

TRANSCRIPT_VIKING_OFH1_SESSION1_25 062024

00:04

Good afternoon, everyone. It is now four o'clock. And I'm opening this open floor hearing for the application by Crystal production UK Limited for an order granting development consent for the Viking carbon capture and storage pipeline. We'll introduce ourselves in just a moment. But before we do that, please bear with me while I do with some housekeeping matters. Can I check first of all in the room, you can hear me? And then if someone could notify online, raising their hand or whatnot, if you can hear me clearly online. Excellent. Thank you very much. That's that's a good start. Can I just confirm that the recordings have started and the live stream as well? Thank you very much. Are there any requests for reasonable adjustments? Excellent. Thank you very much. Okay. We are here in candidate park up near Louth. And we've got the benefit of air conditioning here. But if anyone you know is going to appear on screen, wants to take jackets off ties off because it's hot where you are, that's more than acceptable. Not a problem at all it is it is a warm day. So under introductions, my name is David Wallace. I've been appointed by the Secretary of State for levelling up housing communities as the lead member of the examining authority to carry out an examination of the above application. I'll hand over now to my colleague.

01:34

Good afternoon. My name is John ghost. I've also been appointed by the Secretary of State to be a member of the examining authority for this application. Thank you.

01:44

We do have a third member of the examining authority. Inspector Alex Jack. Unfortunately, he cannot be with us today who's convalescing at home we wish him well. But he will be catching up on the recording. So rest assured you will have heard your representations as you make them online. We're joined by Jessica Weatherby, who's manning the the the online forum. And here in the building, we've got the case manager Caroline hight Well, supported by Mr. Shanks. So that's the team on on our end. I'd like to welcome everyone here today here at the venue and those watching, as well. Thank you for joining us. I'm not intending to ask for introductions from you. This time, we'll we'll go straight into your representations and ask that you introduce yourselves when you give them we'll just set out briefly a few ground rules if you'd like just underpinning the hearing. And I'll hand over to my colleague for that.

02:51

Thank you, Mr. Wallace. So a few few words just to acknowledge the format of the event today. This is a blended event, which allows attendance both in person and virtually through ms teams is expected that both blended and fully virtual events will form part of the planning spectrum its future operating model. The examining authority are attending this meeting in person, two of us are, as are several of the attendees. For those attending virtually please be rest assured that you have our full attention at all

times, even if we are at times not looking at the camera. To avoid visual and noise distractions. Please keep your cameras and microphones off unless we invite you to speak to avoid visual and noise distractions. Sorry, carrying on. We will take a break of around around 515 If it seems the museum will go on for much longer. move on now to the general data protection regulations. Since this event is both being live streamed and recorded, the digital recordings that we make are retained and published. They form a public record that can contain your personal information, and to which the General Data Protection Regulation the GP GDPR applies. The spanning planning spectra its practice is to retain and publish recordings for a period of five years from the Secretary of State's decision on the development consent order. Consequently, if you participate in today's meeting is important that you understand that it will be recorded, and you will therefore consent to the retention and publication of the digital recording. It's very unlikely the examining authority will ask you to put sensitive personal information into the public domain. Indeed, we would encourage you not to do so. However, if for some reason you feel that it's necessary for you to refer to sensitive personal information. We would encourage you to speak to the case team in the first instance. But also then explore with you whether the information could be provided in a written format, which might be redacted, redacted before being published.

05:18

Okay, thank you very much for for that. Just to say that the applicant is in the room and as we go through, we will offer you the opportunity to comment on any representations that you've heard. But the applicant does reserve the right to come back in writing. At the next deadline. All that's been heard today, the next deadline will be deadline for on the 29th of July. For the speakers today, to ensure that we're able to hear everything you need to say we're allowing a 10 minute time limit per speaker, just in the interest of fairness. But of course, we can hear everything that you need to. We may ask questions of you, before dismissing if you'd like. The final point to say is that you do make an oral submission today, please follow up with a written summary of your representation at deadline for moving on then to Agenda Item three, which is to hear representations. I have two individuals who are wishing to speak I have Mr. Michael crooks. And I have Mr. Vincent Lai, who's speaking on behalf of the Guardians of the East Coast. Was there anyone else online? who is attending today who intended to speak? Okay, nothing heard, in which case, I'll come to Mr. Michael crooks in the first instance, if you could unmute yourself and turn your camera on. And then if, whenever you're ready, we'll hear your representation, sir.

