

Talk by Gregg Jilson On Proposed Property Exploration Programme

I'm going to talk about the regional exploration, outside of the mine. Particularly, I'm going to talk about an area that's called the Swim Basin in an area northwest of Faro. But first I'd like to start with a little bit of background on the exploration model for the district because I will be making reference to a lot of this lingo that may not make sense if I don't explain it to you first.

The ore bodies in the Anvil range are stratiform deposits. What I mean by that is they are bedded deposits that were laid down at the same time as the sediments that host them. They were deposited from springs that flowed up along submarine fault zones and they are about 500 million years old.

This is a stratigraphic column through the rocks of the district. There are three major formations: the Mount Mye formation, the Vangorda formation and the Menzie Creek formation.

The Mount Mye formation is derived from shales and now consists of non-calcareous phyllites and schists with some important marble horizons and some carbonaceous phyllite horizons. The Vangorda formation consists of non-calcareous phyllites with an important basal carbonaceous unit that is basically related to the ore bodies and an increasing abundance and thickness of greenstone sills parallel to the phyllite beds as we go up the section. These greenstones are feeders to a thick volcanic accumulation of Ordovician age which is the youngest formation that's related to the ore deposits. The ore deposits occur in about a 300 meter thick interval in the basal Vangorda formation and the upper Mount Mye formation. The exploration focuses on where is this unit and how can we drill it. There are some key other lithologies, particularly the marble package and these carbonaceous phyllites, and I'll refer to them later as unit 3E and 3F. These are basically the shut down rocks, when you're this deep, you're not going to see more ore in the district.

This is a geologic map of the Anvil district. North is this way with a 20 Km scale bar and it shows Faro, Grum, Vangorda, Dy, and Swim lead-zinc deposits. The Mount Mye formation is this white unit, and the Vangorda formation is this brick pattern unit. So the outcrop of the favourable stratigraphy I talked about is there and it jumps up to here after crossing the fault. It jumps down into the Swim Basin and there are little remnants of Vangorda formation in the Swim Basin. The Swim Basin is the thick, flat-lying slab of favourable stratigraphy, and almost the entire basin has ore potential. One of the first things that anyone notices about this district is that all the ore bodies line up. The geologists had to give it a name so that's called the favourable trend. That's just an empirical

observation; that's where all the mineralization in the district occurs.

This is a synopsis of those observations. The favourable trend is shown like that, the various sulphide deposits along that trend and then we've taken all our formation stuff and just cut to the chase (??) here. We've put it in terms of where is the favourable stratigraphy within range of geophysical penetration of this pattern in here...through there...and then where is it in the sub-surface; but it's so deep that the geophysics couldn't test it. This second pattern, the white here, here, and here, the stratigraphy exposed to the surface is so deep that the ore potential is already rooted(??). So using this we can focus on the areas that we want to explore. Primarily, we want to explore along this trend because that's where all the other ore deposits have been. There has been a fair bit of exploration to date in this area along that trend. We believe that the favourable stratigraphy is eroded through here and that there would be no point in exploring that area at least on a priority basis. There are some targets in here but the bigger interest is down in here and that's partly for non-geological reasons, partly for a claim assessment. So those are the two ends of the trend we're going to focus on here and here. The next drawing we'll look at will be this rectangle.

Question: ???

What you can't see on there is question marks and I'm going to talk about drilling holes under that.

This is a geological map of the Swim Basin with a 5 km scale bar, north is still at the top of the map. The checks are representative of granite with the Anvil batholith and the Orchay batholith. These are mountains in both areas. This is Mount Mye the mountain that you see up here and the Orchay mountains which are well beyond the Swim Basin if you look out the windows here. So you have a structural basin around the phyllites and get away from the granite and towards the basin and it's also a topographic basin. These are the hard granites and the soft phyllite. There is a major fault zone that runs along the south west limit of the Swim Basin which actually is a crustal suture which juxtaposes a trend which probably is not even part of North America with rocks that were part of North America. So this is a firm limit of ore potential here.

