GLOSSARY FOR THE AIRCRAFT SECTION

If I've missed something, please let me know!

GENERAL TERMS

Price: This is the relative value of the aircraft in game terms. It bears no reference whatsoever to the "Real World" value.

Fuel Type: The type of fuel the aircraft may use. Virtually all aircraft use "AvG," which is sort of a game catch-all for Aviation Gasoline, jet fuel, or other such fuels.

Load: This is the maximum amount of cargo, weapons, or other stores the aircraft may carry, whether on hardpoints, in internal weapons bays, or in a cargo hold (depending upon the aircraft).

Veh Wt: This is the weight of the aircraft, with a full load of fuel and base crew, but minus the Load figure above.

Crew: This is the size of the base crew (pilot, co-pilot, and any other essential crew such as navigators, gunners, crew chiefs, etc.) plus the amount of passengers the aircraft may carry. This figure may be listed as a single number, in which case it has only a base crew, or "x+n" in which case it may carry a base crew and passengers.

Mnt: This is the amount of maintenance, in hours, the aircraft must be given per week for the aircraft to perform at the proper levels of performance and with the minimum chance of breakdowns. Failure to give the aircraft this maintenance will detrimentally affect the aircraft, while more maintenance will only help the aircraft perform optimally.

Night Vision: This entry lists the devices that allow the aircraft not only to see targets at night, but also lists any sort of enhanced detection ability it has.

Radiological: This is the amount of protection the aircraft has against chemical, biological, and radiological agents, and is listed as Open, Enclosed, or Shielded.

Tr Mov: This is the Travel Movement of the aircraft – the amount of kilometers the aircraft travels in a four-hour period at cruising speed. This may be increased (see game rules), but at the cost of increased fuel consumption and possible breakdowns and other mishaps.

Com Mov: This is the Combat Movement of the aircraft – the *base* amount of meters the aircraft will travel in a 5-second combat phase. Again, this can be increased, as the cost of increased fuel consumption, possible breakdowns, and mishaps. The number in parenthesis is the stall speed of the aircraft – the minimum speed at which the vehicle may travel and stay in the air without requiring a rather difficult (to say the least) Pilot skill check.

Mnvr/Acc Agl/Turn: Mnvr (Maneuver) has no meaning for aircraft. "Acc" is the maximum possible acceleration of the aircraft, in meters per 5-second combat phase, of which the aircraft is capable. "Agl" is a numerical rating of the agility of the aircraft, sort of a general reference of how maneuverable the aircraft is. This rating is divided by a slash into the agility of the aircraft when it has less than half its maximum Load, and when it has more than half its maximum Load. "Turn" is the amount of degrees the aircraft may turn per 5-second combat phase, and is similarly divided. Both ratings are theoretically open-ended.

Fuel Cap: This is the Fuel Capacity – the amount of liters of fuel the aircraft carries internally.

Fuel Cons: This is the amount of fuel the aircraft consumes in a normal four-hour Travel Movement. It may exceed the aircraft's fuel capacity – in which case, the aircraft cannot keep going for four hours without stopping to refuel, carrying drop tanks, or conducting aerial refueling. Traveling at higher than the aircraft's Travel Movement will increase this figure, as will poor maintenance, conducting combat, using afterburners, etc.

Ceiling: This is the maximum safe height at which the aircraft may travel, in meters. Higher flight may be attempted, at the cost of increasing chances for breakdowns and other mishaps.

Combat Equipment: This entry details the various types of equipment, combat or otherwise, the aircraft is equipped with. These types of equipment will be detailed below.

Minimum Landing/Takeoff Zone: Basically just what it sounds like, this is the minimum runway/open space the aircraft needs to attain flight or land safely. The entry also indicates what sort of runway is needed – Hardened, which means it needs a real runway, road surface, or other hard surface to land and take off from; or Primitive, in which case virtually any sort of flat, open field will do.

RF: Certain aircraft have rangefinders or other aids to allow them to aim their weapons more accurately. This will be indicated by a bonus to the pilot or weapons officer's chance to hit the target, on a d20.