06:58

Thank you very much. The project as isolated about wind has fallen as follows. This is using electricity to compress and drive a car to buy electricity, to put it in a pipeline, using electricity, to pump it through that pipeline using electricity to monitor that co2 in the pipeline, using electricity to feed that co2 into the pockets and etc. As a platform of ideas, thereby creating co2. I cannot see the situation net zero. It seems to me that the loop is complete. And this product has two co2 emissions on the planet. The pipeline angles on the agricultural land, farmers really know what temperature is When informed it can detect. If they're in the situation where they need to stop the pipeline, it will then be very cold. A farmer is aware of that it will be buried the minimum depth was 1.2 metres and then Backfill the hole which will give 37 centimetres on top of that solid. On top of that pipe sorry. Farmers, particularly in the Lincolnshire area, do mould drill to 27 centimetres. So that leaves a safety margin of potentially 10 centimetres. And that can be reduced by or even round erosion that they may not lead the pipe. Let me

turn onto the safety, particularly on vent. If it's programmed venting, when is it going to happen? What happens in an event where they have to quickly I've seen a lot of the situation regarding venting that it will be on the 45 metre fence. I squat, particularly at the moment, in this particular part of the country, it's only going to be half the size of the problems which are attracting everybody's attention. And overall. If things go wrong in dangerous people's lives, it seems to me that this is our lives. Profits. Thank you.

09:39

Thank you very much. That's very, very clear. And clearly put Can I just for the for the benefit of my note, as you said that most farmers will do mould drilling in terms of that as a process. Why is that and what does that involve?

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It puts the seeds further down for certain crops.

10:04

Is that, to the best of your knowledge? Is that to be over the whole pipeline that involves that sort of process happening? Or is it just certain areas, certain farms,

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where it would depend on the farmer and the crop that he wants to plant? And to do with this crop rotation as well, as

10:23

do a moment? So you see, it's dropped off just as you're answering that.

10:29

It will depend on the farmers individual circumstance, on his crop rotation, etc, and the type of crop he wants to put in.

10:40

Okay, fair enough. Thank Thank you very much for that. Ghost. Do you have any questions for Mr. Cooks?

10:49

Mr. Brooks, thank you very much for attending today. You You raised about the depth of the pipe and this has been raised by other other interested parties as well. Can you can you just repeat about the the minimum depth, which of course is subject to possible variations, depending on soil conditions, and the likely depth that an ordinary farmer is going to going to be used when he's using his combine harvester or whatever, whatever other farming farming operations, and perhaps you just run over that again, because, you know, you've raised it to this afternoon, but it has been raised by by other objectives as well, thank you.

11:39

The indicative level at which the pipe will be buried is 1.2 metres. If you then take away the actual diameter of the pipe, etc, it leaves potentially 37 centimetres on top of the pipe with infill and backfill. Again, if the situation was that a farmer was to drill, and they actually do drill to 27 centimetres, then you have a 10 centimetre safety margin on top of the land. If there was a situation where children were erosion on even land, or even the situation where they might not have been able to bury the pipe to the correct depth, then that is 10 centimetres less than nine inches, the span of your hand. That is the potential danger we are looking at here to be catastrophic. And the farmer isn't going to be able to go away in his tractor, because his tractor would stop because of the lack of oxygen caused by the co2 outburst from the pipe.

12:45

Okay, thank you very much for that. Although, I will look to the applicant, and I think they will respond in writing. I'm just looking for a nod as it were, in terms of the minimum burial depth. Do I recall reading that is 1.2 metres and then that's the top of the pipe. Just for your for information? Mr. Chris, I don't know if you heard that or not. But the sounds that I'm getting is that is 1.2 metres, then it reaches the top of the pipe and the diameter goes further, deeper underground, if you like as what I'm being told here. I

13:24

appreciate the previous hearings. Yeah, there was a situation where it was indicated that the pipe may not go to that depth, because of particular situations with the Lund. That's

13:35

right. Yeah. No, you aren't. You are right on that one. But yeah, just just getting in my head, what the the elements are. So no, thank you. Thank you for bringing that to the attention. And thank you. for that. Thank you very much. I see you're joined now I assume that's Mr. loi next year. And Mr. Lai, I understand you're representing the guardians of the East Coast.