The Swim deposits here feature some sulphides under Swim Lake and these are some sulphides under ridge called See (??) Ridge. Those latter two occurrences are not lead zinc bearing but they do help to define the bigger trend that we see along the Swim Basin. But the Swim Basin has a number of characteristics. It's 30 km east of the town of Faro, 18 km east of the Dy deposit and its access is gained by road via Blind Creek. So you go up the Blind Creek Road east of Faro. The exposure in the basin is

very poor with lots of lakes and swamps and there is a heavy blanket of till. There is 5 - 50 m thickness of till through much of it and all of this poses a great number of difficulties for exploration. The till cover is too deep to reliably use soil geochemistry. The overburden is wet and clay rich so it is conductive, and so you have a very difficult time telling overburden conductors from bedrock conductors. There are buried bedrock hills underneath this till blanket so the most common cause for gravity anomalies is not sulphide deposits, but ridges of bedrock underneath this till. Its so wet and swampy, its just generally not a very good place to go with a bulldozer in the summertime. (Sounds like a perfect place for exploration.) Not if you want to come back.

It is underlain by upper Mount Mye formation phyllites and there are some lead-zinc veins along the edge of the Orhay batholith located in this area in addition to the three stratiform deposits. As I've indicated, its on the extension of the favourable trend so what we don't know is does the trend go that far. The target is a stratiform sulphide deposit. I think we need a minimum, something on the order of 15 million tonnes to be economic in an area like this, and because the area has been so difficult to explore, and the till cover while thick enough to completely wipe out any geophysical and geochemical response, its not so deep that we couldn't excavate it. There still remains some open pit potential in this area so we are looking for something within the open pit depths. We have a couple of schedule considerations. We can't work in this area readily in the summertime, its best to work in the winter time. We have claims coming due at the end of the basin and there is a March 1st deadline on the assessment. There's 539 claims that come due on March 1st and in order to file work on those we'd have to do \$54,000 worth of work by then. Alternatively, we'd pay cash in lieu, but then we'd be paying \$54,000 and getting nothing for it. So what I would suggest is that we move immediately to organize a drill program, but also get a contractor out there to start preparing the sites, ploughing roads, getting the campsite ready, and I think we could probably mobilize a contractor in there fairly quickly with the D7 or something of that size.

Question: Any approvals required?

No this will probably be one of last exploration programs done in the Yukon without any type of approvals, so we don't have any time constraints there. As long as we don't foul up any streams.

This is a summary of the work that's been done in there. There's been airborne electromagnetic and magnetic coverage dating from 1963-64. It's quite an old system now, but it was a pretty good system. It's identified a band of important conductors along the south margin of the basin. It's a carbonaceous unit that probably is the shut off rock that gives

us a lower stratigraphic horizon where we can stop being worried about the lead-zinc potential, and its right against the batholith.

Question: The drilling that was done before, was that in that area?

These are all drill holes, the black dots are diamond drill holes, and the open squares are rotary drill holes that just tested the overburden.

There's been Turan coverage, Turan is a large horizontal loop electromagnetic system, there's been some gravity coverage, and as I've already indicated there are some large residual highs that have been drilled and have shown to be caused by bedrock; soil geochemistry has been done but the overburden is so thick that not much has been found. Overburden drilling was done in 1971 and this has produced some very interesting anomalies. Overburden drilling is something that I think would be worth doing again in the basin. The holes that have been drilled are a fence here, a fence here and three holes along here. There are no overburden holes down in this area until you get over here again. This hole has moderate zinc and moderate lead, this hole had moderate zinc, this hole has high zinc and high lead, this hole has nothing and this hole has moderate lead and high zinc in the basal portion of the till. That may not be too surprising as there is a sulphide deposit over here (to west) but the ice that deposited this glacial till flowed in this direction toward the west and therefore any geochemical anomalies from these deposits should be out here (west of deposits) and indeed that is the pattern you see everywhere in the Anvil District. So something is out there underneath the till causing the lead-zinc anomalies in the basal till.

Question: how thick is the till?

Its about 30 m here, 22 metres there, 32 there, so its' fairly thick. Thick enough that there are no anomalies in the upper till, ther are only anomalies in the basal till, and the till is so thick that it is very difficult to (try and read?) those geophysical signatures. In 1988 we drill tested a gravity high in here and found out it was a bedrock ridge, we tested a electromagnetic conductor here and there was nothing conductive, just wet till under the conductor. The only way to deal with something like this is to drill holes in it and get some kind of understanding of it.

Question: are there any better instrumentation, higher intensity systems around that can do any better?

There are better airborne systems for sure. There are systems that are better than Turan, for looking through glacial tills, but all Em systems have a problem with this conductive layer on

top of bedrock, you are looking for, you are trying to couple with a flat lying conductive body and that is the nature of these deposits, and of course when you have another flat-lying conductive body on top of it you have a problem and it is very difficult to get the signal from the noise in a situation like that. My feeling is that you are going to wind up drilling the favourable trend anyway no matter what geophysics you use so you might as well go and drill it and use that information to help plan the rest of the exploration in the ?? basin.

