

## CONTENT GUIDE FOR EOSC118

### The Platinum and Palladium Resources of the Bushveld Complex

Cawthorn, R.G. (1999). *South African Journal of Science*, Vol. 95, pp 481-489.

This 9-page document reviews the unique geological setting of the Bushveld Complex and its ore deposits which supply the world with most of its PGEs. We'll read select section of the article, as outlined below.

Use the discussion board on Connect to pose questions, since questions that you have are probably being thought by another one of your fellow students.

**Use the following questions outlined by section to help you through the article:**

#### Abstract

1. What are the three main ore bodies? Platreef, Merensky Reef, the Upper Group 2 (UG2)
2. What are the surface extents of these three bodies? UG2 - 300km  
Platreef - 30km
3. How deep are the mines so far at Bushveld? 1200m
4. How many years does Cawthorn believe the complex can supply the worlds' PGEs? 40y

#### Introduction (pp 481-482)

1. What year did mining operations begin on the Bushveld? 1924, Sept
2. Prior to the dominance of PGEs from Bushveld, where were the PGEs sourced? Russia and Columbia, and as a by-product from nickel mining at Sudbury in Canada.
3. Although there are 6 PGEs only Pt and Pd are usually discussed, why? Merensky
4. Which of the three ore bodies is most rich in Pt? most abundantly in deposits (others are byproducts)

#### Formation of the Bushveld Complex and its layering (pp 482-483)

1. What is the areal extent of the complex? 65000km
  2. How thick does the complex get? 7km
  3. According to Figure 3, how thick are the PGE-bearing ore bodies? less than 1m?
  4. Comparing the thickness of the ore bodies to the thickness of the complex, what percent of the complex is ore?
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### Response to platinum demand (p 487)

1. What did Merensky think about overproduction of the PGE deposits?
2. What actually happened when production started at the Bushveld?
3. What advantage did the Bushveld have over other PGE producing mines?

decrease the price

decrease in price

PGM is byproduct

### Future potential (pp 487-488)

1. What mining technology (and from where) will help to continue mining in the future?

adapting the knowledge from deep gold mining on the gold-bearing Witwatersrand mines - Being regular, gently dipping, tabular bodies, with minimal faulting

### Deposits elsewhere in the world (pp 488-489)

550km

1. What is the strike length of the Great Dyke in Zimbabwe?
2. Which deposit is most similar to the Bushveld and where is it located?
3. What is the primary commodity of the Voisey's Bay deposit in Labrador?

Talnakh deposit - Russia

nickel

### Summary (p 489)

1. Why do the current tallies underestimate the Pt and Pd contained in the Bushveld?
2. Based on the information given, do you expect the Bushveld complex to become an area filled with mining ghost towns?

excludes areas where drilling density is too low

ghost, if given a few hundred years