Armament: This indicates not only any sort of internal armament, but the amount of hardpoints the aircraft has available for weapons pylons, drop tanks, or other stores.

Ammo: If the aircraft carries internal guns or cannons, this figure indicates the amount of ammunition and the caliber of ammunition carried.

COMBAT EQUIPMENT TERMS

Active Jamming: This works sort of like those sound-dampening headphones – the active jamming unit broadcasts frequencies which are counter to the enemy radar frequency coming in. This creates an incredible amount of interference on the enemy's radar screen – the screen can literally look fogged over. ECCM will help mitigate active jamming, but active jamming is typically very powerful, and using ECCM against an active jamming aircraft in one difficulty level harder than normal. Active jamming itself makes an aircraft makes an aircraft two levels harder than normal to find on radar, and the same difficulty level is applied when trying to guide a radar-guide missile to it, once a target is found. In an active jamming environment, the friendly aircraft may attempt to break a lock on each phase at one difficulty level easier than normal, and attempt to break radar contact by an enemy radar each phase, at one level easier than normal. Active jamming is pretty advanced technology, requiring a large amount of rather fragile electronics and a lot of electrical power from the aircraft. Active jamming may also be listed as AJM.

All-Weather Flight: Many aircraft are "fair-weather" systems – their effectiveness is severely degraded when the weather turns nasty, or even if there is a lot of cloud cover. (Depending upon the weather, this may result in a one to four-level Difficulty penalty when attempting to use radar or IR detection methods.) Aircraft which are all-weather capable do not have this problem; their electronics are able to sort out targets from clouds, rain, hail, snow, etc., and not have their electronics affected by lightning. (A direct lightning strike on the aircraft is another story altogether…) They are also able to detect major weather systems of a poor nature and plot ways around them (even an all-weather capable aircraft will fly roughly in high winds or things like wind shears, and are subject to lightning strikes).

Armored Cockpit/Fuselage: Some aircraft have an exceptionally-well protected cockpit to protect the crew and therefore help save lives and possibly keep the aircraft flying longer. Aircraft with an armored cockpit are typically protected by stronger metal and plexiglass or extra layers of metal and thicker plexiglass. (This can be carried to extremes; the MiG-21 has such a strong front canopy that it actually obstructs the pilot's forward vision!) Aircraft with an armored cockpit ignore damage from small arms if a cockpit hit is rolled, subtract three-quarters of impact damage if directly hit in the cockpit by cannon fire 20mm or higher, ignore damage to the cockpit from explosive fragments, and take only half damage upon a cockpit hit from explosive concussion.

Some aircraft (like the A-10 Warthog) are incredibly well-protected; they basically have their entire fuselages protected by armor and are listed as having an "armored fuselage." The cockpit is protected as above; however, unless noted, the rest of the fuselage is only half as well protected as the cockpit.

ASW Equipment: As used in these pages, this is sort of catch-all term for the miscellaneous devices which allow an antisubmarine aircraft to do its job – from the computers to various antennae, secondary detectors, and secondary radars.

Auto Track: This is a special function of certain radar sets which allows a cursory 180-degree scan of the skies in front of the aircraft by the radar. When the auto tracking radar finds a target in this 180-degree arc, it automatically begins the lock-on procedure to the nearest enemy target (or the nearest one not giving a satisfactory answer to the aircrafts IFF receiver), unless overridden by the pilot or weapons officer. If not overridden, it may attempt to lock on to the target in the same phase in which the auto tracking radar begins the lock-on procedure. At the pilot's or weapons officer's option, this radar mode may be slaved to another target which has been spotted visually or on a VAS (see below), in effect overriding the auto track's choice of targets. The lock on may also be attempted in the same phase in this case. Information from auto track is often fed to an aircraft's HUD.