Question: My concern is one more of the global trend.....?

The original proposal I put forward had an airborne system for the district, a \$400,000 airborne survey. I am very supportive of that approach, but it didn't survive the cut. Now the relative weighting of the anomalies in the district is so heavily weighted by that favourable trend that no matter what kind of anomalies you found in the district, whatever you saw on the favourable trend is going to cause you to drill that. So I'm reasonably comfortable with this magnitude of drilling being directed at the geological concept, without the generative type of surveys.

Question: Are you talking about exploration in the current budget or is this getting in the bigger picture. ???? On top of all this stuff, you also have this discussion ??????

There is a \$4 million additional program put together.

There's \$224,000 and \$202,000 so that's \$424,000.

So this is the proposed program. As we've already been over, its drilling only, we're not doing any target generation type of surveys. Its a pattern of approach when you have a known size deposit and we have a known geometry that presents itself well to drill so we can drill with a pattern that's adequate to detect a deposit of that size. The proposed program is to go in there next month, open up the road access, mobilize the camp and then drill 5 - 7 holes about 200 meters each during February extending into early April. The budget for this work is outlined here: \$224,000 is the total and that is the amount in the 1996 budget.

Question: ??? holes east of Swim???

This map will have locations on them, the target area is in here. The holes will be scattered along this trend. ???? Its beyond the last known sulphide deposits. Its going to be biased toward this end partly for an assessment. This program is also trying to get caught up with the assessment. To get the assessment 5 years ahead so there will be no more cash outlays for the next 5 years.

Question: Can we talk about the possibility of leaving the casing in for further drilling???

Depending on the costs involved, I'm a strong advocate of leaving the holes cased so that you can reenter then when you realize what you should have drilled to. We will do that. I've re-logged every hole in the Swim Basin and almost every hole in the Vangorda plateau so I know what its like to encounter an old hole that's not deep enough. So I'm not trying to leave any of that for future generations.

Question: Have you done a lot of that ???

I've done some. It takes a little while to get the grades oriented but it works.

The next area I wanted to look at is the other end of the trend. We call it Faro North West.

Its 20 km north-west of Faro and 5-10 km north-west of the Faro concentrate. The access is via a road along the north side of the tailings impoundment down the Rose Creek valley in the hills. Its mountainous, its near treeline, there's good outcrop, there's little overburden coverage, and its the complete opposite of the Swim Basin. The stratigraphy is a good section of the Vangorda formation. The grade of metamorphism is amphibolite facies grade similar to the Faro deposit area and unlike the area here and the area out in the Swim Basin. That has pretty important implications for any ore deposits that you might find because it means the grade size is a lot coarser and nasty things like mercury and arsenic tend to be driven off during the metamorphism and they don't show up in the concentrate. The structure is the thing that we don't have too good a handle on and it is potentially the biggest problem. If you look at this map, we're talking about this area up here. We're planning to look at the area here and the area here.

Now in getting a handle on the overall exploration potential of this area, it is important to realize that we think that...well, we know that this is a major extensional fault. It's down dropped the block that contains Grum by about 1 km. And when you go into the footwall of the fault you're in stratigraphy which we interpret to be too old to contain ore any longer. Ore if it was there was eroded. There are a number of these faults, there's another one between Vangorda and Dy which we think actually dismembered Dy from Vangorda or vice versa. They were probably the same deposit and there is an opening between them that's been developed by the faulting. There is reason to believe also that Vangorda and Grum were originally continuous. We have this favourable trend, we have an indication that these deposits were much bigger at one time. If we follow this trend, across this fault into the deeper stratigraphy, the first time we cross that favourable stratigraphy again is Faro. To me that says a lot. I don't think its a total coincidence that Faro is

where it is. I think Grum and Faro were once connected and we have a Broken Hill sized district here and erosion has carried most of it away. That says to me that the odds that this trend exists beyond Faro, if the structure allows the preservation of the favourable stratigraphy, the odds that the stratigraphy is going to be mineralized are great.

Question: They are very great, you said?

