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Session 3: “Meeting the Growing Demand for Liquids”

Glen Sweetnam: So welcome. We're very lucky to have three experts on the world oil market with us today and I'll introduce them shortly. This session is a little bit different than what we did last year. Last year we did something on peak oil and focused a lot on the resources in geology. In today's session we really want to focus on the politics and the commercial aspects of world oil supply, and so after talking about sort of the general context of what the demand for liquid fuels will be and what we think it might be going forward, we're really going to dive into the detail. And tying it to Bill Nordhaus' talk this morning, we're really going to start looking at the individual spigots. Now I know Bill Nordhaus said that all that really mattered was the bath tub and sum of all the spigots, but in order to find out how much total oil we will have we do have to look at each of the individual spigots. And so we're going to be looking at the major countries, and particularly looking at countries where we expect an increase in oil supply over the next 15, 20 years. And in that context, looking at our expectations for more oil supply from those countries, how do we expect them to be affected by the lower oil price, how do we expect them to be affected by the commercial arrangements, international oil companies, national oil companies, and so I expect that we'll have a very...a conversation that's going to provide a lot of insight. I know that when I've talked to these three gentlemen I get a lot of insight from them, and I hope it's the same for you. We've put comment cards on the chairs. We'll have a couple folks from EIA walking around and picking up the cards after we've been going for a few minutes, and then I'll try and sort the questions and intersperse them into the discussion.

So with that I'd like to go ahead and introduce each of our individual experts.

The first is Eduardo González-Pier. Eduardo is the Executive Advisor to the Director General of PEMEX and so has a unique insight into national oil companies and the way national oil companies are trying to adjust to the lower priced oil environment and how to develop higher cost/higher risk resources. Eduardo's been at PEMEX a little bit over a year, although he said it seems much longer than that already, and before that was with the Ministry of Health for eight years in Mexico.

The next expert is David Knapp. David Knapp is with the Energy Intelligence Group, and is chief editor of *Oil Market Intelligence*, and has been a keen observer of the international oil market for many years. Before joining the intelligence group he was preparing the oil market report for the International Energy Agency.

And then finally Fareed Mohamedi is a Partner and the Head of Markets & Country Strategies at PFC Energy, and he's been there nearly 20 years assisting clients in the oil industry. Before that he had a stint at the World Bank and the International Monetary Institute.

And so with that, we'll go ahead and get started. What I thought I might do is we'll have a few slides here just to provide the context but there's not going to be a structured order to this. We're just going to have each individual comment on this and so first we'll start out setting the context. The first issue is the role of oil, and so we've been hearing a lot about alternative fuels and the projection going forward. This is EIA's base case forecast which shows oil remaining...liquids remaining the dominant energy type going forward for the next 25 years, which sort of indicates why this is so important. David, do you have a view on this projection? Does the dropping market share look right to you, with still a 33 percent share in 2030?

Mr. Knapp: I have a couple of comments. I also should point out I'm an alumni of the EIA. Actually I'm former employee of FEA and spent one year with Schlesinger when he insisted as an economist that we set both the quantities and the prices. I wasn't sure what I did any more so I went to Wall Street. One thing

about the forecast which is always said, but often forgotten, is that these are assuming policy as it is today, and we heard some comments in the presentations this morning about both technology and policy not being in the equation, so my first question or in response to Glen is how would these percentages be different under new technologies and new policies? Clearly the liquids line would be lower but how much lower? It can only be lower since these are nice convenient shares that have to hold to a hundred. So how high could nuclear get? Given that we're talking about 2030, that's beyond the tentative 10 to 15 year lag time that we know about. I think if it starts it could go pretty fast. This is also international. I could see it going from six percent to say, ten percent. Renewables, eight percent, well, going to something maybe like 15 percent? Very optimistic and most driven by the policy side rather than by the economics. But 15 percent I think is plausible. And natural gas, maybe you can squeeze another percent out of that. Basically more LNG, taking care of more of the growth in Asia in my world, so that means that you've got to lop something off of coal. I would have it down around 23 percent and then you take the rest of that out of oil, which is five percentage points...five percentage points. So maybe oil is 28 percent of the picture rather than 33 percent. We still have a problem but it's finding liquid fuels. So you needn't leave the session yet. That's my view.

Mr. Sweetnam: Okay, that's a good setup. Anything else? Yes, Fareed.

Mr. Mohamedi: We at PFC Energy have done similar exercises and number one I agree with, in fact David said pretty much everything that I wanted to say. But we do have sort of a peak capacity world view and we have the dropping non-OPEC and then in a sense OPEC after a few years, maybe after 2020 now, struggling in a sense to keep up with global liquids demand. And we'll get into some of that later. And then the entire demand picture, we have also...we struggle to try to fill in the gap, and if that demand growth continues. So we've been struggling, we've done

forecasts out to 2040 and just struggled to find the different fuels that will power that. But I do think that this is very much like David said a view from today - without policy changes and assuming that the liquids will be there to meet the demand.

Mr. González-Pier: There's concern about the shares, what type of fuels, also the size of the growth. And you have to keep in mind that most of the growth will be concentrated in one or two regional areas, especially China and India. So specifically what happens with China and India? What the national policies there will be? You'll get a higher or lower growth rate on the overall demand of liquid fuels.

Mr. Sweetnam: Right, non-OECD countries are extremely important, aren't they. So really the liquid fuels...what's really driving it then, just like in the next slide, it's the transportation, a little bit of the industrial growth, but it's this move to transportation that's really going to grow.

Mr. Knapp: On Eduardo's point, in fact that's why I had liquid fuels going down more than coal is I think it's going to be very tough to de-coal China and India both. That's going to still have a major role as a transition fuel for them. And maybe some of it is culled to liquids then we get this whole problem about which side do you count that on. I've always thought it was wrong to call plants in Brazil and coal to gas, gas to liquids, or coal to liquids, to call that oil but that's the way we do the accounting, so....

Mr. Sweetnam: Very good then, so we know that the oil price could make a big difference and I guess we ought to get into this a little bit, or maybe it's something we should come back to once we start to look at the individual components. But, I guess in terms of the range of volumes that we're looking at, over our three cases, sort of centered around the 105 million barrels a day; in the high-priced case getting up only to 90 million barrels a day, in the low-price case getting up to 120. Fareed, based on what you just said, I assume you're going to be a little bit skeptical about the 119 million barrels a day.

Mr. Mohamedi: Absolutely. I mean that...I don't think we're going to see that, in our thinking. Also with the price graph that you have, we think that if you are so optimistic on supplies, then why do you have such a...your two dominant scenarios are prices going straight up. And that actually usually ...with sufficient supplies you could see actual prices down or at least OPEC struggling to try and keep it at current levels or even a little higher.

Mr. Sweetnam: So going back to the price projection up there, you're saying you don't see a repeat of collapse of the 1980s then, in other words when the price went back down low?

Mr. González-Pier: You could, under a scenario where you have an enormous demand destruction of that and there's sufficient capacity and OPEC is trying to struggle to try to, you know, keep its supply down sufficiently.

Mr. Sweetnam: But the destruction you've seen today with the current recession, a couple million barrels a day, that's not sufficient, do you think, to be...?

Mr. González-Pier: For us it's shifted the day of reckoning in a sense out beyond 2020. In the old scenarios without this demand destruction, we had sort of a period where growth of demand was 1.1 to 1.5 a year, you would start hitting a wall in terms of liquids ability of meeting that demand by the end of the next decade.

