

Gold Mining In South Africa

TEACHER VERSION

An interview with Graeme Malcolm, mining for gold and diamonds in South Africa.

GLOSSARY

miner	person who works in a mine
dealings	contact
vacation	holiday
to get something into your blood	to become very interested in something
preferred course	major (U.S./U.K.), principal course of study
challenging	stimulating
stressful	to cause tension
confined spaces	areas of limited dimensions
rewarding	fulfilling, satisfying
to do sthg profitably	to make money from sthg
sedimentary deposit	horizontal layer of mineral
“ja”	yes (Afrikaans)
ore	earth rich in minerals for which it can be mined (ie, iron ore)
to be spread	to be extended, scattered
reef	mineral lode or vein
stopping width	workable width of mineral reef or lode
payable reef	reef rich enough to be mined profitably
workforce	workers, labourers
to recall sthg	to remember sthg
production shaft	inclined or vertical opening used to access minerals
shallow	not deep
“literally translated”	exact meaning in another language
to impress	to produce a vivid memory
alluvial form	soil type produced by deposits from water
rugged	wild
earth moving machinery	machines that move earth, bulldozers
to expose	to uncover
bedrock	layer of solid rock underneath soil
to sweep	to brush
to keep sthg at bay	to repel sthg

COMPREHENSION EXERCISE

Part 1:

Listen for the following figures and names. In what context are they mentioned?

Example: miner – Graeme is a miner.

1. 1970
2. Kalgoorlie
3. 7 or 8 weeks
4. civil engineering
5. 3500
6. 80 or 85
7. South Africa
8. Harmony Gold Mining Company
9. 1979
10. 32,000
11. 25 – 26,000
12. 6
13. 1100
14. 2700
15. Oranjemund
16. beach

Part 2:

Listen again and answer the following questions:

17. Why did Graeme go to Kalgoorlie?
18. What does he say about the people who work in mining?
19. Why is it a “totally different unique” environment?
20. Complete the following: “I don’t think you can say who are the best miners, because mining is based on _____ which is the start of it all. And each geological structure where a mine may be, has its _____”
21. What countries does he mention that have large mining industries?
22. Why is “everything in South Africa” very, very large?
23. Read the following extract and try to put the verbs in brackets into the right form. Then listen to check: “The geological structure that the gold _____ (find) in there is a very, very old sedimentary deposit. So it’s a very thin ore body and it can be very flat, so _____ (spread) over a massive area, at depth and the reef there is very thin. When I was there we _____ (mine) in some places down as low as 80 or 85 cm stoping width, so to actually get in there and get the payable reef out presents problems.”
24. Why is the workforce there in (in South Africa) very large?
25. In what other areas are there large numbers of people underground?
26. Why did Graeme go to South Africa?
27. Describe the Harmony Gold Mining Company.
28. Graeme was working in gold mining. What other types of mining does he mention?
29. Where is Oranjemund?

30. Complete the following extract: "So these people were, in fact, literally moving onto the _____ with very heavy earth moving machinery, moving the _____, the _____, out to _____, maybe between _____ and _____ metres, exposing the bedrock under the _____ on the _____... and picking up all the _____ that were there as an alluvial deposit underneath the _____."

COMPREHENSION EXERCISE ANSWERS:

1. His first dealings with mining were in 1970.

2. He went to Kalgoorlie during summer vacation to work.
3. He had a job on a mine for 7 or 8 weeks.
4. His original preferred course was civil engineering, he then changed to mining engineering.
5. He has worked up to 3500 metres underground.
6. The ore body (stopping width) was as little as 80 or 85 centimetres wide.
7. Everything (related to mining) in South Africa is very large.
8. The company he worked for was called the Harmony Gold Mining Company.
9. He arrived in South Africa in 1979.
10. There were 32,000 employees.
11. There were 25 – 26,000 workers employed underground.
12. There were 6 production shafts.
13. The shallowest shaft was 1100 metres deep.
14. The deepest shaft was 2700 metres deep.
15. He went to see a diamond mine at Oranjemund.
16. The diamonds were on the beach.