Deception Jamming: Deception jamming (or DJM) is a type of ECM which blanks out the real position of the friendly aircraft on enemy radar, and replaces it with one or more false "blips" (radar returns) which may be up to 200 kilometers from the actual friendly aircraft. ECCM can help detect and mitigate these false returns, but this is a more difficult process to do than countering normal ECM, and the presence of deception jamming is more difficult to detect than normal jamming. Unfortunately, deception jamming requires a greater degree of technology than normal ECM, more equipment, and more electrical power from the aircraft using it. Finding an aircraft using deception jamming is "one and a quarter" levels harder than normal – apply a one-level difficulty penalty, then subtract an additional penalty of -2. Once the aircraft using deception jamming is found, it does not affect the guiding of radar-guided missiles, though each minute the pilot, weapons officer, or electronic warfare officer may attempt to cloak the aircraft again in deception jamming.

ECM: ECM, or electronic countermeasures (also known as radar jamming), are electronic signals put out by an aircraft which distort the radar returns delivered to enemy radars. The most common form shows the enemy many targets where there is only one, and depending upon the strength and technology of the ECM emitter(s), this can literally fill the enemy's radar screen with targets which usually look very real and make it extremely difficult to pick out the real one. A subset of ECM is ECCM, or electronic counter-countermeasures (or counter-jamming); this is usually a computer which attempts to help the radar operator, pilot, or weapons officer "clear the screen" and pick out the real target from the fake ones. Most aircraft and ground installations which are equipped with ECM are also equipped with ECCM. Using ECCM to defeat ECM is a task (DIF: Electronics or FOR: Intelligence). ECM makes an enemy aircraft one level harder to detect on radar than normal, and makes breaking lock-ons by enemy aircraft one level easier than normal.

ELINT Suite: This is sort of the intelligence-gathering equivalent of the EW suite below. Aircraft with ELINT (Electronic Intelligence) suites have equipment for intercepting and classifying enemy radar and radio emissions, as well as the ability to eavesdrop on enemy radio broadcasts (and civilian ones, for that matter). Doing so is a task (DIF: Electronics or FOR: Intelligence), and can be affected by enemy ECM.

EW Suite: Aircraft with an EW suite have a computer which coordinates all electronic warfare and defense functions. These aircraft are able to respond in a virtually instantaneous manner to radar threats, whether the signals are generated by a radar site, enemy aircraft, or an incoming missile. Aircraft with an EW suite increase the effectiveness of their ECM (including deception jamming and active jamming) by one level, and increase their chance to break lock-ons by one level. As a by-product of having an EW suite, chaff or flare bundles (whichever is appropriate) will drop automatically if an incoming missile is detected.

Flare/Chaff Dispensers and Chaff Rockets: Flare and chaff dispensers carry countermeasures for heat-seeking and radar-guided missiles respectively. Chaff is also effective against radar itself. Flares, in a game context, come in bundles; the normal load is 6 such bundles in a standard flare dispenser. If the aircraft is capable of carrying more such bundles, this is indicated by a number in parentheses after the notation of "Flare/Chaff Dispensers." A flare bundle actually consists of dozens of brilliant flares, usually based on magnesium, which burn very hot and bright, thus decoying heat-seeking missiles. The flares will also show up quite brightly on night-vision equipment based on IR, light intensification, or thermal technology. A flare bundle will cover an area 250x250x250 meters, and light up the sky in the same manner as a standard artillery flare. The base chance of decoying missiles will depend upon the technology of the missile, but generally gives the heat-seeking missile a two-level Difficulty penalty to track the true target if the missile comes within 4000 meters of the flares and the flares are within its seeker head's field of view (about 30 degrees in front of the missile). The flares remain effective at this level for one combat phase, and at half-effectiveness for one more combat phase.

Chaff consists of foil, usually aluminum-coated plastic, which is cut to roughly the wavelength of the enemy radar. (There are usually several different lengths of chaff within a chaff bundle.) Each bundle has thousands of such strips, and as with flares, they degrade the chance of a radar-homing missile that comes within 4000 meters of the chaff bundle of tracking its target correctly by two Difficulty levels. This lasts at this level for one combat phase, than at half-effectiveness for another combat phase. Chaff can also deter heat-seeking missiles which come within 500 meters of the chaff bundle, due to reflected light; chaff degrades the heat-seeking missile by one Difficulty level for one combat phase. Chaff also creates a false target on radars, for which the enemy pilot, weapons officer, or radar operator must make a roll of AVG:INT to avoid confusing the chaff cloud with a real target. Once the chaff cloud dissipates after two combat phases, he will no longer be fooled.

