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PRESS RELEASE

**Saving the SANDF Money and
Extending Equipment Life
M5 Mortar Airlift Equipment**

Background

The 120 mm M5 heavy mortar is the primary long-range, indirect fire, artillery weapon for the Light Regiment of the South African Army Artillery Corps. This tried and trusted mortar is capable of firing a range of explosive, smoke, and illumination rounds over considerable distances. The M5 mortar has been in service with the SA Army for many years and has seen extensive combat service.

The Light Regiment deploys the M5 with a crew of four members per mortar system, together with the laying equipment (sighting system), containers for the equipment and accessories, camouflage nets, and ammunition.

This considerable mass requires air lift deployment by the Oryx Medium Transport Helicopter, using specially designed and manufactured airlift equipment.

Airlift Equipment

The airlift equipment comprises two self-contained kits – a 1 500 kg capacity cargo net and a larger 2 000 kg capacity cargo net. Each kit comprises a 5 000 kg lifting sling, a cargo net, and protective equipment for a handler (gloves, goggles, and ear protection), all of which are carried in a special bag. To prevent tampering, once the equipment is inspected and certified, the carrying bag is sealed and a reference tag and log card are attached.

The South African Air Force requires that all lifting equipment used with a helicopter must be annually certified as being safe and the equipment log card must be inspected by the pilot before lifting commences. In addition to annual certification, according to the OEM's recommendations the slings and cargo nets must be replaced every 10 years.



The M5 mortar in action



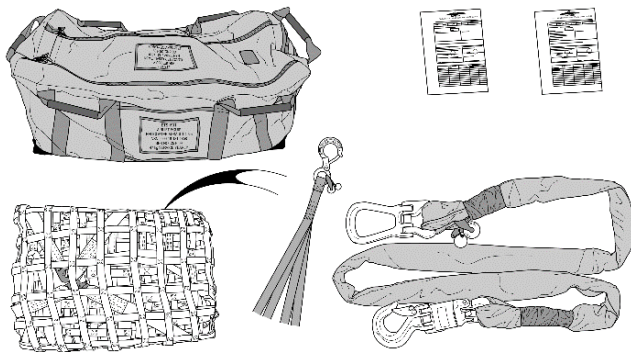
An Oryx preparing to lift an M5 mortar load

Life Extension

To inspect and replace the equipment manufactured in 2009, in 2019 Armscor awarded the repair and maintenance contract for the airlift equipment to Sigma Logistic Solutions. To save costs, the replacement contract requires the reuse of the metal fixtures salvaged from the existing equipment. These are removed during the destruction process and are examined, crack tested and recertified as being safe for use.

To maintain force capability, a phased approach was employed where some equipment remained in service while others were withdrawn from service for destruction and replacement. During the examination and disassembly of the equipment, Sigma personnel identified that most of the equipment was actually still in very good condition. Some of it had in fact, never been used. Sigma then proposed that the Army could extend the life of the 2009 lifting slings and cargo nets if samples of the existing equipment could be laboratory tested and recertified. This would provide additional capability as more equipment would be serviceable thereby increasing the capacity for training, local deployment and overseas deployment.

Sigma's Project Manager approached the OEM - Avilog, Armscor, Armscor QA, and the end-user with the proposal; which was enthusiastically received. A feasibility study was then drawn-up, together with a plan to test to destruction one sling and one of each net, so that the OEM could certify that the remaining equipment was still safe for use. The lab-approved recertification would also approve the equipment as being safe for use for a further two years, after which the process would be repeated every two years, in addition to the annual inspection and servicing.



*Above: The M5 mortar airlift equipment as shown in the Operator and Maintenance Manual
Right: The sling, cargo net and load under an Oryx*



Laboratory Testing

All the slings and nets were thoroughly examined and any unserviceable ones were rejected. Test subjects with up-to-date documentation were then selected and tested at the accredited Denel Dynamics testing laboratory. Both cargo nets were tested according to a documented procedure and passed achieving a safety load factor of 4:1, meaning that the equipment could safely carry 4 x its rated load. The sling which was rated at 5 000 kg was tested in a similar manner and achieved a safety rating of 7:1.

Conclusion

The main objective of the testing and recertification of the equipment was to prove that the equipment manufactured in 2009 was still serviceable and safe for use. This was proven, thereby saving the cost of destroying and replacing all of the equipment. Although there is a cost to the mandatory annual inspection, when this is compared to the replacement cost, the cost saving is in the region of 92%.

As there are a large number of slings and nets in service, the testing and recertification process can be repeated multiple times until a full replacement is necessary due to attrition or serviceable stock levels. Extending the shelf-life of the equipment means that both the end-user and the tax-payer save money, and the end-user gains additional capacity in terms of the quantity of serviceable equipment, without compromising safety in any way – a win-win situation for both parties.