Mr. Knapp: Certainly the bottom scenario, the "D" word is still out there, depression. That would take prices down, and these [price projections], of course, are all in real dollars. And so there is some down side on prices and an extended economic recession and a limited recovery, along with some of the policy things that I talked about before. I could see prices staying down in \$20-\$30 range in real terms. And it would be interesting because it would start impacting our main topic on supply. When you get down to those levels you are actually not only losing some new projects here, you're seeing some old projects that may be shutting down at those kinds of prices where it's just not worth paying even the operating costs where

it's really expensive. So that means the tail end of that bottom scenario sort of ironically turns around and starts increasing faster than the other cases. I have some scenarios that we put in a book that my colleague Ian Nathan and I did looking at NOCs versus IOCs at the end of last year. And we just set it up with prices, and 175 would be a reasonable price out to 2030 but in nominal, not in real terms. So I think my numbers in all three cases would be substantially lower than these. Not necessarily for the reasons that Fareed said. It's interesting, I mean this is a two-way street here so if these are what prices would it take to bring on the supply that was needed to meet these sort of stressed demand numbers for liquid fuels, then maybe that's the way it goes rather than having a lot of the demand survive those kind of higher prices, so....

Mr. Sweetnam: So if we sort of ... I'm sorry, Eduardo, did you have....

Mr. González-Pier: No, I would just like to point out that when you have such a large range of prices, 50 to 200, sometimes the message you really don't know exactly what is going to happen.

Mr. Knapp: Chevron, some number of years ago to their credit, put out a price forecast that had a range of 1 to 100 which we found to be incredibly honest but not particularly helpful with the assessment.

Mr. González-Pier: With the results, what I found very interesting, is the mix of conventional versus nonconventional oil you would get delivered at a different ranges of prices, it's still going to be different. So at \$20 a barrel we can live with a mix of fuels, which is very different from the one you would deliver for \$50. So I think that's especially important when looking at the supply response where the oil will come from and what type of oil will get delivered.

Mr. Sweetnam: Yes, I think you're right. I think that's key. Okay, so if we think then we certainly have the economic slowdown now and the drop in demand, but then getting back on track towards 100 or whether we stay down in the 80s,

there's another major change that's occurred over the last 30 or 40 years, it is this shift from the integrated oil companies to the national oil companies. And I think it would be very useful if you could talk a little bit about how does that change the dynamic? How does that change your view of how these supplies get met? David, do you want to talk a bit about that?

Mr. Knapp: Yes, I mentioned, this is a topic that we decided to take on as part of the work that we do in a book called the "Ranking of the Top 100 Companies" and one can clearly see the ascent of the NOCs in all of that. And there have been some studies—Stanford, Rice, and a few other people—that many of you have seen which in a way were sort of declaring the demise of the international oil company. Our conclusion was that even though the resources bases in Saudi Arabia, Mexico, and various other places give a lot of leverage to the NOCs that they have a whole other set of factors, and I'd love to hear from Eduardo on this in a minute, which change the way that they produce out those reserves. They also have a talent base and a set of experiences, especially in the harder to get stuff, and the costlier stuff, which is not matched by most of the national oil companies. Now the other thing is...for national oil companies...there are...you can't just put all in one hopper, that ARAMCO is quite a bit different from the current PDVSA. Exxon is a lot different than some of the other companies, maybe BP as an example. So there is a role for the NOCs in turning those resources in, because that's where they are, into what the world needs to meet the liquid fuels demand. But there's a set of talents on the IOC side which means that various forms of partnering in the upstream are probably where this market is going to be in 10, 15, 20 years. So the IOCs don't go away, they end up producing more of the non-OECD and national oil company oil, OPEC and others, and less of the stuff in the traditional areas of the OECD. So a change in the mix of the supply but not as big a change in the composition of the operatorships or the participants as one might think.

Mr. Sweetnam: Right, and because the national oil companies have access to so much of the reserves right now it's sort of working together in some manner. I mean, Fareed, you've thought a lot about this issue of how the power shifts back and forth between the IOCs and the national oil companies, depending on the oil market.

Mr. Mohamedi: I mean, there are those like Saudi Arabia, Saudi Aramco, and dream on if you think you're going to get into the upstream oil sector if you're an IOC in Saudi Arabia, Aramco's taken care of it, thank you very much, and no one need apply.

Mr. Sweetnam: You might be able to look for a little gas somewhere?

Mr. Mohamedi: Maybe gas, yes.

Mr. Sweetnam: If it's cheap.

Mr. Mohamedi: If it's cheap, and definitely petrochemical. But I think you're right. The cycles, the oil price cycles and the financial stresses on these countries have led many to again, many governments to reassess. They thought that they could go by themselves without working with IOCs, that they could do it with the service companies. And now I think they're back to saying well I think we're going to need the financial skills and some of technical skills that the IOCs bring. And so I think that right now as prices sort of muddle around in the difficult zone that the two sides are trying to find new ways to working with each other, and I'm sure Eduardo can tell us some of those ideas. But I think that one point I want to make is that if you believe that having a strong state (and I don't mean that in terms of an imposing state but a state with sufficient capacity to get the job done in all areas, social, economic, etc.) is a good thing, which I think we've learned that that's better than a failed state, and the NOC is one of the most important institutions of that state, then I think it is better to help build up a stronger NOC and to then use that NOC from a policy point of view to bring best practices and good skills to the rest of the

economy. And I think that is something that the IOCs have always been dreaming about is the hope that the NOCs disappear. Actually if you look at Nigeria and places like that, you don't want the NOC to disappear. You want a strong effective NOC that you can work with. And so I think there should be a much more active move by IOCs to help partner with NOCs to help make them better institutions and they'll make the state better. We don't want...we're facing in this world actually today too many failed states. And many of the petro states are failed states, and that brings a lot of ills with it.

Mr. Sweetnam: Eduardo, I know you... go ahead.

Mr. González-Pier: I would like to add just one reflection on this which is the supply elasticities under IOC-dominated world versus NOC-dominated world. And my feeling is that supply is much more elastic. Response to prices are much less when most of production is concentrated on NOCs. And you look at the drivers behind pushing producing more in an NOC and obviously price is one of them. But there's many other concerns today. You actually see cases where an NOC has pushed production under high-price scenarios, low-price scenarios because there are so many other things. So living in this 2009 NOC-dominated production world is going to make it much more difficult to predict what the supply response will be. Price being just one of the

Mr. Sweetnam: Yes, because it will be even less elastic? You think it will be relatively inelastic?

Mr. González-Pier: Yes. Or just respond to many other factors beyond the commercial factors.

Mr. Sweetnam: So now, can you think of examples where, Fareed, you mentioned sort of the international company working with the national oil company trying to get the interest aligned? Eduardo, I know you think about how do you get the interest of your contracting countries aligned with the interest of PEMEX, is

there...have you got some ideas, is someone doing that particularly well?

Mr. González-Pier: An interesting discussion is, I'm sure we'll talk about it a little later, is the nature of the fields and how difficult it is to increase production and access to the technologies. And as the fields mature and get more difficult to produce, NOC companies, in this case PEMEX, need to engage with a technology provider, some of them IOCs, some of them are service companies. Now what I think is going to be happening is that the NOCs will need to pair with IOCs to get that extra production. Second what the arrangement will be, of course, depends country by country, and in the case of Mexico where there's such a nationalistic sentiment about oil, there's going to be a need for different formulas of how to team together and get those technologies and get the production increased, especially with the fields in Mexico reaching a mature stage, and new technologies associated toward ends on recovery in the deep water access will become very necessary.

Mr. Sweetnam: I've got one question here. Someone's interested if you think Mexico will become a net oil importer? In other words, despite a great deal of exploration in recent years, Mexico's oil production is dropping while domestic consumption is rising. Do you foresee a time in which Mexico becomes an oil importer or do you have plans to address that?