All aircraft can carry chaff in their speedbrake housings. They cannot carry nearly as much chaff in their speedbrakes as a chaff bundle however, and the pilot has no control as to when the chaff is deployed. The first time the pilot pops his speedbrake(s), the chaff is deployed; this chaff functions at half effectiveness against radar-homing missiles or radars, and only gives heat-seeking missiles a -2 penalty. Enemy radar operators, pilots, or weapons officers need make only an ESY:INT roll, and the resulting cloud lasts for only one combat phase.

Some aircraft (normally large bombers) can carry chaff rockets, usually in their bomb bays. These are rockets which break up when fired, trailing chaff behind them. Chaff rockets have a range of 3 kilometers, travel straight and level for their entire flight, and trail an unusually thick chaff cloud which lasts at full effectiveness for 3 combat phases and half effectiveness for another three combat phases. The parentheses beside the entry for chaff rockets on an aircraft tell how many of these rockets the aircraft can carry.

GPS: An aircraft equipped with GPS (Global Positioning System) equipment can navigate using the constellation of GPS satellites orbiting the earth. This sort of navigation is extremely precise; this precision is classified, but it is generally thought that military GPS receivers can allow the pilot or navigator to locate his position to within one meter, while the best civilian models are generally accurate to within 10 meters. This sort of navigation also does not require the aircraft to make any sort of emissions, so aircraft navigating solely by GPS are very difficult to detect using radio detection gear, radar warning receivers, etc.

HUD/HUD Interface: An aircraft with a HUD (Heads-Up Display) has within the cockpit a special piece of glass or a special mirror which projects certain information onto the forward part of the canopy. This usually consists of the aircraft's speed, altitude, rate of climb or dive, fuel state, and an aiming reticle (often with firing parameters for the chosen weapon). More advanced HUDs may also give the pilot information about the enemy aircraft, such its speed, altitude, angle off, etc. It may also feed the pilot or weapons officer other information, depending upon the other capabilities of the aircraft.

A HUD Interface helps the pilot or weapons officer spot enemy aircraft visually by displaying a box, circle, or other symbol on the canopy telling him where to look for the enemy aircraft(s) his radar is locked on to. This allows him a +2 on his Observation roll to visually spot the target.

IFF: IFF, or Identification Friend or Foe, was one of the first electronic enhancements brought to combat aircraft, the first one appearing during World War 2. It is a simple device which transmits a coded signal that identifies it as a friendly aircraft to other friendly aircraft. This coded signal is normally changed several times per day (sometimes several times per hour) in wartime conditions to prevent it from being imitated by the enemy.

Advanced IFF not only transmits an IFF signal, it can read the IFF signals of enemy aircraft and also block them. Reading enemy IFF signals is a task (AVG: Electronics or DIF: Intelligence), while blocking enemy IFF signals is one level harder than that. Advanced IFF is subject to ECM.

Inertial Navigation: Aircraft with inertial navigation ability are able, before takeoff, register their start point (whether by GPS or standing upon a pre-surveyed point on an airfield or takeoff field for a short period of time) using a computer, then calculate their position by having the computer monitor the altitude, compass heading, and attitude of the aircraft. Inertial navigation is notoriously inaccurate in early examples of the device, but this improves in later designs. It is not, however, as accurate as GPS, which is why more advanced air forces use it less and less these days.

IRCM: Similar in concept to ECM, IRCM (Infrared Countermeasures) devices project beams of heat (often using lasers) which are used to decoy heat-seeking missiles. The beams are not hot enough to damage anything, but do give the pilot, weapons officer, or electronic warfare officer a chance equal to DIF: Pilot, DIF: Electronics, or FOR: INT (whichever is higher) to decoy the missile away from his aircraft. When this occurs, the offending missile goes for the nearest portion of the beam and explodes there (which could conceivably still affect the target), or simply gets confused and goes off on a straight line, through the beam, until it runs out of fuel and momentum and noses over (or acquires another target by accident). There is no "IRCCM" counterpart to ECCM.

