BETWEEN:

Nipon Construction LLC

[Claimant]

Miller & Co LLC

[Respondent]

Before

Ms. Naila Nafees

Day 1

Tuesday 1 July 2025

Mr. Alan Bell
On Behalf of Claimant

Mr. Ravi Kumar
On Behalf of Respondent

Test we'll explain that in a couple of minutes.
(1.04 pm)
CHAIRMAN: We'll explain that in a couple of minutes. Then put into a three dimensional grid, if you will. 100 metres by 100 metres, so it's about the size of four of these ballrooms put together and it's about 2 metres tall, so it's about my height I guess, just to get a sense and our model has I think eight and a half so you can imagine they're quite big, but it's all digital, right? It's a digital representation on a computer.
Just to make a quick point here is so this is from our example and because we know this and we have the data available, this shows a well and the point I want to make clear is that a model starts out empty, so most of the cells in a model when we're looking at a field like D1-D3 field start out temporary and it's only after we understand -- only cells that are known are where the wells are.
A. So in our case, of the 8.4 million cells only about 3,700 of those cells actually intersect the well data. So all the rest you know basically 99.99 per cent of the cells we have to populate and we do that using our expertise.
SIR BERNARD RIX: And using state-of-the-art software to

build the geocellular model.
CHAIRMAN: What's the reference to 8 million cells?
Where is that?
A. Sorry, it's right there, yeah. Just to get a sense that most of the model has to be built, you know, by the geologist, geophysicist and all of these millions of cells have to be assigned a value, porosity, net to gross, water saturation, permeability, all of those have to be assigned and we do that using our expertise and algorithms, but also --
CHAIRMAN: Isn't that done by the digital equipment?
A. It's done by the digital equipment guided by us. Guided by the operator of it. So we tell the digital equipment how to do the process. Yes. But it does run. We give it the parameters to work with.
CHAIRMAN: I might have misunderstood it, but I thought the digital equipment produces the images that portray **what is there and then:**
"The skill of the human being is break it down and to interpret what is there and whether it has any gas or oil relevance."
A. Yeah, that's the case with seismic data it is projected to us and we interpret seismic data and this is a type of seismic data that's probably been spoken already RTI that's very important to this field.

And so this is the actual seismic data and it's been tuned to really highlight gas pay. So this is a well and these are gas pay sands in the well and this is the seismic data that's calibrated to that.

MR DAYAL: Yes, so there is data that's presented to us and we interpret, but then we take that data and we along with algorithms we extrapolate the model, you know, into space.

Where we have data like this, we have very high confidence in our modelling, you know, where we have less confidence when we're away from control like the seismic control, if that makes sense.

CHAIRMAN: Did this technology grow out of the search for oil or does it go hand in hand with oil and gas?

A. It's oil and gas hand in hand. This is seismic technology has been I think -- well, I think it's been around since the 1940s in the offshore environment like where we are here, I think, you know, seismic like the type we have here probably started in the 1980s and then again log data it keeps improving in quality over years on year it gets better technology, better resolution, et cetera.

CHAIRMAN: The search for submarines in the last war shown in war movies was an early form of seismic search, was it?

A. Sonar would be another good example, right. Sonar is going to pick up a submarine, but it could also penetrate and see stuff down below. You can do sonar and actually see features, you know, below the seabed, that certainly a good analogy.

MR SALVE: So I mentioned a couple of things. I'm going to try to move along here quickly, but what I want to say from here is at the time of the AIDP pre-production there were uncertainties and we had estimates of net pay that the contractor was relying on, GCAs and also Schlumberger and what they gave Reliance at the time of the whole thing it wasn't what they hoped for, but it's the way it is. The AIDP was what we believe to be higher values than are currently understood now post-production.

So that the key question is and again it really was the thin beds that I talked about where the difficult ones, the blocky sands are easy to evaluate. Everyone gets those right. Those aren't in question. The difficult bit are is how much and how extensive are the thin beds and how much they will contribute gas to the overall field.

I also talked about models, so these are very schematic, but if you can imagine this is a cross-section through one of the channels in the

D1-D3 fields and in the AIDP the model was what we call unconfined. So it meant that we had these channels and the thin beds, the levees and the overbanks could extend a great distances away. is turned out post-production with the knowledge of What is turned out post-production with the knowledge of post-production -- and Phil will talk about that in a second -- is that our understanding is now unconfined or excuse me confined, so this these channels now are encased in a canyon and that these thin beds that were thought to extend a great distance away now appear to be basically stopped and are really in this canyon and don't extend much beyond it. So that's the crux and I just want to point out that pre-production is a type of the AIDP and these are volumetric metrics. We didn't have production data yet and Mr Spellman in a second here will explain to you the importance of the production data.