14:01

I am Yes. Good afternoon, gentlemen. Good afternoon, everybody. Just as a bit of background on oil and gas professional with eight years experience on both drilling and operate side. I currently work for Saudi Aramco and Saudi Arabia. As company rep. I have quite an extensive knowledge regarding dance fairs, etc, etc. And I'm the one that put in the various questions previously, which had been responded to, and it's basically just to go over the responses that were received with regards the original questions. The first one was about their pipeline inventory, nearly 10,000 tonnes of co2 the applicant response was that they do see a situation in which the full inventory would have to be evacuated? I find that there is a couple of instances. I'm not too sure exactly what the construction of the block valves, the isolation valves that the guys are going to instal on the pipeline. But I would assume that they'd be Standard Oil and Gas with elastomers. There's a very large risk that those elastomers could suffer impregnation are in permeation. From co2, and in the event that they had to close the block 12. The depressurization on the other side would cause explosive decompression, thereby destroying the seals within the block valve. If block valve one was to suffer, that, then the whole inventory would have to be vented to be able to work on block vol. One, everything downstream and everything upstream. So you'd be looking at 10,000 tonnes of co2, venting that from one event site is

around 23 Just over 23 days, it five kilogrammes per second. So obviously, if you're using both events when aiming and when it settles up, you reduce that down to 11 and a half days of venting. So very significant amounts. I don't know the construction of the block valves. If you use Teflon, it's less likely to suffer the impregnation or in permeation of co2, but does still suffer. Standard Oil and gas block valves rely on valve wetting due to the down to the hydrocarbons to provide the seal. co2 has a very, very low surface tension. It's compressed into a liquid form. But it's kept in this dense phase, which is super critical, dense phase. It has a very low surface tension which allows it to be pumped extremely easily with very low friction. That's why it's used that would that affect the block valve operation where the block valves aren't 100% efficient, and there is some leakage. If there's leakage then they can be scouring they can be erosion, etc, etc. So from a technical standpoint on the the answer to my first one about the venting of the the inventory within the pipeline, there's a couple of issues there that I don't feel I've been addressed adequately. They go on to say that the HSE doesn't usually resist require further action to reduce the risk to alarm and developing comprehensive response plans, etc, etc. I'm sure you read the response. My only statement for that is Satish and Mississippi February 22 2020. They also felt that they didn't need it. The court cases are still ongoing and the medical cases are still ongoing. You know, I did point that out within the the questions, but there's been no adequate response to that I don't feel and more recently there was the Texas release, I believe in April this year, which hasn't made it into this obviously because it was after the deadline. But there's been several instances where co2 has been released and people have been adversely affected

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moving on the

18:51

yeah, I've already covered that. The co2 is super solvent. Because predominantly co2 will be flue gases, which have been captured. They will be in trend within that sulphur oxides sulphur dioxide is nitrate, nitrogen dioxides, etc various contaminants, ammonia etc. The chemicals that are used in the process are called amines. During the process they form nitrosamines and nitrosamines which are recognised as being extremely carcinogenic and mutagenic. At very very small concentrations, three nanograms per litre sorry four nanograms per litre and drinking water in three nanograms per cubic metre and air as the Norwegian health Institute's recommended annual exposure limit. You One nanogram is 1,000,000,000th of a gramme. So we're talking infants. So really small quantities of this, this chemical that are hazardous to health, and the from various other nasties, DM, Na, D, n, d, N A, M N A various, without getting too technical. There's a lot of extremely dangerous compounds that are made during the capture process. The response from the applicant was, they won't be in the stream. To me, as an oil and gas professional and been involved in various projects over the years, the only way that you can say that with any authority is not to use it. You know, and we're talking about amounts that are so small, I really don't understand how they're going to monitor to that level. You know, I don't know of any technology allow monitoring at three four nanograms specification. But you know, that they said that it's the emitters problem. Well, my Fred, that them as dutyholders is their problem. It's not the emitters problem. They're the ones putting in the pipeline. The other aspects of the nitrous, nitrous means nitrosamines, as they raise the pH level, within the co2 stream, which N coloriages formation of free water, even at the 50 ppm, which is point 00 5% quantities, which the state that's extremely dry, and good luck to them, I hope they can achieve it. Personally, I think it's very difficult and very

