TEST CERTIFICATE : ROCPROPS MK1, MK2, MK3

TEST OF FIVE MK2 RP1820E ROCPROPS

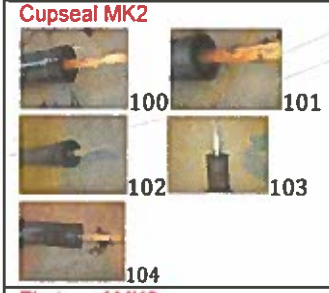
Date of Test: 13/06/2016

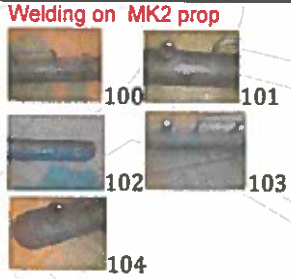
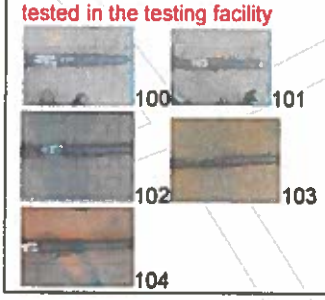
SUBMITTED TO

Anglo Gold Ashanti, Sibanya, Goldfields

INTRODUCTION

We have a rigorous testing program that is based on the statistical selection of products (Project number: SIM04 02 05) that are produced and tested in our testing facility. The Load Deformation graph for the test include a portion of Static behavior of each product being tested in the facility for every 10 products a standard deviation graph is included. Furthermore before the testing is done the product is taken apart and thoroughly checked according to the specifications (also listed below in document) to ensure that there are no deviations or damage to the individual components of the product.

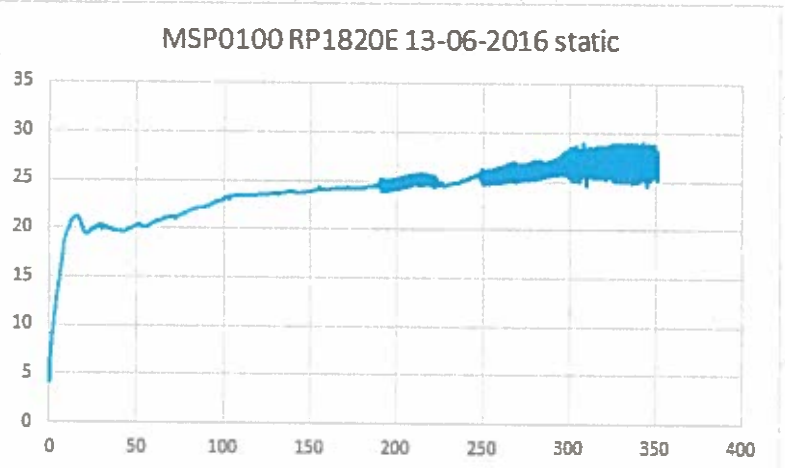
Photos	Description	Specification	Comment
Cupseal MK2 	When product was taken apart, cup seals was measured to see if they were up to spec and see if while assembled they did not get damaged and that the welding on endplate is sufficient	Tears, Surface finish O/D top – min 76.5mm-max 77.5mm O/D bottom - min 78.5mm – max 79.5mm Height –44.5mm	Everything is in spec and no damage was found
Flaring of MK2 	Flaring was then tested with a tool that measures the depth and the inside diameter of the tube. As well the wall thickness of the tube.	Checked with cone gauge to ensure that depth and inside diameter is correct.	Flaring was checked and was correct
Cone on MK 2 prop 	The cone was checked to see if it was according to specifications and if there was no deviations.	Correct height Wall thickness Mk2 min 6.75mm – max 7.15mm O/D &I/D of cone Mk2 – i/d min 78.5mm – max 79.5mm, o/d min 92.3mm max 93.3mm Inside teeth: Teeth "v" shaped; wall thickness with teeth – min6.75mm max7.15mm	Cone was found to be in spec.

Welding on MK2 prop 	The dome area, nozzle and handle was checked to see welding was correct and to check if handle and nozzle positioning is correct.	Welding Mk2 prop on dome, nozzle and handles are sufficient. I/D of nozzle min 16.0 max 16.1mm Lip min 6.5mm max 7.5mm	Welding was found to be sufficient
MK2 prop after it was static tested in the testing facility 	The complete yield of the props was between 300mm and 400mm	The products tested conformed to the original specifications as per design and deforms under load specifications in the testing procedure.	Prop was yielded between 300mm and 400mm