Mr. González-Pier: Not in the near future. The feeling is that the production level will maintain at 3 million barrels per day. We export about half of our production, so if you just do a clear projection of that it will take a couple decades before the lines cross. Of course national demand is increasing.

Mr. Sweetnam: Right, uh uh.

Mr. González-Pier: And eventually will cross...

Mr. Sweetnam: But still a couple of decades you're saying before those lines cross?

Mr. González-Pier: I think Mexico will remain a big exporter for a while.

Mr. Knapp: Do you want to put that [Mexico's] slide up?

Mr. Sweetnam: Yea, let's go ahead and do that, yea. And look at the

Mr. Knapp: There's an interesting phenomenon in the link between oil demand in producing countries and oil prices and also oil production so that it would be difficult for Mexico to see particularly rapid demand growth if they were seeing rapidly sliding supplies. So, and I agree with Eduardo that the real key that most of us looking at it from the outside is sort of when and how much from the old donut hole is a disputed deep water acreage between the U.S. and Mexico, which certainly on the U.S. side there is some reason to be optimistic about some of the fields that are being found in the fold belt there. But again, it's an area that most of the offshore development in Mexico has been recently shallow waters. I think you can walk to Cantarell without getting your hair wet. And it's way out. And clearly that field has been worked exceedingly hard; the whole nitrogen injection project which is sort of looked at in negative standpoint that Adrian Lejus and the crew that was involved there before, actually was very effective and got the oil out, but there's only a certain amount there and that means we're now on the downside of that curve. But it's being compensated for by a newer field slightly closer to shore, or a set of fields called Ku-Maloob-Zaap, KMZ, but that has a limited upside without some additional recovery work on it, which again is high technology. And then the real kicker is the onshore area in Chicontepec, which is very fractured geologically; you need a huge number of wells, and you need a lot of fairly sophisticated reservoir engineering techniques to develop that. There are some very good geologists that I've had the pleasure to meet in PEMEX so I think they're up to it. And then the ultimate question at the end of the day for Eduardo and for his company is how much of the money are you going to let us keep? How much can we spend on those expensive drill ships offshore and on getting some more out of KMZ and ultimately trying to get the full value from this Chicontepec and the government has a whole set of other goals.

I'll throw in another word. You used 'elasticity', so I can talk about 'discount rate', right? One of the inherent differences between NOCs and IOCs is that there is a longer time horizon generally for a government and their internal oil company, or for a national oil company associated with the government. So say the Chinese can go into Latin America and buy a field which has a very long payout whereas an oil company can't because they're an IOC because they're beholden to their stockholders. And I think that's sort of one of the critical differences between the two companies and how fast they develop and how fast they produce the oil resources that they have.

Mr. Sweetnam: So is that an example, then, you mentioned the Chinese national oil company, and I know that there's been some activity between the Venezuelans and the Chinese national oil company, how as that turned out? Is there a discount rate help there or what do you see? Eduardo, are you somewhat familiar with that?

Mr. González-Pier: Well, let me start with a little bit of background since I'm the Mexican flag. The general picture is that production has declined and it's been the case...it peaked in 2004 with 3.4 million barrels. Last year we produced 2.8 which is a 400 million barrel decline. And basically that's because we're over-reliant on one or two fields; Cantarell, which is a huge field, it's production is decreasing fast, and exploration and some of the development of other fields lag behind. We're over dependent on Cantarell. At the same time we have a lot of restrictions, legal restriction and fiscal restrictions, on investing more. So what's happened is production has fallen because investment also fell. Now one thing I would like to point out for Mexico is that we're still talking about conventional oil. And even at the very expensive areas to develop, Chicontepec you mentioned, David, and others, Ku-Maloob-Zaap, still production costs are below \$10. So the potential is very large, it's just the lack. And NOC companies, particularly Mexico, PEMEX, is very

inefficient in putting many complex investment projects into production. It may take five, 10 years. We have to get engaged now in deepwater drilling to have production maybe in 10 or 15 years. And we don't have technologies, and we don't have the legal instruments to do it. So what is happening now is we're trying to recover all the lost time. A big legal reform, energy reform was passed last year by Congress by both houses with majorities, and the idea is to restructure some of these incentives so that we can get what Fareed was calling this teaming up with the technologies of the IOCs and service companies and the national oil companies to get back on track. So what we're seeing is a decrease in drilling [on the graph ending in 2006], actually you don't have the 2007 and 2008 numbers where there was record drilling.

Mr. Sweetnam: Record drilling, okay, is that because you've started to see some of these changes come into play?

Mr. González-Pier: Yes, slowing kicking in, and the drilling has been more intensive on low productivity but very extensive drilling onshore.

Mr. Sweetnam: So when we have you down at two and a half and 2.2 in 2030, you're saying that's actually a low estimate.

Mr. González-Pier: yes, that's the strategy...

Mr. Sweetnam: That's pessimistic.

Mr. González-Pier: That's the strategy of what would happen to PEMEX if you pretty much didn't do anything.

Mr. Sweetnam: Didn't do anything.

Mr. González-Pier: Just let the fields mature, decline, natural depletion, and you lose about 1 million barrels a day in production, about 15 years worth. If you didn't do much but basic maintenance of

Mr. Sweetnam: Okay, that's great insight on Mexico. Fareed, do you have anything to add on Mexico? Okay. Could we move to Venezuela now, should we talk about what's going on there?

Mr. González-Pier: We can change regions.

Mr. Sweetnam: I mean what's your outlook for Venezuela?

Mr. Knapp: Negative.

Mr. Knapp: I was actually...I've mentioned it to some of you, I was in Vienna in the end of February with OPEC, and they were basically looking at data issues and things like that but it turned out to be a confrontation from one of their...with one of their secondary sources (me and PIW) and Venezuela, who I think some of the other members are not quite pleased with in terms of their continued (and EIA is also one of the secondary sources by the way), that they're unhappy with the whole organization being seen as incapable of reporting their own production numbers which many of them are dutifully doing and also contributing to the JODI [Joint Oil Data Initiative] exercise, which are plausible and useful numbers where Venezuela isn't. Well, in the course of this discussion, Mr. Bernard Mommer, who is actually a German I think, but is sort of representing the charm offensive by Venezuela to convince the secondary sources, I don't know whether they've seen the people at EIA yet, but they've seen IEA and they haven't come to see me. But he was talking about the Venezuelan situation, and this is why I bring it up. And he mentioned the relationship between the U.S. and Venezuela, what did we think they were sending, and I said you're sending a lot less, and what do you think about that. And he said I don't know. I said I think it's a tragedy. I mean here's a relationship that goes back decades and decades. Actually back to World War II, the Venezuelan oil was pretty essential to the US war effort in Europe and in the Pacific. And I said and now that oil seems to want to go to China which as an economist makes no sense to me whatsoever. Here's a ready-made short haul market with refining capacity which is geared to using your heavier oil, and you're trying to send it to China. I said I find that very depressing. And I don't think they're going to fix that anytime soon. So my view of Venezuela is that the politics are dominating, that they have serious

problems in the western part of the country around Lake Maracaibo which has always been their oil bread basket. Those fields are declining at rates of 20, 25, 30 percent. They don't have either the commitment or the talent to go in there and to try and stem those decline rates. They're expecting they can cover it up with production from the middle and from partly from the Orinoco tar belt. Well what have they done there? They've gotten rid of the most competent of the companies, which is Exxon, and they're probably going to lose both of the others. There's a little hanging around by Chevron and Conoco. They will keep Total and StatOil on the Sincor project which has now been renamed. But it's probably okay for digging this stuff out of the ground. It's probably okay for milking it and getting it to move along the pipe. It's probably okay if nothing breaks in the upgraders. As soon as anything goes wrong they're really going to miss those foreign companies. And I think that that's a symptom of what we were talking about earlier about the expertise. Certainly in terms of technology Exxon is just absolutely the best. How to run a refinery, a lot of the international oil companies really know how to do that. Can you bring CNOC, the Chinese offshore Company, or CNPC, the onshore company, into Venezuela to help with that? I don't think so. They thought they could fix their problems in Maracaibo by bringing people from Petrobras, which Luiz da Silva or that Chávez thought that he was going to be his new left-wing buddy. A little problem because they didn't actually speak Spanish. But you know, a lot of those fields didn't get shut down right and didn't get turned on right. So I am very pessimistic about where Venezuela is going to go.

