it has been successfully scanned.

Example: A player has four powered armored troops and one light grav tank in the scanning area of the scanner. He would report there are five pieces in that area: four infantry and one vehicle.

e. Devices with electronic signatures, such as spymines and spyshells should be reported if a scan is successful.

f. Pieces with no electronic equipment will not show up.

g. Command vehicles, because of the high density of electronics and communications equipment, will be identified automatically (unless the owning player has recorded in writing beforehand that the systems have been turned off that turn).

3. A field scanner may only make one scanning attempt per turn.

4. **Directed scanning** – instead of performing a broad area scan, a field scanner can be used to attempt to "read" the status of an enemy vehicle or strongpoint.

a. The basic die roll required to successfully scan an enemy vehicle or strongpoint is 1 to 5. The relatively high rate of failure is due to the active and passive defensive systems built into enemy vehicles and strongpoints to provide resistance to scanning.

b. The firing player will roll a ten-sided die. If he rolls a 1 to 5, his piece has successfully scanned the target. A successful scan allows the firing player to learn the current level of one or more of the systems of the target.

c. The player who controls the scanned vehicle or strongpoint will roll a ten-sided die to determine which systems are scanned using the **Scanning Result** table below.

Scanner die roll	System scanned
1	Targeting
2	Movement
3	Damage control
4	Weapon systems
5	Targeting and movement
6	Targeting and damage control
7	Targeting and weapon systems
8	Movement and damage control
9	Movement and weapon systems
10	Damage control and weapon systems

d. The player who controls the scanned vehicle or strongpoint will then reveal the status of the scanned systems to the opposing player. For example, if a vehicle's targeting and movement systems are scanned the owning player must reveal their current levels and any damage suffered.

5. **Proximity scanners** attempt to identify enemy activity through devices such as motion sensors, vibration sensors and/or infrared detectors. Proximity devices are normally operated by individual personnel, but they may be mounted on vehicles or buildings.

a. A proximity scanner scans a 12-inch circular area centered on the scanning device.

b. The player rolls one 10-sided die. The quality level of the scanner determines the die roll needed. A die roll in the range indicated below means that the area is scanned successfully.

Scanner	Die roll needed for success
basic	1 to 4
enhanced	1 to 6
advanced	1 to 8

c. When a scan is successful the opposing player reveals the number of pieces in the area and the size of each piece.

Example: A player has two lightly-armored troops and one medium wardrone in the scanned area. He would report to his opponent that there are three pieces in the area: two size 0 and one size 1.

d. A proximity scanner may only make one scanning attempt per turn.

Mine detection

1. Mine detectors attempt to identify enemy mines through devices such as magnetic sensors, chemical sensors, infrared detectors and/or ground penetrating radar. Mine detectors are normally operated by individual personnel and they are frequently mounted on reconnaissance drones. They may be mounted on vehicles.

2. A mine detector scans a 6 inch by 6 inch square area in front of the detector.

3. The player rolls one 10-sided die. The quality level of the detector determines the die roll needed. A die roll in the range indicated below means that the area is scanned successfully.

Mine detector	Die roll needed for success
basic	1 to 4
enhanced	1 to 6
advanced	1 to 8

4. When detection is successful the opposing player reveals whether there are mines in the area scanned and the portion of the minefield that falls within the scanned area. He does not have to reveal the type of mine emplaced.

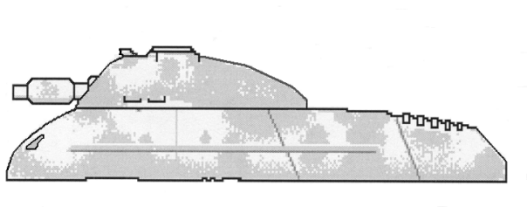
5. A mine detector may only make one scanning attempt per turn.

6. Surface-scattered mines and mines that are delivered during a battle by artillery, missiles or aircraft munitions are not carefully emplaced and concealed, and are therefore automatically detected by both friendly and enemy forces.

Camouflage – Optional rule

1. Camouflage is used to disguise or conceal troops and equipment by obscuring their outlines or blending them into their surroundings. The most sophisticated camouflage utilizes special paints, chemical compounds and fabric fibers to provide obscuration and concealment from infrared and ultraviolet detectors as well as normal optical sights and unaided vision.

2. The players should determine before a game if they will utilize the camouflage rules and what types of camouflage will be given the additional factors for concealment. For example, they might decide that camouflage patterns painted on large armored vehicles do not count, but that camouflage netting on vehicles and defenses, and camouflage uniforms on troops do count.



3. A -1 factor is added during detection whenever an enemy piece has camouflage. This represents the additional concealment provided by the camouflage.

4. A -1 factor is added during hit/miss determinations whenever a weapon is using direct fire at an enemy piece with camouflage. This represents the additional difficulty of getting a good target fix.

4. Players may assign a -2 factor for very well-camouflaged troops such as snipers. This factor represents their special tactics as well as their exceptional skill in using camouflage.