They are very high. I think it would be extremely coincidental that Faro would just be where it is given that overall environment, geological environment. So the question is what is out there becomes quite important. This map is going to be a little bit confusing, but it ties into some important stratigraphic concepts that I can't really illustrate any other way. This is Faro, this is a 3.5 km scale bar and north is toward the top of the page. The graph is of the Anvil batholith, the schists and phyllites are out in this area, and the Vangorda formation is this material, this material and this here and over into here. In this area there are some very important observations. I've indicated that there is a calc-silicates and a marble sequence in the mountain line. Unfortunately, as you trace the Vangorda formation close to the batholith, it also becomes the calc-silicate and it becomes visually impossible to distinguish between this ether calc-silicate, the one that's down in the Mount Mye formation, and the Vangorda formation calc-silicate. Except for the fact that there is a basal unit to the Vangorda formation which is a carbonaceous phyllite. Its been identified here, it has been identified in the hanging wall Faro deposit, and its been identified here. There clearly is a significant left lateral apparent offset along this type of fault set. That horizon is not identified on either of these contacts. This clearly is a deeper marble package. This one is also a deeper marble package, but when you go out to here, there is a little end fold and that distinctive basal unit goes all the way around that end fold. This ?? is actually the Vangorda formation, that deeper Mount Mye formation marble has disappeared. So now all of a sudden, all of this rock in here is definitely stratigraphically higher than the favourable stratigraphy. We've lost the marble that was in Mount Mye but I think it comes back in the north-east of Faro. We have a large area in here that we frankly don't know whether its the Vangorda formation marble or the calc-silicate or the deeper Mount Mye formation marble. Everything seems to indicate that it's Vangorda formation. Certainly to here it is and we seem to be able to trace marbles from here directly into this package which suggests that this also is Vangorda formation. If that's the case, then favourable stratigraphy is at depth here. All of the drill holes are indicated on this map as these little symbols. So you can see there is a big panel here, exactly on trend and we have reason to believe that it is Vangorda formation and the favourable stratigraphy is at depth and it's never been drilled.

Question: At depth? What about near-surface potential?

There is no near-surface potential in the whole Faro north-west area. Its been explored pretty exhaustively and this area is very different from the Swim Basin. (??In this area shallow ore leaves a good signature??)

Question: I thought I heard last year that there would be some open pit potential around there?

No, this would strictly be underground, we're not talking an insignificant depth here. This is a close up of this area and it shows the existing drill holes a bit more clearly. I won't bother to go into what all these numbers and letters mean, but this is the target area and we're proposing to put a hole in the middle of it about here, and the question here is, is there going to be enough room for there to be ore volume.

Unfortunately I can't answer that from the surface mapping. We know the batholith contact dips south-west and we know all the shifts dip south-west but we don't know which one dips more steeply. So there is a distinct possibility that the batholith could actually cut out the ore stratigraphy. That's illustrated on this section which is along ??? looking to the north-west. This is the base of the Vangorda formation, the distinctive basal unit is here. This is the deeper calcsilicate. This is this block of calcsilicate that we don't know the affinity of. This is the batholith. We are proposing, and we don't know the, there's no way we would know where the base of this formation is. It could be there, it could be here. And of course we don't know the ??? of this contact very well. It could be like that. So the idea here is to find out what is underneath the panel of the suspected Vangorda formation and you could almost characterize it as a bit of an outside gamble. It will be a geologic curiosity if there's ore there because it's a down drop panel of stratigraphy. All the other deposits in the range are caught in these down drop panels anyway so it wouldn't be that extraordinary. If this hole hits something of a Faro magnitude it would have an enormous impact on this company. It would completely change the way this company...

Question: There is underground potential as a long shot?

It's a long shot and it's definitely underground. But Faro would have been an extraordinary underground deposit.

Question: Have the geophysics been done or are they too deep?

It's way too deep for the geophysics to register. Once the deposit goes below 500 - 600 ft. there's just no signature left.

There's been some modelling done of Faro-sized deposits at depth and at 500 feet the gravity signature is the same magnitude as

the corrections that you make for ?? rock outcrops. It becomes no longer science at that depth, its art.

That was this area, the type of panel that was here, go in one hole to try to find out what's at depth beneath that panel.

And now we look at this area, where we have a very large panel of Vangorda fm, where there's really no doubt that this is Vangorda fm. You can see that there are very few holes. All of the holes that are spotted in Vangorda fm calc-silicates stop in Vangorda fm calc-silicates. They were way too short to have actually penetrated the formation. We talked about the faults that have this left-lateral offset, there is an east-west cutting dyke complex that appears related to these faults, and an area of skarn development which ... don't really notice, but often those are above dykes, and interestingly in several of these holes at the edges of the skarn there are lead-zinc veins associated with the skarn.