Mr. Mohamedi: I do think though, David, the two factors that will maybe concentrate the minds of the Venezuelans. One is that this larger issue of needing to support social services and the sort of welfare payments and all to the general economy, and we've calculated that Venezuela needs about 95 to 100 dollar oil to make sure that it can meet all these public needs. So I think that an extended period

of under \$100 oil will be one factor in concentrating the minds. And then when you multiply the much lower price with a diminishing production base, I think that's the second thing. So think they will go back to negotiating with oil companies and in fact are already starting to do that. And I think that while we see maybe more than 500 thousand barrel decline from 2007 to 2015 and your numbers were a little bit more pessimistic, in the longer run we think that the companies will be back, especially in the Orinoco Belt which they like to be there and they can deal with it in sort of this industrial production way. And that production will start going back up over the longer term. But it will definitely take a

Mr. Sweetnam: It will be U-shape turn, you're saying.

Mr. Mohamedi: Yea, it will take a change in relations with the IOCs.

Mr. González-Pier: I agree with Fareed. Once you get a country like Venezuela which pretty much depends on government revenues and in particular social spending it's pretty much dependent on oil revenues. You see them falling the past six, seven, eight months. You're still getting pragmatic about your relationship with the oil companies, the foreign oil companies, and I think it's going to happen to Venezuela. Venezuela has shown to be very pragmatic when it comes to commercial interests, in this case with CITGO and the U.S. and so forth. So I think that eventually they'll get the necessary technology and the investments to push up production again. And the potential in Venezuela is enormous.

Mr. Sweetnam: Yes it is enormous. So okay.

Mr. Knapp: Well my read on Chávez is it might be harder than that, Eduardo. That, you know, if you can remember that there were people in Washington back in the 60s that thought we'll just ignore Castro, he'll go away. And it was decades. Now Chávez may not officially get to be king for life in the Simón Bolívar role but I have a feeling that he's going to work at it for as long as he can, and so I'm a little less optimistic that the pragmatics, that's absolutely true in lots of areas, but it does

depend sometimes on the personalities, and I think we have one here with Hugo Chavez that is maybe going to defy the pragmatism.

Mr. González-Pier: Well, Khomeini said that economists were donkeys, and even the donkeys are going to make their revenge on Iran and they'll definitely take their revenge on in Venezuela. I'm much more optimistic on that one.

Mr. Knapp: Okay.

Mr. Sweetnam: Let's then...should we...I know we're staying in the same region but should be move to the Brazil and talk a little bit about what's going on there? Is that...Fareed, what's your view on how Brazil's partnering with the...the international oil companies there?

Mr. Mohamedi: Well, I mean, first you've got Petrobras, the success story is Petrobras. And I think that it's been...it's a company that got sufficient...there were significant reforms done about a decade and a half, decade ago. It got its operational autonomy and has had quite a bit of operational autonomy from the state. Had a fairly decent service sector to depend on, indigenous service sector to depend on, that way it could technically use the industrial base to do deepwater and develop that technology. And so...and then it had the ability to transform itself to do business development beyond its shores and went overseas, across the Atlantic and to the Gulf of Mexico, etc. And in fact in the 70s found West Qurna, no, no, found the giant Majnoon field in Iraq.

Mr. Sweetnam: The crazy field.

Mr. Mohamedi: The crazy field. And so I think as a company it has been a real success. I don't think it's really relied that much on international oil companies to support it, and now it is incredible situation that geology, it's got very blessed geology, and will be able to exploit that. Your forecast of 1.5 million extra by 2015 may be a little bit optimistic, partly because of the high decline rates in the deep water. And then the budget, the financial crisis has to a certain extent, reduced the

availability of capital to Brazil, PEMEX, and in general in the world. And also we mustn't forget that we were just going through quite an infrastructure constraint period, and that in some areas that hasn't been totally relieved. So that...all of that...but I think that in general your feeling that Brazil will be a major producer mainly by Petrobras) producing that stuff is going to be online, especially by 2030.

Mr. Sweetnam: Any predictions about how the government will structure the deals on the subsalt, and that is something they're looking at right now isn't it?

Mr. Knapp: I think we're at a very critical point in terms of the organizational structure of the...I don't know the difference between sub-salt and pre-salt is. I'm assuming it's just when it happened versus where it happened. But assuming that those are...

Mr. Sweetnam: They're the same.

Mr. Knapp: But assuming that those are...the same, there are some important lessons that can be learned from what's just now starting to go on. It's just a couple years ahead of the Gulf of Mexico. And I think Petrobras does in fact understand that they can learn from that experience, and they probably would like to have foreign partners. How are they going to do their leasing rounds, how are they going to do their tax laws in particular is actually being decided right now. And it kind of could go either way but as pessimistic as I am about Venezuela I'm kind of optimistic about Brazil. Fared is absolutely right that these guys have been technology leaders in terms of subsea, remote operated vehicles, multiphase pipes and pumps, and various other things where they were kind of just step for step with the offshore technology conference, you'd see an American company in the Gulf of Mexico, then you'd see something in the Campos basin from the Petrobrass. So they're good. In fact we didn't quite know what to do with them about the NOC thing, so we said okay, here's the NOCs but here's these other three guys. And it was Petrobras, it was Petronas, and it was Statoil which in a way is a national oil

company. And we said these are really national oil companies, these are very much more IOCs in terms of their motivation and their activity, etc. Will they partner with other companies? I think they will in some of this just for shared experience of it, and I think ultimately all the geology just looks fabulous for what they thought. And it isn't just in Santos, it actually goes all the way up in deeper regions under the Campos and up north of the Campos as well. So this could be the one really exciting major zone that's out there for us once ... until they get to Greenland or someplace that the USGS thinks there's oil.

Mr. Sweetnam: Okay, till we get to the Arctic then, that's sort of the bright spot for now. Eduardo, anything to add?

Mr. Mohamedi: I agree with David with this identity problem of Petrobras, a NOC that likes to believe they're an IOC and it sort of puts pressure on.... It likes to play in both leagues, it likes to play with IOCs in the Gulf of Mexico, north Gulf of Mexico. It also likes to play NOC. So it makes it a little difficult to engage with them and second know what type of a role they play.

Mr. Sweetnam: Actually, if you're an IOC partnering with Petrobras, you're not sure if they're a competitor or a customer.

Mr. González-Pier: They're engaged in all the fora, and many NOCs would like to have that type of bullish strategy with respect to how much they produce, how engaged they are in other regions of the world, where the technology's coming from, they're certainly a model and you would want to emulate them.

Mr. Mohamedi: I just want to clarify one thing. I think that there are quintessentially the three NOCs that you mentioned. All are essentially NOCs but their objective function is slightly different than lets say a more pure rentier state NOCs. The rentier state requires much more revenue and its objective function is pure revenue extraction while in these cases they allow them a lot more operational and to a certain extent strategic autonomy to support a much more wider

industrialization that is going on in their society. In fact one of the big questions about PEMEX is that as Mexico transforms itself to NAFTA and through industrialization fund direct investment coming in, can PEMEX transform itself from purely being seen by the state as a source of revenues and rather much more as a source of industrialization and support for a larger industrial effort, which is the sort of transformation that Petrobras and Petronas and others have made and have sort of gone up in terms of capability with the states' ability to do different things and more complex things.