expensive to achieve a dryness of that level, point, 00 5%, dryness, you know, it's, it's amazingly dry. The other chemicals that they would have to use the desiccants, the mag, the tag, the DAG, present their own issues, because they also provide, they're basically hydrocarbon based, which can change the compressive qualities of the gas. And they can form their own compounds. That, again, I don't want to get too technical in that respect, but there are issues in the drying process as well, because there will be certain amounts of mag tag or DAG, whichever compound that they use for in the drying process, introduced into the stream, which can also help with the formation of free water. That free water in conjunction with x two s, which is a common clue. Discharge can form sulfuric acid, you can form nitric acid, you can form hydrochloric acid with the ammonia. So there's various nasties. And it only needs a very small amount of concentrated acid to create a nice environment corrosion, which can then causes low pressure zone and turbulence which can then cause deposition to mineralization. And that so on and so on, which can ultimately lead to clathrate or hybrid formation or increased erosion. In the event, there was a failure in the pipeline. And it was to burst. The the Thompson jewel process as the court and in the response indicates that there would be a rapid cooling down to minus 54 Celsius to minus 7478. Celsius, which in DNV, and various other regulatory bodies, testing would massively enhance crack propagation. And there's a couple of studies which say it's almost impossible to mitigate the cracking to be able to project where the crack is going to propagate to and to drill it to prevent further cracking is almost impossible. And it's such an explosive decompression and rapid to an embrittlement. That just not practical or feasible. I don't see any point where that has been addressed either. Going back to what Mr. Kreutz was saying the the original information we were given was that it would be trenched to 1.2 metres and then a 24 inch pipeline lead 24 inch pipe line would have a 28 to 30 inch flange which is further exacerbates the risk to farmers contacting the flange flange being the weak point, rather than the actual pipe body. It wouldn't take much deflection on the flange for it to impinge on the security of the seals. So, you know, that's another aspect that should be addressed by the applicant as well.

25:33

Yeah, downstairs, co2 is super solvent, it's it's well known and classified as a super solvent, which means that the various nasties that I spoke about the sulphur oxides, sulphur dioxide, NOx, various other compounds which form acids etc. Go into solution very, very easily in the Super solvent. In the event, there was a breakdown in the second stage compression or if a block valve was too close, or there was a problem at the receiving end. And the pipeline was to slow down and not been able to maintain the 1200 plus minus psi and 3031 degrees heat, it doesn't take long for the dance phase, or supercritical, however you want to describe it, co2 to revert back into the gaseous liquid state and then back to the gaseous state, which must is a 535 to one expansion rate, and a massive cooling effect as well, at that point. So you know, how's that addressed? A 24 inch pipeline should be good for a working pressure around 3000 psi. But we don't have this mic post specifications. It's based on oil and gas. I don't think it comes under the oil and gas regulations because it's supercritical fluid. But there isn't a specific regulation, as far as I'm aware, at the moment regarding co2 transport. It's kind of a mishmash of various other hydrocarbon rules that have been implemented and utilised and modified to suit the process. I'm not here to throw a spanner in the work. I'm only here to keep people on it. And that's all I have, sir. Sir. Thank you very much for the time.

27:33

No, thank you, Mr. Lai. And yeah, I fully appreciate you're trying to help with the the engineering, if you like of the process. There's just a couple of questions that come come to mind. As you're talking through that. One of the applicants in their description of development, they've said that the pipeline itself is going to be made with a thick wall design a thick wall pipeline. Does that give you any reassurances about its resistance to erosion or cracks?

28:07

It gives a lot of carbon. Yeah, sorry, go ahead.