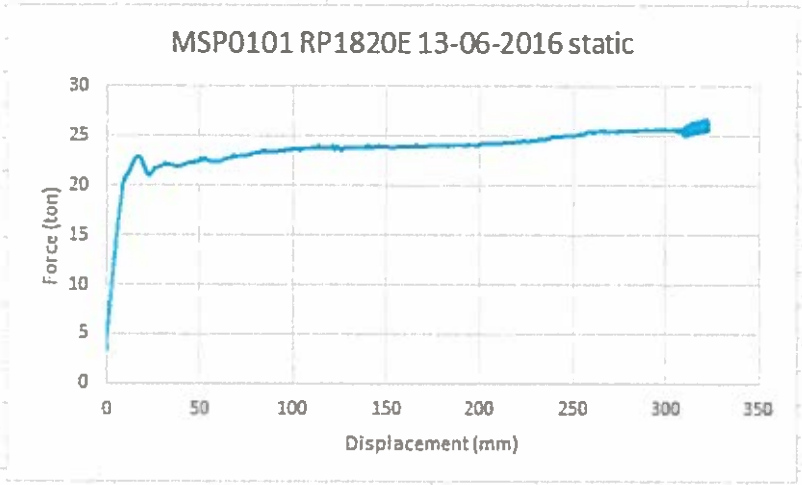
Material tensile test results

Test	Cone (mm)	Tube material certificate	YS (MPA) 0.2%	TS (MPA)	Yield/ Tensile ratio	EL 5.65*/A %
MSP0100	6.94; 6.92 7.14; 6.96	HC12721	287	423	0.68	30
MSP0101	7.12; 6.86 7.12; 6.96	HC12721	287	423	0.68	30
MSP0102	6.82; 6.79 6.91;6.96	HC12721	287	423	0.68	30
MSP0103	6.94; 6.88 6.78;7.02	HC12721	287	423	0.68	30
MSP0104	6.77; 6.89; 6.92; 6.78	HC12721	287	423	0.68	30

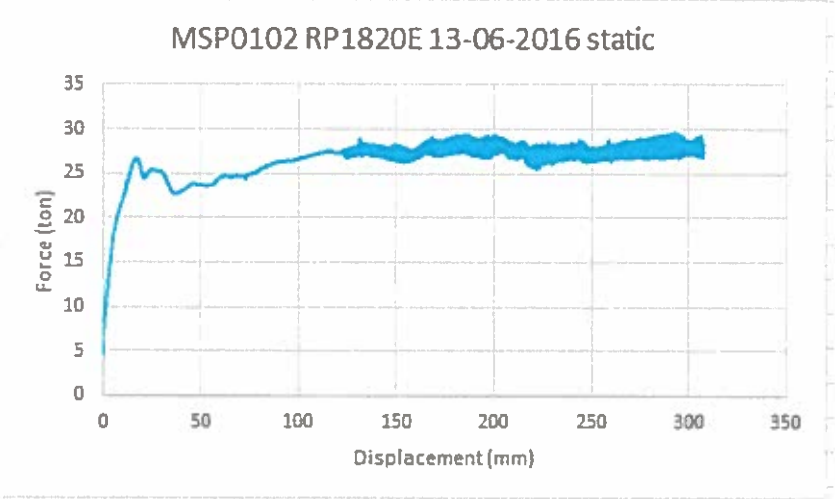
Test 1



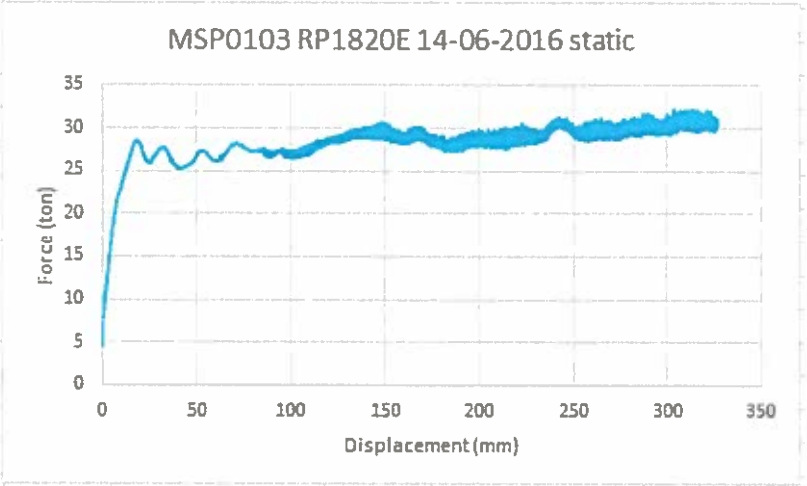
Test 2



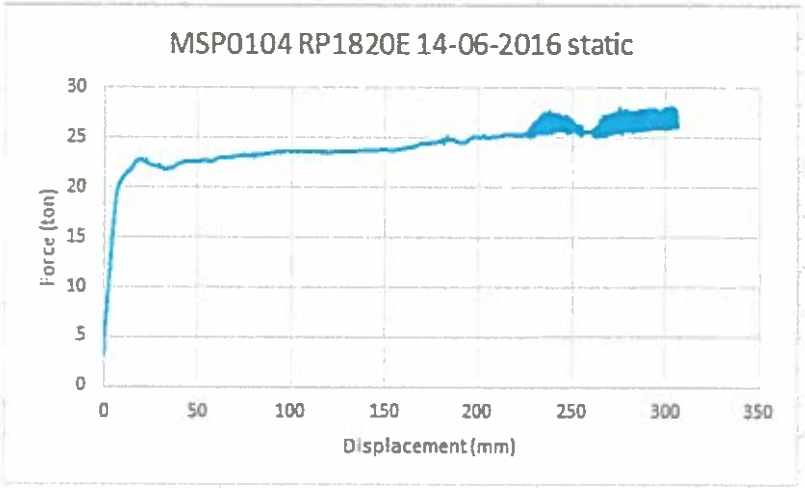
Test 3



Test 4



Test 5



Conclusion

As stated in above document the individual components of the product/products were measured and checked to see if they were to specifications and there's no deviations found, after the complete product was then installed into the testing machine and was tested according to testing procedures.
The products tested conformed to the original specifications as per design and deforms under load specifications in the testing procedure.

Testing Officer.....H Els

R&D Engineer.....C Nissen

Only the original signed report must be Regarded as the official document.