

**QUESTIONS AND ANSWERS FOLLOWING THE PRESENTATION OF
PLATINUM 2004 IN LONDON, 17TH MAY 2004.**

Responding for Johnson Matthey:

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Q1: You were talking about [PGM] thrifting, I'm surprised you didn't bring up the question of fuels - there's a lot being made at the moment of ultra low sulphur diesel fuel as well as petrol, could you perhaps give us an indication of how you read that in terms of loadings for both metals?

JEREMY COOMBES: Thank you, the less sulphur the better is always the case for autocatalysts and so the reduction of sulphur levels will be of assistance in reducing the loadings of pgm on catalysts all round. It's particularly relevant to the diesel area at the moment because in the diesel environment currently we only use platinum. Platinum is resistant to sulphur, much more so than palladium and potentially the reduction of sulphur to low levels gives palladium much more of a chance to be in the diesel catalyst environment, but it wouldn't solve the problem entirely.

BILL SANDFORD: Even ultra low sulphur diesel still contains sulphur and that's still an issue and that needs to be dealt with – it still causes some problems.

Q2: Have you made any estimates into how much platinum would be used or required if the retrofitting activities in Tokyo were spread through the whole of Japan and similarly if those sorts of retrofitting activities were extended to the United States, probably when the sulphur levels come down in 2007?

MIKE STEEL: I don't have any actual distribution figures of heavy-duty diesel vehicles in Japan, but obviously the Tokyo metropolitan area is by far the most significant one and the legislation does extend to the prefectures just outside Tokyo. Its going to be a situation where as far as Japan is concerned the new legislation applying to new vehicles comes in 2005, so it's a relatively small number of old vehicles that the authorities are trying to get off the road, that are the major polluters. I think it's a useful addition to platinum demand, but it's not actually going to make an enormous difference, and even if it happens in the USA wouldn't make an enormous difference in platinum terms, but it would certainly be very positive for the environment, because we're talking about the oldest dirtiest vehicles and encouraging them to disappear.

JEREMY COOMBES: I would add that I think retrofit will not be so significant in a few years time, because we're going to get more stringent legislation coming along and that will demand that pgm catalysts are fitted to new vehicles, probably from 2007 onwards in Europe and the US and will probably see some form of pgm catalyst, platinum most likely, put on heavy vehicles.

Q3: Mike, you commented that palladium is in over supply and it may get worse. Scrap is rising, from secondary sources - autocats. And perhaps worst of all palladium is largely propped up by a very large spec element from NYMEX and also TOCOM. So why the bullish [price] forecast?

MIKE STEEL: Well of course, as I tried to point out, it wasn't a particularly bullish forecast when we set off. I guess the feeling was that the commodities cycle still has some time to go. One can take different views on that and therefore given the horizon of 6 months, which is all our forecast applies to, we did feel that it could maintain that sort of level, \$200-\$320. \$320 was certainly not a particularly high level. We certainly think the longer-term issues are more significant for the palladium industry than the short term. I think that fund interest in commodities generally is enough to [keep] the price where it is. I guess one also has to say that one can also understand where people are coming from as people look at the price and say: 'well, just 3 years ago palladium was over \$1,000, platinum was maybe \$700 and now we're seeing \$250 against \$800 – surely, in those circumstances, those prices are going to come back again.' I think what people are omitting to notice is two things, one the long term price of palladium which is significantly lower than platinum and secondly I think people are looking at an increase in palladium demand, which I'm sure will be there, but neglecting to note just how much the palladium supplies are increasing in South Africa. So longer term I am more pessimistic, but in the short term I think we can stay in that range.

Q4: Obviously the Chinese government is taking some measures to try and cool its economy. What do you see as the impact on precious metal demand from that?

BILL SANDFORD: Well, there was an announcement recently as you rightly point out about cooling the economy. Those announcements were not specifically aimed at the platinum industry, they were really aimed at steel and building and things like that, but it had the effect of unnerving some of the investors and that together with comments about US interest rates was enough to start a sell off, which resulted in the price going down. Right now, there's no sign in the major jewellery industry that we have in China, which consumes a lot of platinum, that that announcement has had any effect at all. I guess it takes some time to feed through to perhaps money in people's pockets, then we might see something, but right now there's no immediate impact.

MARK BEDFORD: Just to add to that, Jonathan, we've just had reports of the May holiday sales in from China, and they seem be really quite healthy. Obviously more than they were last year, as they were in the middle of the SARS epidemic, but certainly comparable with 2002, and looking really quite healthy despite the very high price.

MIKE STEEL: I'd add another thing, if it doesn't sound as if we're adding too much to this- plainly if the Chinese authorities try to cool the economy, one of the things that will be most affected may be exports, but also the currency, and there is always this perennial question about when will the Chinese revalue their currency? If they revalue the currency it means of course that it will get stronger against the dollar and that means imports of materials will be cheaper and therefore the cost of platinum locally will go down, which one might imagine would boost sales of platinum jewellery.