IR Masking: Some aircraft, generally by aspects of their design (such as the position of the engine exhausts, extended tailpipes, or other features) are able to reduce their IR signature to an extent. These aircraft reduce the effectiveness of heat-seeking missile fired at them by sort of a "half a difficulty level;" meaning that the missile has a -2 chance of hitting such an aircraft. Detecting the aircraft with infrared sensors of any type is likewise at -2 to the enemy’s chances.

IR Uncage: Normally, an IR seeker head has a very limited field of view before launch, about 30 degrees in front of the firing aircraft (or in the case of some aircraft, the direction in which the missile is facing). Aircraft capable of uncaging their IR seeker heads increase the pre-launch field of view to 180 degrees, allowing them much more flexibility in firing them at a target. Aircraft able to uncage their IR seeker heads can also use those seeker heads as sort of a faux FLIR viewer, equal to one of one-half the capabilities of a normal FLIR viewer.

Laser Designator: This is a laser, normally with a beam which is not in the visible light spectrum, which is used to guide laser-guided weapons to their target. These weapons may be launched by the aircraft itself, or by other aircraft, or in some cases, helicopters or ground units. (Different weapons often require a laser designator with a different wavelength of light in order to avoid confusing the weapons. Some designators can be set to emit differing wavelengths of light by the pilot or weapons officer, depending upon the weapon being used. Ground-based weapons, helicopters, and aircraft rarely use the same wavelengths of lasers.)

Laser Spot Tracker: Not an actual designator, the laser spot designator allows the aircraft to sense the laser spot provided by another source, whether on the ground or on another aircraft or helicopter – and thus guide one of its laser-guided weapons to the target so designated.

Look-Down Radar: Normally, aircraft with radar have great difficulty picking out targets on the ground or near the ground – if the crew of an aircraft equipped with normal radar attempts to detect a ground target or target within 350 meters of the ground, the Difficulty level is two levels worse than normal (assuming the friendly aircraft is above or at the same altitude as the target). Aircraft equipped with look-down radar have special computer equipment that negates the ground clutter (radar returns from terrain); the crews of these aircraft do not have the Difficulty penalty mentioned above.

Magnetic Anomaly Detection (MAD): This is a device used by antisubmarine aircraft to detect submarines which are submerged. It does this by detecting the difference between the Earth’s natural magnetic field and the disturbance in it created by the submarine (essentially a large mass of metal with its own magnetic signature). The capabilities of MAD devices are highly classified, and I don’t know what their detection range is (or even a ballpark figure); if anyone knows anything unclassified about the capabilities of MAD (especially detection range underwater), please let me know.

Multitarget (x): Most aircraft able to lock on to enemy aircraft are only able to lock on to one such target at a time. Aircraft with multitarget capability may lock on to more than one target at the same time, or maintain lock-ons while gaining new lock-ons to other aircraft. They may have as many lock-ons as the number in parentheses beside the "Multitarget" listing, such as Multitarget (4), which means that the aircraft in question may lock on to up to four targets at a time. Such aircraft may also launch heat-seeking missiles at other targets (or the same target as they are locked on to), while maintaining their lock-ons. Normal aircraft cannot do this.

Radar Detector: This is a simple device, a step below an RWR, which simply detects the presence of enemy radars. They are generally paired with an ELINT suite.

Radio Detector: As with the radar detector above, this is a simple device which detects the presence of radio emissions within the range of frequencies desired by the operator. It is also generally paired with an ELINT suite.

Radio Jamming: This is basically the radio equivalent of ECM; it jams radio instead of radar frequencies. Early radar jammers were capable of jamming only a limited range of frequencies, and these often had to be set by hand by ground crews before the aircraft took off. Later radio jammers are capable of jamming a wider set of frequencies, and often these frequency sets can be changed or set while in flight by the pilot or electronic warfare officer. Radio jamming makes radio broadcasts within the jammed frequencies two levels more difficult to get through to the receiving party. If the aircraft crew is able to pick the frequencies it wishes to jam during flight, doing so is an AVG: Electronics or DIF: Intelligence task. Counter-jamming is also possible, in the same manner as ECCM.