MR SPELLMAN: Thank you, Phil. Phil described seismic data covers the entire block, but it's not detailed resolution. You then drill wells and get logs and that gives you more specific detail you get core out of a smaller set of wells because you don't core everywhere. The next piece of informations that a very, very

important piece of information is what we call I'll refer to as performance data which is going to be production and pressure data. So as the field produces, you keep track of the pressure initially and then watch that as the field produces.
We liken that to letting the reservoir tell you what size it is by listening to it. There was a couple of suggestions of analogues of gasfield balloon or decompressing aeroplane.
We thought this tank of compressed gas was a better analogue than what we had before when it changes shape, changes size and a reservoir doesn't do that.
Then the decompressing aeroplane we that's not how the gas was produced so whatever is a compressed gas table and it's showing the original pressure we have a valve to simulate the 18 wells -- phase 1 wells. So we're going to turn on this valve. We're going to let that gas produce, we're going to measure the pressure from the pressure gauge and we're going to keep talking about how much production is coming out of it and plot that up on a simple pressure versus cumulative production plot.
That's what's shown there as the field is moving.
You see the second valve show us. That's the phase 2

drilling that was contemplated in the AIDP and if you continue down to monitoring that pressure you project that data it's going to project to the gas in place estimate and that would project to receiving 6 TCF before the end of the year.

This is an illustration only we've got multiple P/Z plots for the visit well that is we can go into detail. This is just an illustration to show that.

That was the understanding of how this reservoir should have performed. But we don't know it. We don't know how big the tank is. We have the estimate from the volumetric. Phil has described it, but we're going to go ahead and put this reservoir back on production.

So we got phase is wells drilled, the original pressure is the same, but we see that as the production continues, that the reservoir pressure is dropping faster. And that was noted by the parties, that it was dropping faster than expected and it's really dropping faster than what it would have if you had a 16.3 TCF reservoir.

You look at that up the actual data and it's telling you that you're got about 4.5 TCF of gas and that's about the volume that was estimated, you know, in the RFDP timeframe, so a couple of years after

production started.
So that's what caused the geoscientists and the engineers to go to this field and find out where did the gas go? That's what happened to everyone.
That's the two:
"Of the big components are the confined unconfined nature of it. He also mentioned the laminated sands."
CHAIRMAN: Don't understand that confined. What was the confined name "zero" it.
MR SPELLMAN: The deposition pre-AIDP was that it was confined to the whole and could extend large distances.
A. No, you're telling. Confined model means that if you don't have this contained system, if you don't have these boundaries that are confining the reservoirs, then these thin beds can extend a long way and they could and would contribute as the field was being produced they would contribute back to these main channels where the bulk of the wells would be located in the confined system again basically the same picture, but we have this koonion and so these are actually ^ these things, these channels and levees overbanks are trapped in the canyon and again outside as it turns out after more investigation by the contractor, turned out to be not containing the thin

beds as expected.
So that's the differences is unconfined, able to go all the way from the channel system and confined most of the gas resources are right near where the channels are., if that ep hes.
CHAIRMAN: We normally have morning tea break and I don't want to interrupt your presentation.
How long is now left in your oral presentation of these slides? Please don't feel obliged to rush it.
I want to understand this.
WITNESS: I'd say it's probably, what, 15 minutes.
Yeah, probably a few more minutes.
CHAIRMAN: Is it acceptable to continue for 15 minutes?
MR KOHLI: May I just point out one thing. Many of the questions that I have are relating to these slides.
So this presentation is actually quite helpful because those are the questions I had to ask to make sure that everything is fully explained.
If the gentlemen here take a few more minutes to actually explain it properly, I won't be minding that at all.
CHAIRMAN: Yes, well, I feel much the same as you, Mr Kohli.
And I was thinking during this presentation that it might for any future arbitrations of this kind, be

beneficial to have, if necessary, a couple of experts, because they may not disagree, but if this had been given at the very beginning to the subcontractor -- I'm not criticising anybody -- it would, I think, have been helpful.
So let us press on, and you take the time that is necessary.
A. Thank you, sir.
So the production performance, you know, that we saw just illustrated by that schematic of a tank with compressed gas being produced from it, indicates that smaller volumes were actually in the field until just described parts of the component is due to the confined/unconfined interpretations.
The other part, as Phil mentioned, in going through the log analysis the net pay pre-production and post-production was significantly reduced and that's because the contributions from the thin bed sands did not come into play once the production data was available.
So there was adjustments made to the confined/unconfined system and also to the net pay calculations.
Yeah.
Q. I just briefly talk about this. This is a graph of

the gas in place estimates original gas in place estimates, so this is the 2P estimates through the whole time of the experience in January 2009, you have production data that's now available pre-production and all the estimates through time is additional wells were drilled which is the blue line showing the well dropped out numbers were going up and then after production of the numbers have droadges snrorktsz down to the levels which you see over there on the grove. That's judgment a summary of that. ^^ wide range of estimates, post-production there's a pretty tight range of estimates from multiple consultants.