28:22

Carbon Steel is extremely prone to carbonic acid, uric acid, nitric acid. There's been various studies over the years with regard to dense phase impurities in the accelerated corrosion. They are quite technical and it stretches my knowledge, quite a lot to understand. But yeah, it's absolutely one of the other questions I presented was there's various 90 degrees 70 degree bands live in the pipeline. I asked a question about cushioning which is a double thick wall or like a fluid cushion which prevents you which was never answered.

29:17

Okay, okay. Thank you. And then in one piece of correspondence, I seem to recall the applicant saying in respect of the the events in America that one of them was due to an in stable land unstable lands sort of a landslip causing damage to the pipe. And of course such conditions perhaps don't exist in Lincolnshire, and in the UK. I mean, do do. I don't know if you've seen that or not, but does that ring true?

29:50

At no, as regards Lincolnshire, it's reclaimed land. It's quite a thin mantle. Certainly down the coast. It's a very thin mantle done by A soft fleet. That's why they use it for bombing ranges, because the drowns or penetrate the mantle and go into the quicksand below, certainly where I leave vehicles. So there is Landon's significant amount of subsidence in the various buildings shut down to one area in the local area where I live present in the back in the 1950s. So, it's relatively virgin and consolidate. And we had an earthquake not too long ago.

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And just one sort of final question. As such, she mentioned the block valve stations and if things went went wrong, they're such in terms of the kind of issues you might expect from a blocked valve station. I mean, what what would you be looking at those potential problems,

31:06

I don't know what designer block valve the guys are gone with. If it's a Standard Oil and gas block wells, then the elastomers will be rubber burst, be it neoprene, who knows that there'd be some kind of high temperature, high pressure, impervious rubber, that rubber will take us to to within it In addition, and then if you've if you've lent a side, you're getting supposedly compression. Blow the seal only depends on the scene. And in fact, when you don't have a seal, you know, well, best. Or certainly only 90%, effective 5% Depending on the level of damage. Standard Oil and gas valves rely on wetting by

the fluid that's been transported to provide the seal in the meniscus, the surface tension of the fluid causes the seat and the the valve to move to get the spirit of the valve to move together and provide that seal. You know, it's almost like a lubricant. Because of the low surface tension of co2. You'd want to get that betting. I don't know how effective when we do high high pressure high temperature wells offshore, we have to get the seals warm to get malleable to get them to seal. So, but in this case, 31 degrees, the co2, maybe that mitigates it. I don't know, that's a question for the applicant to answer. Maybe it's not an issue. up to speed on that aspect.

32:47

No doubt that they they've heard that. And we'll come back to that. Just just for my final question, if you like in layman's terms, because obviously there's there's gas pipelines up and down the country that are run and seem to be run safely. Is it the case of using that existing technology for a new type of gas, if you like that doesn't usually go in a pipe that then causes this conflict, this tension, this perspective of sort of explosions or erosion to that level that you're talking about?

33:25

Potentially, yes. Like the regulations, as far as I'm aware, and like I say, I'm overseas now and don't really keep up to speed. So much with the HSE publications. bid to the best of my knowledge on rules and regs in 2013 and regulations with regard to time. It was all amended. Or the gas pipeline legislation question so may now be specific.

34:02

Okay, thank you. Thank you very much for just, it's my coke if you've got any questions. Okay. No further questions. I'll just look to the applicant. Nothing more there. So that will come back in writing. They've heard that. Thank you very much, Mr. Lobo, for your written and and your submission. And thank you for for your time attending today.

34:23

Thank you for taking the time to listen. Thank you.

34:25

That's that's not a problem. So thank you very much. Mr. Cookson. Mr. loi for your for your time. And for appearing today. I have no other registered speakers, none in the room and none online. So that would then bring us to Agenda Item four, which is to bring this open floor hearing to a close. Thank you for everyone. A reminder that if you've made a oral submission today, please could you put that in writing

35:02

Okay, my colleague is letting me know there is an action point for today just bear with me one second.

35:28

Okay, thank you very much for that. Because the applicant is responding to what they've heard today does. You've heard about the 31 degree temperature point, rather than a specific action that will be part of your response to the to what you've heard today at the open floor hearing. That is at deadline for on the 29th of July. So thank you very much, everyone. The time is now 1635. For those of you who are on

the company site inspection tomorrow, see you tomorrow. Other than that, have a good evening, everyone. Thank you