Q5: In fact you've just touched on part of my question, but you've talked a lot about fundamentals, which is really great information, but what are your assumptions on the dollar/Euro exchange rate and how do you feel prices will move if the dollar makes a significant move, for example in a strengthening direction?

MIKE STEEL: Of course, it's a big question for the world as to what the dollar is going to do in the future. It's obviously a major influence on the price of all sorts of commodities, way beyond the precious metal industry. What are the US authorities going to do? They seem very reluctant to change interest rates. They're probably going to move up at some stage and that I imagine will strengthen the dollar and take away some of the incentive for people to buy commodities, rather than keeping their money in dollars. But I don't really think in an election year we're likely to see interest rates go up enormously in the United States. So I don't think we're going to see any fundamental difference to what we've seen in recent months.

BILL SANDFORD: I could just add, that in terms of European demand, obviously that's affected by the euro-dollar [rate]. And if you look at the platinum price in euros over the last three years, it's actually stayed almost the same. And in that sense it hasn't affected demand, although most of demand in Europe, unlike say Asia, where you have a much bigger jewellery market, is relatively price insensitive - its mostly autocat and industrial applications.

Q6: To put you on the spot a little bit, would you say that in this case supply/demand fundamentals might in fact override the currency factors?

BILL SANDFORD: I think it's a mixture of both actually, I think you have to take both into account quite significantly as we've seen in the last three months. Mike's mentioned Asia. Europe I think has remained relatively immune, and I think you have to take both into account. They're both significant.

Q7: Mike, you mentioned recycled metal from Russia, it looks like it's about 170,000 oz a year coming out of there. Exactly where is that coming from? Is it local metal? Is it recycled metal from the West? Where would that be coming from?

MIKE STEEL: No, there's considerable industrial activity in Russia anyway. They still have a large chemical industry; the largest nitric acid industry in the world, a very large petroleum industry, a significant glass industry, there's metal being recycled all the time. It's also true that there's some industrial sectors that are still giving up metal as they're moving to some new, improved process, which demand less metal and the nitric acid industry is a good example. In the old days, they just used simple platinum-rhodium gauzes, they had no catchment systems to reduce the amount of metal lost. There was also metal lying around in much of Russia for a long time, that's now gradually coming back out of the industry, they're becoming more efficient and the way the industry still operates in Russia is that if you have excess metal you offer in the market place, but actually Gokhran has the right to buy it, and it does buy it and gets some stock in that way. The 170,000 oz extra, I would say some of it came out of recycling, some it may have come out of stocks still held by the government, because we don't know just how much the government has.

Q8: And just a couple of words on the rhodium market?

BILL SANDFORD: The rhodium market, and the future for it? Well, as we said before really, it remains a relatively small market, 600,000 oz or so. You know, in the last year demand increased, mainly auto driven, but supplies increased even more. So the surplus, if you like, grew throughout 2003. Where does it go from here? Well, it's a very difficult one to call, rhodium, insomuch that very small changes in supply or demand can switch the market from a deficit to a surplus. We're going to see more for sure in autocatalyst applications and we're certainly going to see more metal from South Africa and its going to be a close call I think whether that puts the metal, or keeps the metal, in surplus in the future. A very small change on 600,000 oz can be quite significant.

Q9: Two questions, one following up on the first question, the low sulphur fuel getting into Europe pretty soon, and actually already available in a lot of countries, has caused Umicore to come up with an announcement saying that they'll be able to replace 25% of the platinum in their diesel catalysts. You're doing some work on that yourselves, could you explain what you expect the impact to be of that, and how fast that will happen? Second question is, you're gearing up catalyst production for heavy-duty diesel and I understand a lot of that is vanadium-based and particularly I guess for the European market. What's the risk of low sulphur catalysts getting into private cars over time, because it's basically a [SCR] -based technology, and the current catalysts would have a limit on what they can achieve on NOx reduction?

BILL SANDFORD: OK, well let's take the Umicore question first. Certainly where you have a price differential between palladium and platinum of \$600 as we did then and still more or less do, then its very attractive for the car companies to want to put palladium in instead of platinum, but the sulphur issue as we mentioned earlier is still quite significant. Umicore made an announcement. Johnson Matthey has been working on this extensively for some time, and we've been in direct contact with customers and working very closely with them. I'm sure others are as well. Whether the full issue of sulphur poisoning can be solved, or whether it will be necessary for other engine management systems to be added are still to be decided. There are still some quite significant challenges there. It might be in the end that it has to be engine management, and car companies generally are quite reluctant to fit engine management systems. So whether this becomes a reality I think is still not fully decided. If it does become reality then it will depend on the exact proportion of palladium that might be substituted for platinum, and whether indeed it's 1:1, it might not even be 1:1, you might need more palladium for every ounce of platinum you take out. But, right now if its 25%, which I think is the number you mentioned, then it would amount to around 250,000 oz of palladium per year, (and if it was 1:1, then obviously less platinum), and we'd welcome that. I think, in the market where platinum is quite tight at the moment and palladium is in surplus, then some substitution of palladium for platinum is to be welcomed.