2 Q. So natural processes --

CHAIRMAN: Can I ask a question that arises out of Prof Cameron's report. He denies that he is engaging in just retrospective examination and being wise of events. He says once it's after events and this has really fallen, you have to go back and ask what you failed to do earlier in the life of the exploration. So at some stage in your presentation, I'd like you to explain why it wasn't possible to get the warning signals that required not only that Reliance would inform the government exactly what was happening, which is a question, but that it would have alerted those who are scientists looking at this, who

are professional people doing their job, of really examining what steps had to be taken to put this in reverse given that the signals were coming that it was really a very disappointing well, a very disappointing source?

A. Right.

CHAIRMAN: That I think is really at the heart -- core of this, of the conflict between the parties. So what --

A. Yes, we don't directly address that head on in this presentation. What we're trying to show is the data that was available at the various points in time, the tools that were available to analyse that data and how that data was used and we stopped short of addressing the question you just brought --

CHAIRMAN: We'll come to that in due course, no doubt.

A. Yes, sir.

CHAIRMAN: But with the help of anything you have to say about the exploratory process that will help us to understand that question at the end of the testimony?

A. Yes, sir.

Q. So this is a quick analogue here just to, you know, modelling is -- excuse me, modelling is difficult sometimes, modelling and this is an example of forecasting storm tracks and I draw this analogue to the difficulty especially prior to the getting

production data to estimating the gas in the D1-D3 field. So this is an example from the Gulf of Mexico. This is a storm from 2022 called Tropical Storm Ian ^name) that turned into a Hurricane and all of these tracks, these are models, you know, multiple realisations if you will, of how this storm could track three days out.

So you can see that the predictions from competent meteorologists scientists using modern software there was a wide range of uncertainty and that's the nature of natural processes, is there's a wide range of uncertainty. So how did this turn out? Well, again predictions got better as you got closer to landfall, but the prediction was at the edge. It was maybe the far edge of one of the predictions.

So the landfall was actually just outside this range of uncertainty.

So here are the estimates from leading experts in the D1-D3 fields pre-production and it also had a wide range of uncertainty. But you see, you know, coming from all the way from the low case, if you will, the best, the proved case of D&M, all the way to the 3P case, if you will, of Gaffney Cline.

You can see a range of expert estimates of what the OGIP is in the D1-D3 fields.

But landfall, if you will:

"Turned up to be herein a the edge of the range of uncertainty and that just happens. We see it in our business."

That you can do your best efforts to estimate gas in field, but sometimes it's just, you know, whatever circumstances more complexity, more a model that turns it not correct leads you to find out that it's actually much less than was predicted and that's what happened to the contractor here is that.

(1.27 pm)

CHAIRMAN:

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CHAIRMAN: We will take a short b

CHAIRMAN: We will take a short break

CHAIRMAN: We will take a short break now.

(Short break)

(1.28 pm)

CHAIRMAN: Did you take remedial steps or cut our losses much earlier than we did?

I'm sorry to keep taking you back to the core of the problem that is before us, but anything you can say on that -- I mean, this is an enormous variation, from a layman's point of view, in what the experts are saying.

Maybe that's relevant to the solution of the ultimate problem, but is that an unusual configuration that you're now showing us in the range of uncertainty? Is that unusual in your business to have such variations from a well that appeared to be or source that appeared to be very promising at first? The "glorious days", as Reliance called those first days, the "glorious days of exploration".

A. I guess in our experience, it happens. It's not real frequent, but if we look at what we see at the beginning, looking at the other side of the storm, landfall all those models were created by meteorologists that knew what they were doing, they were using the best technology at the time and the answer landed within the range of what was estimated and it was at the edge of the range and that's the situation we have here.

CHAIRMAN: I would have thought that in this technology, in this context, there would have been much more commonality in the estimates, in fact, it's mildly shocking to see that GCA estimate 27.196 and landfall, it's to a layperson, it's seems that there's big variation?

