

**REPUBLIC OF SOUTH AFRICA
DEPARTMENT OF MINERAL RESOURCES
EXAMINATION FOR THE MINE SURVEYORS CERTIFICATE OF COMPETENCY**

DATE: 15th October 2010
TIME: 12:30 to 15:30 (3 Hours)

TOTAL MARKS: 100
TO PASS: 50

SURVEY III

- Note:**
- (1) Work to 1 second of arc and 0,001m.
 - (2) Trigonometrical functions must be shown to six (6) decimal places.
 - (3) **All steps and checks** must be shown.
 - (4) **All calculations and answers** to be **shown clearly**.
 - (5) Sketches have been reduced and are not to scale and attached herewith.
 - (6) The make and model number of your calculator **must** be written on the front cover of your answer book.

The attached plan indicated an ore reserve area A, B, C, D, E, F and A.

Calculate the amount of reef tons containing in the area ABCDEF and A after a 15,0m boundary pillar was left and a Density of 2,78 t/m³ is used.

<u>Point</u>	<u>Y Co ordinate (m)</u>	<u>X Co ordinate (m)</u>	<u>Collar Elevation (m)</u>	<u>Depth of reef below collar (m)</u>
Trig 1	+395,765	+2 060,780		
Trig 2	-3 340,752	+888,150		
Trig 3	-148,813	-984,083		
ARN 1	+3 592,501	+2 649,136	+1 556,230	500,000
ARN 2	-1 770,959	+1 491,917	+1 600,849	680,000
ARN 3	-744,555	+5 305,709	+1 539,632	1 000,000

<u>Point</u>	<u>Clockwise Angle</u>	<u>Distance – Cape feet</u>
A	154:15:12	A – B = 9 650,212
B	137:34:51	B – C = 7 814,754
C	139:30:36	C – D = 10 354,433
D	89:54:09	D – E = 19 030,792
E	128:00:46	E – F = 16 035,574
F	70:44:27	F – A = 15 023,288
B-A - TRIG 3	93:10:09	

Conversion factor: Metres to Cape Feet = 3,17606

Geological core information:

<u>Borehole</u>	<u>Reef width (Based on core)</u> <u>(m)</u>
ARN 1	0,250
ARN 2	0,368
ARN 3	0,198

All three boreholes were drilled vertically, but the borehole survey indicates that borehole ARN 3 had a vertical deviation of 6 degrees from the vertical in a true direction of 95:00:00.

Set up at Point A:

Horizontal angle: Trig 1 – A – Trig 3 = 153:05:27

Horizontal angle: Trig 3 – A – Trig 2 = 098:48:18

Horizontal angle: Trig 1 – A – Trig 2 = 108:06:15

[100 marks]

DEPARTMENT OF MINERAL RESOURCES
MINE SURVEYORS CERTIFICATE OF COMPETENCY
SURVEY III - 15 OCTOBER 2010