Mr. Knapp: Yea, they depend more on the government than the company, and the opposite about what I said about Chavez. I think Luiz da Silva is in fact the pragmatist and there are a set of leftists in Latin America that are much more on the pragmatic side than the Chavez and Morales in Bolivia and I guess also Ecuador. Those are pretty doctrinaire sorts and they are a bit of a block. The others around may have left us credentials but they actually won their countries, the lady in Chile, etc., on a much more pragmatic basis so I think that's the camp that Brazil is going to be in. And interestingly, Ecopetrol in Colombia is starting to look like they want to be more of the IOC style NOC and they're doing pretty well. They're trying to list stock, they're trying to really clean up their image and things like that, and so we may have another entry and it's a few years away but of this hybrid.

Mr. Sweetnam: Right. So we probably do need to move away from South America now and North America. Let me go just to the organizing slide that we use here, and I know you all have seen this but just for everyone in the audience here, what we plotted is the current level of production for the top 15 producers, and then on the vertical axis we show how much we expect their production to change between now and 2015. So for example, Saudi Arabia (including the NGLs) was producing about 10 million barrels and we expected them to increase over the next seven years, or eight years, just 700,000 barrels a day. This is total liquids so the

U.S. with total liquids of a little over 8 million barrels a day we expect an increase of 1.8 million barrels a day over this timeframe. That's including the ethanol ramp-up. So we look at that, you can see how important Brazil is in the picture overall. You can also see how important Mexico is on the downside and why it's important for us to be clear on what happens in Mexico. Maybe before we leave North America we ought to pick up Canada and what we think might...any view on what's happening in the oil sands, in this low-price environment, does the million barrels a day seem unrealistic? Or realistic? Dave?

Mr. Knapp: I'd have it slightly higher than that but certainly nowhere near as high as some of the optimistic numbers and CAPP's numbers (Canadian Association of Petroleum Producers, whatever they are) are probably still rose-colored. We had the Minister of the Environment of Alberta in New York last week to talk to New York Energy Forum, and he was sort of saying oh, everything's going to be okay, everything's going to be okay. But that's absolutely the critical question is how does environmental legislation, they now have a small carbon tax, they have carbon trading in Alberta, Alberta only participants, and then they have a fund where you can make a direct payment which is really geared almost completely towards CCS, towards carbon capture and storage. Those prices don't hurt these projects but it's for everybody and it's going to be a bigger number and some of the numbers we've heard this morning [in other sessions], if you're \$200 a ton for carbon, all of a sudden the economics start going wacky in this. And the different between Canada and Venezuela is just pure and simple temperature. I mean the stuff is mobile at ambient air temperature and easier to move around. The materials used and stuff are not at risk...

Mr. Sweetnam: In Venezuela.

Mr. Knapp: In Venezuela, whereas in Canada, Fort McMurray gets real cold. You need special metallurgy, you need to pay people extra, you need to take care of

them, you need to melt the stuff to make it move. And so it's just shakier economics. So I think all the risks are no resource question at all, it's there, and it's 173 billion reported recoverable at a 3 percent recovery rate. There are a trillion barrels probably all in there in Saskatchewan. But the economics are going to be so affected by the environment side that we'll see what happens with it.

Mr. Mohamedi: What we said in our forecast is 400/500 thousand plus, not more than a million, less than a million.

Mr. González-Pier: I would also add the technology side of the equation. They have made large improvements in decreasing the cost of getting the oil sands out. And it's still very high, it's very pricey to develop.

Mr. Knapp: But SAGD...I'm not sure how much farther you can go, with that stuff, where you're using other kinds of solvents like naphtha to mobilize it, that's a possibility with that. My question to the minister was how do you feel about nuclear? You know it sort of makes sense and he said, well, but it takes a real long time to do that and I mentioned that the Premier of New Brunswick, had done some surveying and they already had solved part of a problem, and they had approval to have a joint site. He said, "I've got 70 percent approval," he told us last year, "of doing more nuclear in New Brunswick." Well I mentioned that to the guy in Alberta and he says "Yea, but they already have one and those are different people, it's not going to play out here." So you know it's sort of a repeat of what happened to the U.S. nuclear business.

Mr. Sweetnam: So it's at risk, both of you are saying this is at risk with the low prices. So if we move to Africa now, Nigeria, Algeria, do these look reasonable that we can expect another 5 to 7 hundred thousand barrels a day from those countries in the next seven years?

Mr. Mohamedi: We have two risks to this. One is it assumes the return of shut-in volumes because of politics, the MEND [Movement for the Emancipation of

the Niger Delta] and the whole Niger Delta issue which I think will persist. If that's not going to get any better, so that's...you've assumed that that does get better. And the deepwater offshore again tends to peak and then come crashing down faster, so sustaining some of those volumes over the next, you know, the next few decades.

Mr. Sweetnam: Would that be an environment where you can make more investment essentially, you're saying, or it's going to decline off?

Mr. Mohamedi: Well there is the offshore definitely, but I don't think that one should discount the political risks, and in a sense Nigeria is becoming a failed state. There are larger and larger parts of the country that are now under the writ of the government, and that is also going out. The violence is not only now on land, shallow offshore, there have been incidents of going out, quite far out, so I think this is the problem that you're going to have to encounter with this country for quite a while.

Mr. Knapp: I was there a month ago and my take away on it, what really interested me is the people there were talking about Nigeria being a drop of oil in an ocean of gas. And their gas development has been incredibly frustrated. They can't even run their one gas plant, or their four gas plants or whatever it is. And that's sort of become a priority there in the middle of the major policy thing but the President, is he still alive? Yar'Adua is very, very sick. There is a lot of stuff going on on the oil side with the Lukman regime kind of moving in and trying to redo the whole NNPC hierarchy. And until that gets resolved, it's very difficult to make a call even without MEND, I mean even among the people that don't have guns, of course everybody has guns there. But from a resource standpoint and from a province which has traditionally been a home to very good cooperation between IOCs and NOCs...they had a major exhibition at the exposition at the African Oil and Gas Conference that I was at...lots of the major oil companies were there. I talked to a lot of these guys, they understand the risks of being a Port Harcourt and Lagos and places like that,

but they do like the business environment. They do, they love the geology. And Shell has been there forever, Chevron ENI, Conoco, Statoil is now in there and who shows up but Gazprom to get involved with some of the gas. So it's a good environment for IOC/NOC cooperation. It's a good environment for oil and gas development but is it a failed state or not? And we don't know the answer to that yet.

Mr. Sweetnam: So that's the wild card?

Mr. Knapp: Yea. Algeria, I think that this might be optimistic. A lot of us don't like the hydrocarbon law very well. There are some just basic decline rate imperatives going on in Hassi Messaoud and other places that are going to be difficult to overcome. Obviously there's more condensate that's kind of showing up on the border with Libya, but I think it's a struggle for them to stay even in Algeria.

Mr. Sweetnam: And how about their relationship with the IOCs there? Is that something that works?

Mr. Knapp: It's in-between. You know, Anadarko has been there, Repsol has been there. There obviously are these anti-French things have been around from independence times and stuff like that. And it's made it, you know, it's a little less interesting, to think, to some of the big U.S. and European based IOCs, that they would rather go maybe somewhere with more upside like Nigeria than they would to go to Algeria, especially if they're not interested in the gas business.

