Technical Specifications

During 2010, a Task Team was established to investigate and recommend suitable equipment to replace the aging current equipment.

The Collieries Committee, in the following year, agreed to the task team's recommendations and approved the funding for the new equipment and on 29th of November 2011, the first order of R45 million for the large drill was placed. The total spend for both drills, rescue winder, capsule and probe camera amounted to R69 million.

Today, we are proud to showcase this equipment and thus reinforce our commitment to the safety of our employees and our preparedness for emergencies.

The components of the Rescue Drill Unit with its specifications are made up out of the following equipment

Schramm T130XD Rescue Hole Drill:

Pull Back capacity: 59 000kg; Mast: 15,24m length; 45˚ angle drilling
A 711mm Casing Advance System with Numa Superjaws bit.
The Standard Hole Diameter uses a 660mm Numa RC 210 Hammer bit.
3x Atlas Copco XRVS617 Compressors with output of 26.36 m^3 @ 25 bar.
1x Atlas Copco Booster Compressor with output of 145.44 m^3 @ 69 bar.
Schramm Load Safe with Automated pipe handler to lift rod into Drill with Hydraulic roll on/off of pipe to rack.

Schramm T685WS Probe Hole Drill:

Pull Back force: 42 500kg; Mast: 9,144m length; 45˚ angle drilling
KL Rod Handling System with pipe rack.
The standard hole diameter is 165mm using Reverse Circulation technology.

Floxal Nitrogen Plant:

AMSA - Air Liquide Nitrogen Generator with flow rate of 1800 Nm^3 per hour at 9 bar.
15 x 12" Membranes, 700K Hollow Polymeric Fibres and Nitrogen extraction through permutation produces 97% purity.

CIS Compressor Trailer:

3x GA250 Air cooled Screw Compressors with power consumption of 500kW each.
Output: 1798 Nm^3 per hour each @ 12.5 bar.

Cummins Generator:

Cummins KTA50-G8 V16 Diesel engine.
Fuel consumption @ 75% load is 200lt/hr.
Alternator: Stamford P1734C1 with prime rating at 1120kW/1400kVA, 400VAC and standby rating at 1200kW/1500kVA..

Mobile Rescue Winder:

13mm Non-spin rope at 1300m length of wind and maximum weight of 1500kg operating at a maximum speed of 0.5m / sec.
Full Hydraulic operation with Perkins 4-cylinder back-up motor.
Capsule weight : 600kg

Gas Chromatograph & Bore-hole Camera:

Fully portable 3 Channel Varian CP 4100 measures O_2, N, N_2, CO, CO_2, CH_4, C_2H_4, C_2H_6, H_2
500m Waterproof Umbilical Cord bore-hole camera that handles up to 6 bar water pressure.
360˚ Pan and Image record facility.

Chamber of Mines of South Africa

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RESCUE DRILL UNIT

Mining has and always will be a dangerous profession.

Mining accidents are generally caused by explosions, fires or collapse of support structures. Any of these can result in miners being trapped because of blocked escape routes.

Some of the Largest Mining Disasters

1. China, 26 April 1942: Gas and coal dust explosion - 1549 died
2. Courrières, France, 10 March 1906: Coal dust explosion - 1099 died
3. Mitsui Miike Coal Mine, Japan, 9 November 1963: Explosion - 458 died
4. Senghenydd, Wales, 14 October 1913: Coal dust explosion - 439 died
5. **Clydesdale Colliery at Coalbrook, South Africa, 21 January 1960: Fall of ground and gas poisoning - 435 died.**

   This was the worst mining disaster in the South African Mining History. None of the bodies entombed underground could be recovered. The reason for this was that none of the drilling machines available at the time were capable of drilling holes large enough to give rescue workers access to the site for the retrieval of the bodies. This incident was the catalyst that urged the Chamber of Mines to purchase a suitable drill for similar rescue situations.

DIGGING DEEP: A drill being erected near Clydesdale Colliery, near Vereeniging, in the middle of a maize field, above where it was thought 435 miners were trapped in January 1960
Picture: SUNDAY TIMES ARCHIVE

6. Wankie, Zimbabwe, 6 June 1972: Coal dust explosion - 427 died
7. Dhanbad, India, 28 May 1965: Coal mine fire - 375 died
8. Chasnala, India, 27 December 1975: Coal mine explosion and flooding - 372 died
9. Barnsley, United Kingdom, 12 December 1866: Explosion - 361 died
10. Monongah, United States of America, 6 December 1907: Explosion - 360 died

The Road to Fast Rescue

Following South Africa's worst coal mine disaster at Coalbrook Colliery in January 1960, the mining industry realised the need to develop a drill capable of boring a hole from surface down into a mine, in order to rescue trapped miners.

This objective was realised in 1977 when Ingesoll-Rand built the worlds fastest rescue drill for South Africa and the Rescue Drill Unit (T5) became operational. Since then the Rescue Drill Unit, situated at Colliery Training College, Emalahleni, has been at the ready in the event of an emergency. The unit is on 24 hour standby and is responsible for assistance and rescue in the case of a mine accident due to fire, roof collapse, explosion, etc. Continued training and development ensures fast and efficient rescue missions.

Important Rescues Conducted

- ◊ 1981/1982: The RDU Equipment was used in police work to search and recover bodies disposed of in a mine shaft and the RDU T4 was required to assist with fire fighting on a coal mine in the Utrecht area.
- ◊ Usutu Colliery, 6-11 November 1984: Methane explosion - the RDU were used to drill a large diameter hole to re-establish ventilation and to purge the mine of methane.
- ◊ **Emaswati Coal Mine, Mpaka, Swaziland, 9 June 1991: Roof collapse**

  When 26 miners were trapped at a depth of 62 m below ground because of a collapsed roof in the Emaswati Coal Mine, a request was issued to the South African Chamber of Mines for assistance. The Ingersoll-Rand

  Rescue Drill (T5)was deployed. This was the first rescue of its kind in Southern Africa. It was also the largest number of men to ever be rescued through a hole in this manner.
- ◊ Ogies, 1992: The RDU T4 was used to drill survey holes into the strategic oil reserve containers in old coal mines.
- ◊ Gloria Coal Mine, 1994: RDU drilled successfully to a depth of 171m during a rescue operation when 33 workers were trapped underground.
- ◊ Matla Mine, 2003: The RDU T5 drilled a rescue hole for divers to search for and recover the body of a CM Operator that drowned when his CM breached an underground dam.

International Assistance

San Jose' Copper-Gold Mine, 5 August—13 October 2010:

South Africa assisted in the development of a rescue plan to rescue and recovery of 33 miners trapped 700m underground for 69 days.

Rescue mission: Workers raise the capsule, which will bring the trapped miners to the surface (Picture: AFP/Getty)