So what we are proposing to do is get a hole in this general vicinity to look at what's in the Vangorda fm. I don't have this section CD. I don't have section AB to illustrate the general concept of the test we want to make. The reason for drilling in this area is that this area is a ridge and it slopes down into the valley, so the ... holes get to the bottom of the formation ... on that section. So this will be the base of the Vangorda fm, Mt. Mye is that little fold closure that I told you about, and that's the gist of the drilling. SO what we propose to do is get a 400 m hole to test the Mt. Mye fm and the ...?. So these two holes will exhaust the budget.

Question:longshot?

This one you are counting on those left-lateral apparent displacement faults having offset the favourable trend. So I feel a little stronger about the first one, the one immediately northwest of Faro.

We are proposing basically again just drilling, definitely an underground target. Proposing several holes 400-500 metres deep each and a total budget of \$202,000, which is the amount in the 1996 budget.

So those are the two programs.

Question:

There are many, many targets, but these ones are I think the highest priority because they are looking at this very, very trend, and they are looking at longstanding structural problems.

There is simply no other way to answer questions, there's no

amount of geophysics to get the answers,

They are my high priority holes. There are still an enormous number of other holes that could be drilled, there's a lot of work that has to be done in preparation before drilling a lot of other holes ... geophysical...., the survey I talked about, to completely reinterpret the geology, and particularly keep an eye out for these extensional fault patterns, put your first holes where it looks like an extensional fault is already there.. what you have is proof that geological interpretations ... start to priorities ... that was done once in the district and the hole that was drilled was a hole that was set up to test the concept of the Vangorda fm. It was drilled in this area, it was the best preserved panel of Vangorda fm and at that time there was Swim, there was Grum, or Vangorda, Grum had just been discovered, Faro was known. Doing regional mapping we had developed this concept of a calcareous phyllite formation, and the obvious place to test it was here. So hole 76-S21(?) was drilled here, twice, because one geologist didn't believe the story and that was the discovery hole for Dy. And that basically derailed the deep drilling program that Cyprus Anvil was carrying out. There is something in the order of 8-10 km of drilling on Dy and it wasn't until 1980 that CA got back into deep drilling. They got about 7 holes drilled and then the company went bankrupt. So there's a big question mark. And what we know about the district is what we know around the black blobs (deposits) and it's very easy to convince yourself that you know everything within a little area like that. As soon as you get outside of that there are all sorts of things you don't know. We developed these models, they sound great, but we never incorporate into the model what we don't know and we never tell you about what we don't know. There is really nothing that says there couldn't be a second trend here. There is only two places where the favourable stratigraphy is ... at the erosional surface, that's here and here. This area has so much till you wouldn't know it's down there and so they just take this spacing and you superimpose a line along that exposure. There is a finite possibility that there could be a second trend down there. We know there are stratiform looking sulphides in this area, and in here. We are all ... of what you see under Swim Lake, and there's a lot of reasons to think that there is more ore.

Question:

This area is under an Indian land claim right now, and this area is outside the claim as well.

Question: It the drilling going to write off the area north of Faro if don't find anything?

There is a whole lot of ideas beyond the test. There's a big ... magnetic anomaly up here that we've tried to drill a couple of

times but we haven't been able to get a hole into it for some reason ... we couldn't penetrate the overburden. I still don't know what caused that anomaly, I'm quite curious about it.

I prefer to focus here.

There is a very interesting area on the south shore of Swim Lake that needs to be tested at some point. It's basically related to this concept I haven't gone into about the distribution of along the base of the Vangorda fm and its relationship to where the ore deposits are. If you look at Grum and Vangorda, and go across the trend of the deposit there is a great blossoming thickness of the basal carbonaceous unit of the Vangorda fm. As you cross this favourable trend line there is something more than coincidence related to the trend line, there is this big thickness increase in carbonaceous phyllites and we see that big thickness increase down here. We have a sulphide accumulation which is non-lead-zinc bearing and it is non-carbonaceous. If you extend this up dip it extends into where these carbonaceous phyllites of the Vangorda fm and that transition zone between the two has to be of some considerable interest. There are some structural complications that I would like to sort out before going in there with a drill, and also it doesn't fully address the assessment from out in the Swim basin.