Mr. Mohamedi: One country that you left out on this [bubble chart] is Libya. And I think that's looked upon favorably from a geology point of view for the prospects appear very optimistic but again very bad terms. And that the IOCs have had a hard time getting a contract that they feel that they can get a good return on. And I think this is going to be a constant struggle with...it's not an ideological struggle, it's an issue of the government thinking that it can maximize its returns because where else can the IOCs go? They've got an attitude that they will have to come to us, they have to work with us.

Mr. Sweetnam: so it's sort of a standoff, we didn't forget them, they're just not in the top 15 or the current producers. But you're saying.

Mr. Mohamedi: Right.

Mr. Sweetnam: ... But you're saying from their perspective...

Mr. Mohamedi: That's right. And they're great prospects for oil and gas.

Mr. Sweetnam: And so it's hard to know which way that standoff will go in the current environment, with low oil prices and the low demand.

Mr. Mohamedi: I think that...

Mr. Sweetnam: Power shift to the majors at this point? Or...?

Mr. Mohamedi: No, I think that they will continue to be a standoff as long as the government feels it has sufficient revenues. And it has lived for so long to a certain extent on a much lower revenue base, and that the expectations from below are not that strong. But over time I think that will change. And again, I think my rule of economy...prolonged periods of low oil prices will concentrate the minds of the government, and they will modify and to....

Mr. Sweetnam: Although are you saying \$50 isn't all that low for Libya?

Mr. Mohamedi: It is still, it's still.

Mr. Sweetnam: It is low.

Mr. Mohamedi: It isn't that low because they've been living for so long on a much lower.... We have this concept at POC called the threshold price, how they can balance their external accounts. And as I mentioned, Venezuela was at about a hundred. Libya is much lower than that, it's about in the 30s. Saudi Arabia around 50s.

Mr. Sweetnam: And so we might have to go to lower oil prices before the integrated oil companies...

Mr. Mohamedi: Or over time that their needs will rise. And we've noticed that these threshold prices over the decade have gone up, Saudi Arabia was something

like 25 in the late 90s, today it's double that at about 50. The needs of the government, the needs of the state, etc.

Mr. Knapp: I might make a slightly corrective footnote.

Mr. Mohamedi: Please.

Mr. Knapp: And it is the world's view that Libya opened up and they created these very onerous terms in the oil contracts. They didn't actually...it wasn't the government that set the terms. Companies bid participation rates and they bid very high. And then they turned around and said these terms are extortion, but it was the oil companies that had bid. A very interesting way to do things. When you talk to Shokri Ghanem, who was running the oil company at the time, he said I don't know why they're blaming us for the terms, they're the ones that.... Well maybe that isn't the right structure. Maybe they need ... they've done two rounds, maybe the next round, the companies are going to start figuring themselves out and not leaving so much money on the table. It's also forgiven blocks, that the first and second offers were so far apart, and it wasn't necessarily knowledge basis. Fareed's point very well taken. There's a big upside because here's a province which was good to start with that was just fallow for a couple decades. And the options there for enhanced oil recovery are gigantic. They were using...they couldn't get tools under the sanctions, they could do the kind of work normal reservoir engineers would be doing on those fields, so there's a lot of therapy available independent of some of the exploration that's taking place in the west and in the south. So I'm an optimist about Libya but I'm still a bit confused about why, and I fall into it too, where they said the terms were good enough for the companies to come in, it's their terms.

Mr. Sweetnam: And the companies perhaps thought they could come in and change the terms afterwards.

Mr. Knapp: Yea, and they tried to renegotiate it and it didn't work.

Mr. Mohamedi: And I also think the atmosphere, a couple of years ago,

three or four years ago, was a feeding frenzy. Where else could they go?

Mr. Knapp: They didn't have enough bureaucrats either to handle it. And so there were...things went too slowly and it wasn't a good exercise.

Mr. Sweetnam: Let's move to the Middle East then, look back at our bubble chart. Here, we sort of have Iraq and Kuwait moving steady. UAE and Iran dropping, not big changes there. Obviously the 800 pound gorilla is Saudi Arabia, and in this we use it as a swing supply. Are you concerned in the Middle East that they haven't updated their reserve numbers or changed the reserve numbers over time? I mean do we think there's an issue here or we're too optimistic about Saudi Arabia?

Mr. Knapp: No. No, I trust the Saudi members. It's the only numbers there I trust. And they haven't revised their numbers but some of us have. That's where we thought that Kuwait, that that 9 and that 4 were good numbers and we decided to put them in the other order. So, and we did a ... I actually published, along with Tom Wallin, our own assessment of reserves as a sort of alternative to the *Oil and Gas Journal* but we didn't call them proved reserves because that's not what they are in the Middle East, they're P-2 reserves except for the Saudi's. They're proved and probable. And so what I had to do was gross up the U.S. reserves and the Russian reserves which are more strictly proved. And there was so much guff for our partner at the time who had done...who had some major accounts with the Kuwaitis and the Emirates and were under a little pressure from them, they decided we couldn't use their name with it anymore and so I haven't had a chance to update that, which wouldn't be any big changes but just to actually just aggregate the proved and the probable. But I mean it's a very good point that when we look at the numbers from most of the countries in the Middle East that the reserve numbers you're looking at are what we would call proved and probable, not proved.

Mr. González-Pier: Glen, I have a question about the United States production forecast.

Mr. Sweetnam: Yes, yes.

Mr. González-Pier: Where is the extra production in the U.S. coming from?

Mr. Sweetnam: So then U.S...extra production is coming from...

Mr. González-Pier: Non-conventional.

Mr. Sweetnam: ... the deepwater (Gulf of Mexico) and also from enhanced oil recovery. And then biofuels because this is sort of total liquids. So it's those three components.

Mr. Knapp: And maybe a little oil shale.

Mr. Sweetnam: Yes, right,...

Mr. Knapp: The deepwater is rich in liquids.

Mr. Mohamedi: Can I make a comment on Iraq?

Mr. Sweetnam: Yes.

Mr. Mohamedi: You've rightly got it here as flat as you've got Kuwait. But I think Iraq has a massive potential. And I think that the problem is muddling through and figuring out on two levels how to manage the sector. On the leaky faucets level before we get to the meaning of life level, is the whole issue of trying to stabilize production right now. And we think that they will be down possibly 100 thousand barrels a day this year because maintenance and all sorts of other stuff, and then there's even talk behind the scenes of about 250 thousand barrels a day. The Ministry, in terms of the development of the sector over the next...in the future, is still very much wedded to these bid rounds which is another...which is frightening the companies that you will have a feeding frenzy and then a race to the bottom, and they don't like the terms at all. But under the pressure of this short-term decline that you could see them using short-term EPC contracts to fix and try to get some of this production back up and then work on some of the new fields if there's a sense that future terms could be better. Future terms also depend on the hydrocarbon law. And the hydrocarbon law is really tied up into what the future of Iraq will really look

like. Will it be really one country, and this is tied up in the whole Kurdistan debate. It's also tied up in whether you create separate regions emulating Kurdistan, like in the South, etc., so it's a real meaning of life issue on the future of Iraq. And oil is at the absolute center of the future viability of this entity called Iraq. And I think that it's extremely important that they work it out. Not from the point of view of short term, trying to keep revenues up because already revenues are starting to fall below what they had budgeted with oil prices crashing but also now with production crashing. And so that's going to be a real problem for them. And the second thing is so that the future viability of creating a new, modern Iraq. So I think this is incredibly important for Iraq and it's also important for our energy balances going forward because you could see major upside over the next 20, 25 years.

Mr. Sweetnam: Right, and I think on the next slide we sort of have them jumping to 2 million barrels a day in that next period from 2015 to 2030. You're right about that being a big part of the projection. Do you...or Eduardo, anything on Iraq? Okay, should we move to....