A. Yeah --

CHAIRMAN: The question is: ought that to have rung

bells? Which is what I think Prof Cameron is telling us. It ought to have rung bells. It ought to have alerted Reliance to the fact that this was not going to be the "glorious days". This was a bummer.
A. We think there were several things that led to this. We talked about log analysis.
You know, the estimating pay if the thin beds, so this was in early 2000s, you know, so these types of reservoirs were still being understood, you know, now they're much better understood.
You know, now threat does not have to be like this. In various countries at this time, there were fewer and the technology to understand those thin beds that we talked about was evolving, frankly, and it appears that almost like a pendulum swinging too far that Schlumberger, who is an adviser to the contractor, you know, predicted, you know, quite a bit of pay in those thin beds and we think that because they went from a place where they couldn't see pay in thin beds at all, say so years earlier.
It's almost as if the pendulum swung, so they started to make a dispute and these how you get to 16 TCF instead of 4, you know, it's those two factors. You know, you have to weigh both of those to understand and understand that this was still evolving

technologies, especially on the log analysis side in that timeframe.
It wasn't fully mature technology, because we hadn't seen if the industry we hadn't seen those types of reservoirs frequently in this type of environment and it took a while to understand them.
So that's my explanation, sir, as to how you could end up at that much difference.
CHAIRMAN: Yes. I interrupted you. You press on with your final description.
A. Thank you, sir.
So once the data started come in indicating that the field was not as big as the AIDP, they had to make a turn and change how they evaluated developed the field, because and they did some pretty creative thing in our opinion, in managing the field that was much, much smaller.
As we talked about they design at world class data well production programme, once they got into the operations, any did some things that were pretty creative with managing pipelines and operating the filed for the D6 next to the D1-D3 using that commonality of the facilities and so we can cover that in more detail in our second report.
But in the interests of time, we'll try to move

through.

CHAIRMAN: Yes, please go ahead.

A. So we took a look at some of the claims that there was mismanagement going on in the field.

CHAIRMAN: Is this a convenient point to break? Because I think --

A. It can be, yeah.

CHAIRMAN: I think you've got us to the point where you --

A. We're making a turn.

CHAIRMAN: It's now 12 o'clock, so if we take a cup of tea for quarter of an hour and then come back at about just after quarter past 12.

Please don't talk to others about your evidence and it will be more powerful if we have your unblemished, unaffected opinions.

A. Yes, sir.

CHAIRMAN: The tribunal will adjourn now until 20 past 12.

SIR BERNARD RIX: You certainly should not be talking to lawyers during your evidence. You're in a form of purdah.

WITNESS: Understood.

(1.35 pm)

(Short break)

((1.36 pm)

MR KOHLI: You didn't know history matching?

A. Make sure there is a reason for going to this side of the well formation information.

SIR BERNARD RIX: I'm not hearing you terribly well. Can you move the microphone as close as possible.

A. Sorry. Is that better?

SIR BERNARD RIX: The closer the better.

A. Okay. Thank you.

Sorry, could you repeat your question?

SIR BERNARD RIX: I think you answered it, that you didn't go back to the beginning and then there may have been another question.

MS BAJAJ: No, he didn't answer the question.

MR KOHLI: No, sir. They didn't answer the question. Mr Spellman said they want to make sure that I'm

Mr Spellman said they want to make sure that I'm answering your question here. My question was -- just one moment.

Yeah. My question was that you picked up the **field as it was performing as a moving car:**

"You didn't really check out from where it had started and what could have possibly gone wrong."

A. Our analysis went back to the beginning to the original gas in place and then recoverable estimating

recoverable volumes.

Q. You were supposed to answer the question whether the contractor has been following good international petroleum industry practices during its operations; right?

A. Yeah.

SIR BERNARD RIX: Well, this is before. It's in 2010.

MR KOHLI: This is in 2010, sir, but I'm just saying that --

SIR BERNARD RIX: The question had not by asked by King & Spalding.

MR KOHLI: That is true. I'm just asking about whether in 2014, when those questions were asked to you, did you, at that time, go and check whether the field had been operating well since the beginning or did you not? Because if you were to certify that they are following GIPIP, you would have checked it out right from the start. Or did you check out whether they're following GIPIP after 2014?

A. It would have been after 2024. We looked at the current operations after 2014.

5 Q. So when you answer the question that the operator or the contractor has been following GIPIP, am I to understand that you mean that they've been following GIPIP after 2014?

A. No.

6 Q. It's what you said.
A. Well, let me restate that, then, because I must have misspoke.
The engagement with King & Spalding was in 2014. That included the three questions. One of those questions was operations related.
Operations folks went back to, I guess, a combination of things. To look at the development plan as it was executed and then also to look into various other things in the post-2014 timeframe which are the reports that you referred to.
Q. So am I to understand and please correct me, am I to understand, you went back and looked at the AIDP?
A. We did not look at the AIDP. We had our operations folks can look at how wells were drilled, they can look at completions and comment on that without knowing what the AIDP had in it.
Q. So how would you certify the operations as following GIPIP and then without looking at the development plan to say:
"Whether it's adhering to the development plan."
A. Your operations engineer can look at well completion reports to see how the wells were drilled.
(1.40 pm)
(The hearing adjourned until 9.30 am on the following day)

I N D E X