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The Republic of Singapore Air Force (RSAF)'s F-15SG Multi-role Aircraft

1. The RSAF's F-15SG is an all-weather multi-role fighter designed to achieve air superiority over the battlefield. It is the most advanced and technologically sophisticated variant of the F-15 aircraft built to date.

2. The F-15SG is equipped with the latest avionics, an integrated sensor suite and advanced weapons. This unique configuration provides the aircraft with exceptional situational awareness capabilities, enhanced air-to-air and self-defence capabilities, and outstanding survivability.

3. The state-of-the-art avionics, integrated sensor suite and advanced weapons for the F-15SG include:

   a. Active Electronically Scanned Array (AESA) Radar. The F-15SG is the first production F-15 aircraft to have an AESA radar with full air-to-air and air-to-ground capabilities. The AESA radar has an extended detection range, which allows the F-15SG to detect and engage targets before it is detected. In addition, the number of targets it can track and engage is also higher than most other fighter radars. And unlike mechanical radars that use moving flat-plate antennas, the AESA antenna comprises numerous small transmission/reception modules – each scanning a small fixed area. Hence, the AESA radar performance is far more reliable than the previous F-15 radars.

b. Electronic Optics (EO) Suite. The F-15SG EO suite consists of two pods, which allows for precise navigation and attack. The *Navigation Pod*, with the Terrain Following Radar (TFR) and Forward Looking Infra-Red (FLIR), enables the pilot to navigate the F-15SG at low altitudes at night, under varying weather conditions. The *3rd Generation SNIPER Targeting Pod*, with targeting FLIR, is for the sighting, tracking and ranging of a target. It has enhanced detection ranges over older generation targeting pods. It also has a laser spot tracker, which allows the F-15SG to deliver weapons on target with precise accuracy in day and night.

c. Weapons Payload. The F-15SG is able to carry a larger payload of weapons and fuel, giving it enhanced firepower and longer endurance for air defence and counter-air operations missions. It also has the ability to carry a large variety of both conventional and precision stand-off weapons, making it extremely versatile and lethal. The F-15SG has a maximum payload of 23,000lbs. This allows it to carry up to eight air-to-air missiles in an air-to-air configuration, and up to fifteen 500lbs bombs in an air-to-ground configuration. The aircraft is also armed with an internal General Dynamics M-61A1 20mm Gatling gun (installed in the right wing root), which can fire up to 4,000 or 6,000 rounds per minute.

4. Other F-15SG systems include:

a. Infra-Red Search and Track (IRST) System. The IRST system detects and tracks objects that emit IR radiation, such as jet aircraft and helicopters. Unlike radars, the IRST system does not give out any radiation on its own, making it undetectable. With IRST tracks, the F-15SG will be able to employ weapons without the need to operate the radar, hence greatly decreasing the probability of being detected.

b. Joint Helmet-Mounted Cueing System (JHMCS). With the JHMCS, the pilot needs only to point his head at the target, and weapons will be directed to where the pilot is looking, providing the pilot with “first-look, first-shoot” high off-boresight capabilities. JHMCS enables the pilot to accurately direct (cue) sensors and weapons against enemy aircraft while performing high-G aircraft manoeuvres. In addition, the pilot can view any desired data (airspeed, altitude, target range, etc) 'heads-up', eliminating the need to look into the cockpit during air combat.

c. AIM-9X. The AIM-9X is a supersonic, air-to-air, IR-guided missile which employs a passive IR target acquisition system to home in on IR emissions and to intercept and destroy enemy aircraft. The AIM-9X, coupled with JHMCS, allows the F-15SG pilot to attack and destroy any airborne enemy without having to manoeuvre the aircraft. The AIM-9X is an improved variant of the AIM-9M, with high off-boresight angle capability, improved IR counter-countermeasure robustness and missile manoeuvrability. The increased off-boresight acquisition angle and improved situational awareness result in enhanced lethality and survivability.

d. Electronic Warfare (EW) Suite. The F-15SG's EW suite is an integrated electronic support and countermeasures system that comprises a warning receiver, a radar jammer and a chaff/flare dispenser. The system can effectively detect, identify and counter threats posed by an enemy, thereby greatly enhancing its survivability.

e. Link-16 Fighter Data Link. The Link-16 Fighter Data Link allows the F-15SG to share target information with other aircraft, thus greatly enhancing situational awareness and information exchange. With enhanced battlefield awareness, the fighter can gain an upper hand in the fast paced air combat environment. The sharing of such information by air and ground forces also reduces dual targeting and redundant employment of weaponry.

5. Technical Specifications

Manufacturer	: Boeing
Engine	: Two General Electric F110-GE-129 engines
Combat Ceiling	: 65,000 ft
Wingspan	: 42.8 ft
Length	: 63.8 ft
Height	: 18.5 ft
Maximum Speed	: Mach 2.5 plus
Weapons	: M61 20mm cannon
	AIM-120 air-to-air missiles
	AIM-9X air-to-air missiles
	Maverick air-to-ground missiles
	Laser-guided bombs

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