Mr. Knapp: Kuwait, just a... and I agree that there are short term problems and that Kurdistan is huge for Iraq. We shouldn't lose track of the fact that I think most people believe that Iraq is the second richest oil province in not just the Middle East, but in the world. I mean it's just...it's got huge upside potential, but it's got so many issues beforehand. I'm not ready to step out with a real big number sooner than where you have it. With Kuwait, they have an interesting and very special situation that they have upsides on the northern and western fields which they can't get through this whole Project Kuwait deal, which has become a political football, but they also have a real problem with Burgan which used to be the second biggest field in the world, which was so damaged during the Gulf War with shaped charges and with fires that were drawing huge amounts of reserves up that they lost. There used to be an artisan oilfield if there is such a thing, and sort of producing a lot by its

own pressure. Now they need gas or water to stimulate to try to recover and it's a technology that KPC doesn't have at hand. So this is one of those classic places where if they can get the law right, if they can make the technical service agreement, Mexico ought to be watching carefully, to work well there on the oil side as they tried with gas in the north, then we have maybe an example of how that relationship might be built. But Burgan is sick. The big field is sick.

Mr. Mohamedi: And the bigger issue is Kuwait had in the late 80s and the KPC, in the fall of KPC one of the best national oil companies in the world. To the point where they had integrated downstream with the upstream, branded gasoline (Kuwait in Europe), and had very sophisticated working that. And then ironically democracy brought politicization. And KPC became a very political organization as Senators, MPs, cousins and sons all started to work in these organization, became part of the patronization network. And it [KPC] has become a shadow of itself, of what it used to be, and that is reflected in some of the things that you've been saying, and then got caught up with Project Kuwait. In parliament saying no, you can't do whatever you want with the IOCs, we want to see all these contracts, and it says to the government, it says to the ruling family, so it became this development of the oil sector became part and parcel a prerogative of the ruling family and the prerogative of parliament. And they are now locked horns in trying to figure that out and there's a stalemate. And that's why every two weeks now the government falls in Kuwait, the parliamentary government. But the ultimately irony is that Kuwait is so rich that it can live on \$10 oil. Actually that used to be the case, it's gone to \$20 in terms of its threshold price. And so in a sense nothing...there isn't that economic catastrophe waiting to happen, especially after five, six years of incredibly high oil prices to concentrate their minds. So they have the luxury of having these extended parliamentary government battles without concentrating on what's going on below the ground.

Mr. Sweetnam: Okay, so then let's... why don't we move up to Russia, which is clearly another big wild card. We don't have them changing much but their production had started to drop and I guess it just increased again in the last month. What's your take on Putin and Russia and what the future holds for them, Dave?

Mr. Knapp: Well I don't think he's the president or premier anymore but I think he's still the premier. The biggest unanswered question on the supply side of the oil market is do they have the potential to stabilize the Western Siberian production and bring on some of the Eastern Siberian and the stuff in the Far East and some of the stuff in Timan-Pechora in the North? Yes, they do. And what we've seen in the last couple of months is that a field up in Timan-Pechora, a joint venture called South Khylochuyuskoye is starting to kick in. They have been ramping up production at the Salym field which is interestingly a joint venture basically between Shell and Rosneft I think. But there are these set of TNK-BP involved in central Eastern Siberia, the Vankor area which has really done nothing and it's supposed to have been producing tens of thousands of barrels a day last year and hundreds by now. And it did two last month. But it is bigger than .5 which it was the month before. So some of these developments are going to take place. There is some upside left in the Sakhalin projects. Certainly on the gas side that's now just starting up. Is that enough to carry them to 13, 14, 15 million barrels a day? I think that's kind of a stretch given where the state of production in the heartland in Western Siberia is, but the policies, the politics, Moscow's sort of decision-making on a week to week basis about how extortionate they want to be in terms of the taxation are clearly in the driving seat for Russian supply development. And I think about it every week and every month and I come to different decisions half of the time. So it really is a poser.

Mr. Sweetnam: Fareed, what's your take?

Mr. Mohamedi: Well, I think that...I mean this whole issue of the recent

declines could continue, so I think that keeping it around 10 and going even to 2030 is pretty much correct. I mean there's the whole thing of decline rates could accelerate because of poor investment conditions. The whole issue of exploration in Eastern Siberia and what happens there in terms of developing that whole region, and then offshore which they don't have the technical capability to do. And the proliferation of small firms in many parts of the oil sector and how they can cope with lower oil prices, the taxation issue, so there's a lot to resolve out there. I do believe though, again, financial pressures on the State could force a rethink. I mean oil revenues became quite important the last few years. I believe almost as important as the gas revenues. I believe that gas revenues are up to about 30 percent of total government budget, and so you have it. This is essentially a rentier state that we're talking about with heavy dependence on hydrocarbon revenues.

Mr. Sweetnam: So how does it cut? Which way does it cut, then, the lower prices they make...

Mr. Mohamedi: They open up more and hope that the investment comes in from their own private sector and from the foreigners.

Mr. Sweetnam: Okay, good. And here we have a Russian question. Will Gazprom make good on its gas capital investments in the next several years? The current development with the South Stream. David this is one of those

Mr. Knapp: It's taken them 30 years to do almost nothing, why are they going to get anything done in the next 30? You know, it's...I'm not an optimist about the decision making within Gazprom. That's one of the weakest spots. The other thing that's going on with Gazprom is it's in oil a little bit now that they bought Sibneft. But there is a guy named Vladimir Milov, who some of you may have heard, who has this thesis of creeping renationalization of Russia which has been somewhat, I think, at the core of the declines that we saw recently, that in order for them to take out Yukos they built up very big debts. They have to pay those debts

back. That's money that's going to somebody other than the upstream drillers. The other companies that are still out there, including Lukoil which is kind of a quasi-state but really more like a private oil company, and certainly BP...or TNK-BP (let's get that in right order). They have been building war chests in order to keep from getting bought. They've been dividending out money in some of these companies to the rich oligarch oil generals before it gets taken away by the government, and all of this has just left very little money going into the ground in the upstream. That is a little less in play right now, maybe it has something to do with the ruble and about how the loans were denominated and certain various other things. I haven't really looked into it seriously. But I think that's kind of a major deal. The question of gas problems and what they get done with gas is not my area, but like I said, I'm not optimistic and certainly the development in Shtokman at least there they're bringing in Statoil which knows some stuff about how to do it although their LNG plant that Snøhvit hasn't been particularly successful, they at least know what the problems are, they don't know all the answers. And so I think that maybe that's going to start to work.

Mr. Sweetnam: Okay, so I've got a number of questions here that are not...just aren't quite fitting into...I wasn't able to work them in. The first is China. There's a surprise that China was left off and maybe we made a mistake in not including China, it might be that...

Mr. Knapp: It's there.

Mr. Sweetnam: Yes, it's there, I see.

Mr. Knapp: Just below the line.

Mr. Sweetnam: Yea, just below and just up. So we don't see a big change in what they can do geologically. There's just not a lot for them to do there.

Mr. Knapp: They're still finding stuff offshore but they're also now at this point that we see in the Gulf of Mexico here where the last generation is starting to

get tired and fall off, and they're then having to replace that with these new fields. They just brought on another Bozhong field in the Bohai Gulf a couple days ago. There's more developments coming there and in the South China Sea. But meanwhile just in the... I just got the data for February yesterday from China Oil and Gas and Petrochemical, and the west has gone real quiet. The Tarim and the Xinjian, which is the name of the province but also their sort of assorted oil fields, and the Tuha basin, Terp (phonetic) and Hade, they're all way below what I thought they were going to do. And unless the Uighars were doing something I wasn't watching, then maybe that's the geology out there isn't playing out. And that was the sort of twin towers of their development, it's their big development in the west and more from the offshore. And the offshore is about a tie, I think, and the west looks like maybe it's on the downside. So I would be surprised to see growth in oil from China. And if there is any growth, the near west of Xinjiang and some of these other areas are also doing kind of okay. But you compare that to the demand growth, and it doesn't help out the liquid fuels situation one bit.

