ROOIVALK ATTACK HELICOPTER, SOUTH AFRICA



THE ROOIVALK IS A TWO SEAT, MISSILE ARMED ATTACK HELICOPTER FROM THE DENEL AVIATION DIVISION.

The Rooivalk is a latest generation attack helicopter from Denel Aviation of South Africa. The South African Air Force ordered 12 Rooivalk AH-2As, the first of which entered service in July 1999. The helicopters form part of No 16 Squadron at Bloemspruit Air Force Base (near Bloemfontein). The helicopters have been delivered but have not yet been fitted with the final weapons configuration - the Mokopa ZT-6 anti-tank missile. A production order for the Mokopa was placed in March 2004. It is envisaged that the Rooivalk will provide a key element in peacekeeping operations in which South Africa is increasingly involved. The helicopter is planned to achieve Initial Operating Capability (IOC) in late 2005.

The Malaysian Defence Force has plans to acquire Rooivalk helicopters when funding is available.

COCKPIT

The cockpits are in stepped tandem configuration. The Weapon Systems Officer (WSO) is seated in the front cockpit and the pilot is seated in the cockpit above and behind the WSO. The cockpits, which are fitted with crashworthy seats and are armour-protected, are equipped with hands on collective and stick (HOCAS) controls.

A Thales Avionics TopOwl helmet-mounted sight display (HMSD) provides the crew with a head-up display of information for nap-of-the-earth flight (NOE). TopOwl incorporates an integrated measurement system for directing an articulated weapon such as the cannon, or air-to-air missile seeker heads. It has an integrated Gen IV image intensifier and FLIR capability and provides transition from day to night use at the push of a button.

The Rooivalk has a crash-resistant structure and is designed for stealth with low radar, visual, infrared and acoustic signatures.

WEAPONS

The Rooivalk carries a comprehensive range of weaponry selected for the mission requirement, ranging from anti-armour and anti-helicopter missions to ground suppression and ferry missions. The aircraft can engage multiple targets at short and long range, utilising the nose-mounted cannon and a range of underwing-mounted munitions.

The 20mm F2 dual-feed gas-operated cannon fires high-speed (1,100m/s) ammunition at a firing rate of 740 rounds per minute. Two ammunition bins hold up to 700 rounds of ready-to-fire ammunition. The slew rate of the cannon is 90° per second. The cannon is chin mounted on the helicopter.

The Rooivalk is armed with the Mokopa long-range anti-armour missile developed by the Kentron Division of Denel. Mokopa has a semi-active laser seeker head and is equipped with a tandem warhead. Range is over 8.5km. Rooivalk can also fire Hellfire or HOT 3 missiles.

Rooivalk can carry four air-to-air missiles such as the Denel Aerospace Systems V3C Darter or MBDA (formerly Matra BAe Dynamics) Mistral. The V3C Darter has an infrared seeker and a helmet mounted sight for target designation. The Mistral, which has been selected by the South African Air Force, has an infrared seeker and range of to 6km.

Rooivalk is equipped to fire 70mm Folding Fin Aerial Rockets (FFAR) from the company Forges de Zeebrugge of Belgium with a range of warheads, selectable according to the type of targets being engaged.

COUNTERMEASURES

The Rooivalk's electronic warfare suite is the fully integrated Helicopter Electronic Warfare Selfprotection Suite (HEWSPS), incorporating radar warning, laser warning and countermeasures dispensing system. The system is flight line programmable and in-flight adaptable to match the threat library with the mission's area of operation

The radar warner features low effective radiated power (ERP)/Pulse Doppler radar detection beyond radar detection range, ultra broadband frequency coverage, high pulse density handling and internal instantaneous frequency measurement.

The laser warner provides broadband laser frequency coverage to detect and display rangefinding, designating and missile guidance laser threats.

The countermeasures dispensing system, which is operated in manual, semi-automatic or fully automatic mode is charged with chaff and flare cartridges.

FIRE CONTROL AND OBSERVATION

Target detection, acquisition and tracking are carried out using the nose mounted stabilised sight, TDATS. The TDATS sight is equipped with a low level television sensor, Forward Looking Infrared sensor (FLIR), autotracker, laser rangefinder and laser designator.

NAVIGATION AND COMMUNICATIONS

The Rooivalk is equipped with an advanced navigation suite including Doppler Radar Velocity Sensor, Thales Avionics eight-channel Global Positioning System, Heading Sensor Unit and an Air Data Unit.

The communications suite consists of two VHF/UHF transceivers with FM, AM and digital speech processing, one HF radio with frequency hopping and secure voice and data channels and an IFF transponder.

SPECIFICATIONS - ROOIVALK ATTACK HELICOPTER, SOUTH AFRICA

Missions	Anti-armour
	ground Suppression
	Anti-helicopter
	Ferry, Reconnaissance, Counter-insurgency
Armament	8 or 16 Anti-tank Missiles, 7" sal missile or hot 3
	Air-to-air missiles, infra-red guidance
	38 or 76 70 mm unguided rockets, variation of warheads
	20 millimetre F2 cannon high velocity ammunition (900 rounds)
sighting System	dual Helmet-mounted sight and Display, HMSD
	stabilised nose-mounted sight with FLIR, TV; laser rangefinder; laser designator; autotracking
Avionics	
fully integrated, dual redundant MIL-std 1553B-based avionics and weapons system, providing the following management features:	total mission modes
	target acquisition
	flight control
	health and usage monitoring
	Communications
	threat detection and control
	flight and fuel
Crew	Pilot, weapon systems Officer
Mass	

maximum take-off weight	8,750 kg
minimum operating weight	5,730 kg
maximum internal fuel	1,469 kg
Dimensions	
main rotor to tail rotor	18,732 mm
main rotor diameter	15,580 mm
overall height	5,187 mm
power plant	2 makila 1K2
twin engine, take-off rating	2,243 kW
single engine, super continence	1,660 kW
flight performance	
fast cruise speed	150 KTS
maximum sideways speed	+/- 50 KTS
maximum rate of climb, twin engine operation	2,620 ft/min
maximum rate of climb, single engine operation	1, 280 ft/min
maximum range, internal fuel	700 km
maximum range, external fuel	1 260 km
maximum hover ceiling (OGE) out of ground effect	17, 900 ft
maximum hover ceiling (IGE) in ground effect	19,200 ft
excess hover power margin oge sea level anti-tank mission	+/- 39%



The Rooivalk Combat Helicopter carries a comprehensive range of weaponry selected for the mission requirement.



Rooivalk firing a Kentron Mokopa anti-tank missile



Target detection, acquisition and tracking are carried out using the nose mounted stabilised sight, TDATS



The Rooivalk Attack Helicopter supports a diverse range of weaponry including missiles, rockets, cannon and machine guns.



The South African Air Force has already allocated \$137m for Rooivalk Attack Helicopter production.



The two centrally-mounted Multi-function Displays (MFDs) and Compact Display Unit (CDU) on the left hand side.