RWR: RWR refers to a radar warning receiver. This is a device, usually distinguished by small antennas in blisters on an aircraft, which detects lock-ons by enemy aircraft and missile launches by enemy aircraft or SAMs, and (very) approximately what direction and distance from which they are coming. These devices are usually limited-range radar receivers, IR receivers, or radio interference detectors.

Satcom Radio: This is a radio equipped to use military and/or civilian satellites in order to receive and transmit virtually anywhere on the planet. It’s a setup which generally requires a great amount of power, which is why not every aircraft carries one. Most satcom radios are also secure radios.

Secure Radios: This is a feature which most modern aircraft (and military vehicles, for that matter) have – the ability to encrypt their transmissions so that the enemy will have quite a difficult time listening in. It is not foolproof, however, and depending upon the technology of the aircraft with secure radios, they offer a two to four-level Difficulty penalty to the enemy when trying to intercept the friendly aircraft’s transmissions.

Sonobuoys: A sonobuoy is basically a droppable sonar "pinger" – a device which contains a small sonar emitter which can be used to nail down the position of a submerged submarine. The sonobuoy also has a one-way radio which allows the aircraft which dropped it to listen in on those pings. Sonobuoys may float on the surface of the water, or may be given neutral buoyancy allowing them to float a given distance from the surface, with an antenna reel floating on the actual surface of the water.

Stealth: Stealth is a radar and infrared-defeating configuration for an aircraft. Stealth is generally accomplished by special shaping of an aircraft and the use of RAM (Radar-Absorbent Materials). The shaping in early stealth aircraft is generally done with faceting, where the aircraft’s fuselage is literally comprised of facets instead of being a smooth surface, such as on the F-117A Nighthawk. Later aircraft, such as the F/A-22 Raptor and B-2A use a shape which is comprised of smooth curves with little or no reflecting surfaces. In both cases, the stealth aircraft is devoid of external right-angled surfaces, since these reflect radar the most. Some aircraft, such as the B-1 Lancer, have some small amount of stealth characteristics, whether by accident of design or by early attempts at reducing radar signature.

Stealth characteristics against radar would be of little value if the aircraft could simply be easily picked up by infrared signatures. Therefore, stealth aircraft generally have devices and design features which cool the exhaust and leading edges of the aircraft (front of the wings, nose, intakes, control surfaces, etc.)

In the game entries on this site, stealth aircraft have the effects of their stealth configuration described in the body of the aircraft description. Of course, many or most aspects of stealth design are classified, and some guesses have to be made for game purposes.

Supercruise: The typical aircraft which is capable of supersonic or transonic flight must engage its afterburner to fly at such speeds. (An afterburner is a simple device added on to the rear of the engine which injects fuel into the exhaust of the engine, increasing thrust.) The problem with afterburners is that they consume a fantastic amount of fuel; aircraft which are flying at a Com Mov of more than 1700 at sea level or 915 at altitudes of 6000 meters (other altitudes may be extrapolated from these examples) must triple their fuel consumption when they are flying at such speeds. This works out to Tr Mov of 4900 and 4225, respectively.

Through a combination or more advanced engine design and aircraft design, supercruise-capable aircraft may break this rule to a certain extent; they are able to travel, depending upon their design, at anywhere from Mach 1 to their maximum speed without engaging their afterburner. Generally, most such aircraft are capable of Mach 1.5 or so without using their afterburner, and this is the standard supercruise figure I use in my pages. Aircraft capable of supercruising at more or less speed will be noted by the Tr Move and Com Mov figures, but are generally not explicitly stated as such.

Synthetic Aperture Radar (SAR): Normal radar works by using a quick pulse and waiting for its return to the radar receiver. This yields a position and some other information about the target, but not an extremely accurate picture (often, it is little more than a "blip" on the radar screen). SAR uses radar to make a long, detailed sweep of the target (long in this sense is perhaps 5-10 seconds) to create a radar return that is very detailed and yields comprehensive information about the target. Normally used in reconnaissance (because the best SAR can literally yield returns good enough for photographic-quality detail), it can also be used for pinpointing ground and air targets and gaining precise information about them. The use of SAR gives the radar operator, weapons operator, or pilot a two-level boost in his difficulty level for identifying ground targets, and a one-level boost for identifying airborne targets. The downside is that that the radar signals are one level easier to detect.