17. To work during summer vacation.
18. The people who work in mining are interesting, likeable and easy to get to know.
19. It's a "totally different unique" environment because they use very large machinery, in confined spaces, at great depths underground.
20. Complete the following: "I don't think you can say who are the best miners, because mining is based on geology which is the start of it all. And each geological structure where a mine may be, has its own difficulties".
21. Canada, the U.S.A., Australia, Europe and South Africa.
22. Due to the geology.
23. "The geological structure that the gold is found (find) in there is a very, very old sedimentary deposit. So it's a very thin ore body and it can be very flat, so it's spread (spread) over a massive area, at depth and the reef there is very thin. When I was there we were mining (mine) in some places down as low as 80 or 85 cm stopping width, so to actually get in there and get the payable reef out presents problems."
24. The geology makes it difficult to use large machinery, so they rely on workers.
25. India, China and a lot of other third world countries.
26. The South African mining industry is one of the biggest in the world and he had a fascination with Africa as a child.
27. The Harmony Gold Mining Company is a very large company in the Free State, on a very large property.
28. Diamond and uranium mining.
29. Oranjemund is on the mouth of the Orange River, on the coastal border of South Africa and Namibia.
30. "So these people were, in fact, literally moving onto the beaches with very heavy earth moving machinery, moving the beaches, the sand beaches, out to sea, maybe between 50 and 100 metres, exposing the bedrock under the sand on the beaches... and picking up all the diamonds that were there as an alluvial deposit underneath the beach sand."

LESSON PLAN

1. What things are mined? Eg. Gold, silver, coal, uranium, diamonds, etc. Which of these are found in students' home countries? Why? Students give their impressions of modern-day mining techniques and how they

might vary from country to country eg. Brazil to Canada. Why would techniques vary?

2. Read through part 1 of the listening. Listen and student write down as many details about the facts and figures mentioned as possible. Compare answers. Repeat.
3. Read through part 2 of the listening. Where there are gaps to be filled in (Qs 20 & 30) students can try and predict them. In Q 23, students should try to put the verbs into the correct tense before listening. Repeat the listening. Check answers and repeat, pausing if / where necessary.
4. Graeme talks about the importance of geology to mining practices. Geography is something that has an important impact on the development of a country.
 - a) Students should now describe their own countries (or a country they know well) in terms of geography. To do this they should first draw an outline of their own country and mark in the key cities. Then talk about (and mark on the map) other key features such as: mountains and valleys (highlands and lowlands), forest/wood areas, jungles, rivers, lakes and other important water sources, desert areas, agricultural areas, industrialised areas, islands, states boundaries. Talk about major natural features (eg. the highest mountain, an outstanding waterfall, coral reefs). Talk about the climate in general, also how it varies from one area to another and from one season to another. Encourage students to ask each other questions if they are of different nationalities.
 - b) How has the above affected the country in terms of economy, lifestyle and the standard of living of the people? What aspects of the above do students particularly like or dislike about their country? What are they proudest of? What would they change if they could control the weather?

TRANSCRIPTION

BC How did you become a miner? What got you interested to start with, in mining, as a career?

Graeme I guess the first dealings I had in mining were in around about 1970 or 71, when I went to Kalgoorlie during a summer vacation and went there to work, and just happened to get a job on a mine there, and I was there for 7 or 8 weeks, and I guess something got in my blood and created an interest, and when I went back to Melbourne after working through the vacation, I changed my preferred course from Civil Engineering to Mining Engineering and have been with it ever since.

BC What do you like about mining?

Graeme It's different, it's very challenging. It's... the people that work in it are very interesting, very likeable, very easy to get to know, very good to work with. And technically it can be very challenging.

BC In what way?

Graeme The two things are managing people in difficult situations, because mining underground can be a particularly stressful situation, and it's a totally different unique environment for people to work in. It's usually very, very large machinery, in fairly confined spaces so it has some technical and management type difficulties. So dealing with people in that situation has its challenges and can be very difficult at times, but also very rewarding, and technically it's... technically it just is a very difficult situation to be at depth, underground, and I've worked up to 3,500 metres underground, so there is an awful lot of technical issues associated with actually working down there, and doing it profitably at the end of the day which is, what it's all about really.