JEREMY COOMBES: Yes, just to add to that and to maybe start to answer your other question, the substitution of some platinum by palladium, apart from being helpful to the general market, will also be specifically useful because of the way we see light duty diesel applications being treated for environment emissions. In Europe in particular, when European stage V comes in the focus will be on more NOx reduction, as you saw from Mike's charts, and also particulate matter has to be removed. We are expecting heavy use of catalyst technologies, particularly using filters to trap particulates, and these filters will be either additional to the

current oxidation catalysts, or combined with the oxidation catalysts in a kind of catalysed filter device. Either way, they're going to demand more pgm and that, at the moment, means we're going to have to use more platinum on diesel cars in Europe. So if we could see palladium introduced, it would help to release, if you like, some of the platinum used currently to be applied to the technology that's going to be required in a few years time.

Q10: Mike, you touched on scrap recovery particularly palladium saying you're just beginning to see the large increase people have talked about. When do you think you'll see the big increases people have flagged? Is it some time, say in the next 2-3 years, or is more like the end of the decade?

MIKE STEEL: I think we're going to see it begin to pick up in the next 2-3 years, because we're talking about the life of a car probably somewhere in the 8 to 12 years range and we saw palladium-rich catalysts going on in the mid-1990s, so we're really just entering that phase. It's going to grow quite sharply from the next 2-3 years onwards.

Q11: And just one on China, in terms of competition from white gold and also reportedly palladium for jewellery, what are you seeing on that front?

MARK BEDFORD: On palladium, we see palladium as being in a test-marketing phase in China at the moment. A fair amount of jewellery has been manufactured, and it's been consigned to the retail stores, but we're yet to get any really firm information from the consumer. The verdict we've had so far is that it's sold rather disappointingly in the major cities – Beijing, Shanghai, but done rather better elsewhere. But it's really too early to say how successful that's going to be. As far as carat white gold is concerned, it certainly has a place, particularly at the lower end of the market. Also in terms of gem set jewellery is become quite popular, but in general terms it hasn't had a tumultuous affect on the demand for platinum. I think it will be there, certainly at the lower end of the market, and we'll have to see what impact palladium has on carat white gold sales as well. The two could find themselves competing more than perhaps with platinum.

BILL SANDFORD: We should add there, I think, that the introduction of palladium jewellery was something that was led by the manufacturers and not by the retail trade or indeed by the consumers, and was an attempt on their part to make more margin at a time when the platinum jewellery [market] was slow because platinum was at \$900/oz. And as Mark said, there's no sign yet that the consumers are actually interested in palladium jewellery in any - I was going to say in any great scale, actually in any small scale right at the moment. Underneath that though, demand for platinum jewellery continues, and the [manufacturers'] purchases slowed when the price was high, but the moment the price came down from \$900 to \$800, then those purchases resumed at a very, very strong level, so demand for platinum jewellery continues at a very, very good level.

Q12: It's sometimes said that one of the most exciting new applications for platinum currently being developed in the near term is gas-to-liquid technology. Do you have numbers that you can give for what you think it might consume in this new catalytic application?

BILL SANDFORD: Well you're quite right, the development of gas-to-liquid technologies are likely to be very important for the pgm industry, not just platinum, perhaps for several of the metals. It's early days yet, these plants are many of them in the feasibility stage and not fully approved, though some are starting to be approved. They're unlikely to come on stream in any big way until the end of this decade, although undoubtedly [the] catalyst will have to be bought before then. In terms of the catalysts that go in, then I'm going to have to dodge your question really because the makeup of those catalysts is largely proprietary and Johnson Matthey is very heavily involved in developing those catalysts and the recipes are very jealously guarded; except to say that the numbers for them are quite large, and if all these plants come about then it will be quite a significant number for the pgm industry. I'm sorry it doesn't answer your question exactly, but I'm afraid confidentiality reasons don't allow me to do that.

Q13: Disposable income in China is going to grow, and therefore vehicle growth and we're going to see more and more cars there. But at the same time, they don't really have oil there. Any thoughts on what direction that automobile pool will go, diesel or gasoline?

JEREMY COOMBES: From what we know at the moment, I think we're looking at gasoline vehicles in China. That could change, but whether they're diesel or gasoline there's going to be a lot of growth. Passenger car sales last year were 2.2 million, are expected to be 2.75 million this year and carrying on growing. Looking at what the impact on pgm demand would be, the Chinese at the moment are applying European stage II standards in the major cities and they'll be extended to the rest of the country by the middle of this year and by 2008 they'll have European III standards nationwide and beyond that we expect to see even tighter standards applied. So either way, a lot more pgm demand from China.

BILL SANDFORD: Any more questions? No, well I would like to thank you very much for your attendance and wish you a very fruitful platinum week.

Thank you very much.