Target ID: This couples the radar, FLIR, and/or VAS to a computer which reads the shape, engine heat, radio signatures, heat signatures of the surface of the target, etc., to determine for the crew of the aircraft what kind of target he is facing, i.e. MiG-29 fighter, T-55 tanks, etc. For most aircraft, the Target ID is optimized for enemy aircraft, but some aircraft with look-down radar or designed for the ground attack role may also have their Target ID devices able to identify ground targets. The reading is generally no more than approximate – while the target ID device may identify the target as a MiG-29 Fulcrum, it can't normally tell if it is a Fulcrum-A, Fulcrum-B, Fulcrum-C, etc.

Terrain-Following Radar: Most aircraft require that their pilots fly them by the seat of their pants while at low altitude, a dangerous endeavor to say the least when in combat or rough terrain. Terrain-following radar, or TFR, is a specialized form of autopilot into which the pilot inputs a desired altitude above ground level (usually to a minimum of 15-45 meters, depending upon how advanced the TFR is), and a computer reads the TFR signals reflected from the ground and keeps the aircraft at that altitude above ground level, more or less, with the exception that the computer will not allow the crew to take so many Gs (whether negative or positive) that they greyout, redout, or pass out.

Track While Scan: Normally, when an aircraft is locked on to a target with its radar, it loses radar contact with all other targets. Aircraft which can track while scanning do not lose contact with other targets when their radar is locked on to a target.

Vectoring In Forward Flight (VIFF): Certain aircraft, such as the Harrier, have the ability to perform vertical or very short takeoffs and landings by vectoring the thrust of their engines through specially designed nozzles around the fuselage (or even the exhaust itself). However, some of these aircraft are also able to do this to a certain extent while in standard flight mode, giving them a slight advantage (and also disadvantages) in a dogfight. This is known as VIFFing. Aircraft able to VIFF may use their lift nozzles to push them into slightly tighter turns, jump up suddenly in altitude (or by inverting, drop suddenly down), jump sideways suddenly in the direction they are banked, or push their noses up or down slightly.

A "VIFF turn" allows the aircraft to increase their turn rate by 50%. Each turn of such VIFFing also decelerates the aircraft by 20%. A "VIFF Popup" (or Drop, if inverted) allows the aircraft to jump up by 50 meters (or drop the same amount) in one combat phase, even if in level flight. A VIFF popup decelerates the aircraft by 20%. A "VIFF Sidestep" requires the pilot to bank in the direction where he wants to slide; he may then use the nozzles to push the aircraft sideways by 50 meters in one combat phase. A VIFF Sidestep decelerates the aircraft by 30%. The pilot may pitch his nose up or down by up to 10 degrees in one combat phase with his nozzles, even while remaining in level flight; this is useful for quick shots at a target, but is a dangerous maneuver. A "VIFF Vertical Pitch" decelerates the aircraft by 20% per 10% of pitch, and has other negative effects (see next paragraph).

Most VIFF maneuvers require the pilot to make an AVG: Pilot (Fixed Wing) roll each combat phase he does such a maneuver. Normal failure at this roll means that the maneuver is not successful; Catastrophic Failure causes the pilot to lose control of his aircraft. Outstanding Success means that the deceleration normally required is cut in half. The VIFF Vertical Pitch maneuver is a special case; this is a DIF: Pilot (Fixed Wing) maneuver at a 10% pitch up or down, FOR if the aircraft is pitched 15-20%, and IMP if the aircraft is pitched at 21-25%. (Any more pitch causes the pilot to immediately make a second roll at a FOR skill level for control of his aircraft.) There is one more disadvantage to VIFFing – any heat-seeking missiles targeted at the VIFFing aircraft get a +2 to hit during that combat phase, and may break their normal rules with regards to angle-off (the angle from which they are normally required to approach an enemy aircraft in order to sense it); they will be able to sense the aircraft from any angle.