BC Now mining is perhaps one of the older professions around. Who are the best miners in the world? Who are using the most interesting techniques, or most advanced techniques?

Graeme Ja, I don't think you can say who are the best miners, because mining is based on geology, which is the start of it all. And each geological structure where a mine may be, has its own difficulties. Each mining site has to deal with those difficulties on an individual basis. There are countries right across the world which have very large mining industries; Canada, the U.S.A., Australia, South Africa, Europe... And I don't think you can say who are the best, because each of them have their own... difficulties, each of them have their own... cultural difficulties with the people that work there. Everything in South Africa, is very, very large, particularly the gold mines, and that's a reflection on the part... on the geology. The geological structure that the gold is found in there is a very, very old sedimentary deposit so it's a very thin ore body and it can be very flat, so it's spread over a massive area, at depth, and the reef there is very thin. When I was there we were mining in some places down as low as 80 or 85 centimetres stoping width, so to actually get in there and get the payable reef out presents problems. A very large workforce there because of the manual... the necessity for manual work, very difficult to get large mining machinery into such small stoping areas, so the necessity for a very large number of people underground remains there. That is not unique to South Africa. The mining industry in India and China and a lot of the other third world countries still is very labour intensive, so there is still a large number of people who actually go and work in the mines. It's a little different in Australia and the States and Canada, and other first world countries, if you want to call them that, where they've developed, and have been able to develop because of the geological structures there, they've developed very, very large openings underground, so they can utilise very large mining machinery, and the labour force is not necessarily so big.

BC You trained in Australia, but then you went on to South Africa. Why did you choose South Africa?

Graeme Primarily because the mining industry there is recognised as one of the bigger mining sectors in the world. They have very, very deep mines there, and very large mines, and I'd always had a fascination with Africa as a young child for some reason, which I can't recall. So it just seemed to be a logical first step.

BC What sort of things did you see there in South Africa that the average person would never get to see?

Graeme The company I was working for was a company called Harmony Gold Mining Company, which is in the Free State, and a very large property and very large company. When I arrived there in 1979, there were 32,000 employees, of which about 25 or 26,000 were employed in an underground situation. It was, as I said, a very big property with 6 production shafts, ranging from the shallow end of the property in the south end, the shaft there was about eleven hundred metres deep, going up to the north of the property where the mining was taking place at around twenty seven hundred metres deep. It's fairly unique in terms of a working environment at those sort of depths underground. As I moved through the company there and eventually became part of the management structure, as a manager we used to travel considerably, looking at other mines and other mining operations. A lot of other diamond mines, a lot of gold mines, a lot of uranium mines at that time, in South Africa. Probably one of the most interesting, and certainly different from anything I had seen at the time, was a diamond mine on the west coast of South Africa at a place just near Oranjemund, which is the border, the northern border between what was then called South West Africa, is now Namibia, and South Africa...

BC How do you spell the name of that town?

Graeme Oranjemund would be O-R-A-N-J-E-M-U-N-D, and literally translated means, from Afrikaans, means... orange mouth and it is in fact the situation of the mouth of the Orange River.

BC What did you see there that impressed you?

Graeme The type of mining they were doing there was completely... unique. They were mining diamonds, and diamonds in an alluvial form not in a pipe-type form which is underground mining. The diamonds there in their alluvial form had deposited themselves on the beach front, and on the west coast of Africa there it's fairly rugged. So these people were in fact, literally moving onto the beaches with very heavy earth moving machinery, moving the beaches, the sand beaches, out to sea, maybe between 50 and 100 metres, exposing the bedrock under the sand on the beaches, and quite literally sweeping the bedrock and picking up all the diamonds that were there as an alluvial deposit underneath the beach sand.

BC It must have been a massive job to try and control the sea.

Graeme Yes, an extraordinary situation where they literally did move the beach 100 metres and kept the sea at bay for the time it took them to get in and sweep a section of the bedrock there.