Mr. Sweetnam: All right.

Mr. Mohamedi: There's some optimism in gas in China but not oil.

Mr. Knapp: Well using the coal is probably the real key. You know, coal to liquids, if it could be made viable, both for environmental and for liquid fuels issues, it's pretty essential. And China has been all over, entered many of the technology activities that have gone on when I was in the IEA. The Chinese, if it said coal, they were there.

Mr. Sweetnam: So now what about Kazakhstan. I know we don't have that up there because it's not producing a lot there. But obviously we have big hopes for them.

Mr. Knapp: Yea, 1.2 million.

Mr. Mohamedi: Yea, I had flagged them as a country in... . I had flagged

them as a country you had missed out on in terms of putting up there with Libya, and I think that's going to be one of those countries that you're going to see a lot more coming out of. Of course the evacuation issues are always going to be there and their relationships with Russia, and then with the alternative pipelines in going other places. It's always going to be a very interesting country, countries like, and national oil companies of, China that see that ... also see that as their near abroad as much as Russia sees it as its near abroad.

Mr. Knapp: Their immediate neighbor.

Mr. Mohamedi: And Russia wanting...I mean Kazakhstan wanting to diversity its relations. Kazakhstan unfortunately in the last few years, and this may be because it was ... looked like a success story, borrowed a lot of money. It's private companies, its banks, borrowed a lot of money overseas, and have gotten quite indebted. And so there is a much need for cash right now in Kazakhstan. And so the Chinese bearing large sums of money may be a real advantage for the Chinese companies coming in.

Mr. Knapp: And the pipeline.

Mr. Mohamedi: And a pipeline extended east.

Mr. Sweetnam: Pipelines raise political issues there. So there's one question here about have the politics gotten worse? I mean we're sort of going around. If you step back and sort of take a broad view on this, do you think that the politics in some sense changed over time? We've talked about how we've gone from the international integrated oil companies to the national oil companies, but do you have a sense that we're going through the same cycles that we've been going through or has something changed?

Mr. Mohamedi: Politics in what sense?

Mr. Sweetnam: Well, have politics gotten worse? Kuwait, Iran, Nigeria, Venezuela, Algeria, Mexico, Russia. Is it a pattern, a coincidence, or just the same

old situation?

Mr. González-Pier: Whenever the price goes up, politics get worse.

Mr. Sweetnam: When the price goes up?

Mr. González-Pier: Yea, so I think the concentration of a lot of these oil reserves in these countries which are lesser developed, plus the huge increases in oil demand, which at the same time create large financial transfer from east to west, south to north, politics are going to get more sensitive.

Mr. Mohamedi: That's...

Mr. Knapp: When's the last time we heard the phrase resource nationalism? Low prices kind of took that away.

Mr. Sweetnam: Kind of took that away.

Mr. Knapp: In a way, it's a mix. It's worse and it's better. Certainly Venezuela's worse than it was, and I think it's still getting worse. Russia is more confusing, probably worse but I just don't know. I can't make up my mind about Russia. The Saudi-American relationship is different and probably not as good as it was in the Bush Administration with Obama. Can that be changed? Maybe, maybe not. The other kind of relationships, obviously Libya's a much more positive situation than it was when Qaddafi finally accepted some responsibility, if you will, for Lockerbie and tried to get back in the international community. That's sort of a positive, that's where things have gotten better. But I think there's...things are cutting both ways, in a lot of areas of the world. And when you have prices at 150 and then at 50 or 40 or 35, what do you know? I mean you've been whipsawed so much that I don't think it's a good time to make a judgment until we've had some better view of where the oil prices are going to be and how the people are going to act in the coming environment.

Mr. Mohamedi: I want to make three points. One is the term resource nationalism was really a misused term. I don't think that what you had in the last

decade was resource nationalism. It was just ... gave the major producing states more leverage vis-à-vis IOCs, and that the terms that they could extract were better, especially with demand growing so fast, capacity constraints etc. So I really think that's a hangover word from the 1970s or 60s when countries were becoming independent and asserting in a sense of nationalist control over their oil sectors from the colonial powers. I know it's splitting hairs but it's really important because then it sets up our next...my next argument that actually low oil prices then changed terms. It's not an ideological position that these guys don't know, I have to own. And now maybe Mexico will make me wrong on that, but in general I think that many...so in that sense politics or relations between major producers and the foreign oil companies, I think will improve over the next few years. I think there will be a greater flexibility by the major resource holders. And the third point on Saudi Arabia's relations with the United States, it's a very long issue, but I will say that it's actually changed for the better in this way. It was an unnatural relationship back in the 70s and the 80s. The Saudi's were completely...when the phone call came from Washington the Saudi's said yes. And to whatever the United States told them to do, lower price, buy \$60 billion worth of arms, finance Afghanistan, finance the Contras, and the Saudi's said okay, wrote the check. And in the end they bankrupted themselves in doing that. And wasted huge amounts of money. And actually now Saudi Arabia is in a much more stable position. It stopped being a dove in OPEC parlance, there are no doves left in general but most of the OPEC countries like high oil prices. They may not like ... the Saudi's I don't think like 150 but they certainly like 75 as the King said. And in a sense the Saudi's want to balance consumers with producer needs. They've got a new big consumer now they have to think of, China, not just the United States. But they positioned themselves with the United States in a more neutral position. And they've become...they've learned to live in their own neighborhood. And in that way they're counseling the

United States, and they certainly did George Bush, George W. Bush, that you have to stop interfering with this relationship, stop being disruptive, interfering in the region, stop being disruptive, and in fact they created a foreign policy for themselves that protected themselves and positioned the whole region in a sense independent of the United States. And I think that's a much more stable situation to be in going forward. And I think that in that way and given the arguments that Obama has made on his recent trip of wanting to live and listen with the Middle East and with the Muslim world, I think they'll find that a very nice message and not the bullying message that they got from the last administration.

Mr. Sweetnam: So an important aspect of politics, in some sense, has gotten better from your perspective.

Mr. Mohamedi: I definitely think so. And I think that the region, the Gulf, is a much more stable region today than it was only 10 years ago.

Mr. Knapp: Well, I can't really disagree with that, and obviously if we're from the American perspective that yea, we like it when they pick up the phone and when an Energy Secretary, which actually happened, can call the Saudi delegation at an OPEC meeting and say we want you not to cut or you know we want this and that. That's probably not healthy, so you're absolutely right about that. The other thing is that this is one of, if not the best king, that's ever been in the throne in Saudi Arabia. So Prince Sultan, who's a really bad guy, is quite sick. So maybe things get better from the whole success standpoint and whatever. But things are going to be different. If you want to throw in U.S. - Israeli policy, maybe taking a more neutral stance, that would play hugely positively for Obama in the Gulf. It won't play very well in my town up in New York, but the domestic politics have a lot of issues. But we're in for a lot of geopolitical froth here in terms of figuring out, as the world figures out, who is this Obama guy. We know he didn't like the Bush guy, and that made them somewhat predictable, but do we like this guy or not. We'll see; the

Europeans are a little confused at the moment.

Mr. Sweetnam: Well on that relatively positive note, I think we need to bring it to a close today. We're out of time. Please join me in thanking all three of our experts for their insights today.

END OF SESSION.