

818	<p style="text-align: center;">THE ALBERTA ENERGY REGULATOR PROCEEDING ID NO. 436</p> <p>IN THE MATTER OF the Regulatory Appeal by Obsidian Energy Ltd. of the Alberta Energy Regulator's decision to issue an Environmental Protection Order to Obsidian Energy Ltd., pursuant to Sections 113 and 24 of the Environmental Protection and Enhancement Act On March 23, 2023 (Regulatory Appeal 1943624)</p> <hr/> <p style="text-align: center;">AER PROCEEDING VOLUME 15</p> <hr/> <p style="text-align: center;">Calgary, Alberta December 6, 2024</p>	819
820	<p>1 Proceedings taken at the Govier Hall, Calgary, 2 Alberta 3 4 December 6, 2024 Morning Session 5 6 A. Bolton The Chair 7 B. Zaitlin Hearing Commissioner 8 T. Stock Hearing Commissioner 9 10 B. Kapel Holden AER Counsel 11 O. Chijioke AER Counsel 12 A. Huxley AER Counsel 13 (Via Videocast) 14 A. Lung AER Staff 15 A. Stanislavski AER Staff 16 F. Hamdan AER Staff 17 18 P. Fitzpatrick For Regulatory Compliance 19 Branch 20 J. Allison For Regulatory Compliance 21 Branch 22 A. Hall For Regulatory Compliance 23 Branch 24 25 D.P. Langen For Obsidian Energy Ltd. 26 A. Barrington For Obsidian Energy Ltd.</p>	821

1	TABLE OF CONTENTS	
2		
3	Description	Page
4		
5	December 6, 2024 Morning Session	820
6	Final Submissions by P. Fitzpatrick	836
7		
8	December 6, 2024 Afternoon Session	853
9	Final Submissions by P. Fitzpatrick	854
10	Certificate of Transcript	880
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		

1 K. Di Rocco, CSR(A) Official Court Reporter
2
3 (PROCEEDINGS COMMENCED AT 11:11 AM)
4 THE CHAIR: Okay. I believe the
5 video feed has restarted, and you can continue,
6 Mr. Langen.
7 D.P. LANGEN: Thank you,
8 Mr. Chair.
9 THE COURT REPORTER: Sorry, sir. Can you
10 turn your mic on. Thank you.
11 D.P. LANGEN: Sorry. My
12 apologies.
13 Now, Mr. Chair and Commissioners, I want
14 to outline why CLM's singular focus on the
15 14-18 well cannot lead you to the conclusion
16 that it is the cause of the Reno cluster. To
17 do this -- it's not going to come as a
18 surprise -- I'm going to discuss the
19 application of induced seismicity frameworks by
20 each of Drs. Verdon and Canales. And I'm only
21 going to discuss the Verdon framework, since
22 it's the only framework commonly applied by
23 both Drs. Verdon and Canales on the record of
24 this proceeding. So it's to the Verdon
25 framework that I now turn.
26 On this point, we have clear agreement

<p style="text-align: right;">822</p> <p>1 between Drs. Verdon and Canales that the inputs 2 into any induced seismicity causation framework 3 are the quantitative data and information that 4 is available to the assessor at the time the 5 framework is applied. I discussed this in 6 cross-examination with Dr. Canales, and 7 Dr. Verdon addressed this in his oral reply 8 evidence. 9 That is to say, all of what I just 10 discussed with you previously -- the spatial 11 proximity, the temporal correlation, the 12 geology, the geophysics, and any available 13 reservoir modelling, the science -- is then 14 used as an input into the Verdon framework. 15 As you know, the 14-18 Obsidian well -- for 16 the 14-18 Obsidian well, Dr. Verdon's induced 17 assessment ratio is a positive 31 percent; 18 Dr. Canales's was a positive 51 percent. For 19 the high-volume Leduc injectors, Dr. Verdon's 20 induced assessment ratio was a positive 21 55 percent; Dr. Canales's induced assessment 22 ratio ranged from negative 12 percent to 23 positive 35 percent. The fundamental 24 difference between those two being the weight 25 or lack of weight afforded Dr. Pooladi-Darvish's 26 pressure analysis and reservoir model.</p>	<p style="text-align: right;">823</p> <p>1 Finally, for the 6-14 Belloy well, 2 Dr. Verdon's induced assessment ratio is a 3 positive 49 percent, and Dr. Canales's induced 4 assessment ratio ranged from positive 5 21 percent to positive 48 percent. Again, the 6 fundamental difference between these two being 7 the weight or lack of weight afforded to Belloy 8 fault. 9 Now, before getting into what you should do 10 with these numbers, I want to touch on the 11 question that you asked each of Drs. Verdon and 12 Canales, Mr. Chair, which can be summarized as 13 which of the three induced seismicity causation 14 frameworks is the better one? 15 Not surprisingly, Dr. Verdon chose the one 16 he and others developed. If you look at the 17 transcript, in doing so, he provided clear and 18 logical rationales for his view. 19 In contrast, Mr. Chair, Dr. Canales did not 20 answer your question. Instead, he repeated the 21 late-breaking evolution of his evidence that I 22 discussed with your earlier, that he only 23 applies all three frameworks as a guideline. 24 As I noted earlier, this idea that CLM 25 applies the frameworks only as a guideline is 26 not evidence -- evident on the face of its</p>
<p style="text-align: right;">824</p> <p>1 evidence. Indeed, Mr. Chair, you questioned 2 Dr. Canales as to why he first only relied on 3 the Davis framework rather than the more recent 4 frameworks following the November 2022 event. 5 He indicated he was unfamiliar with and did not 6 use the Verdon framework often. 7 In cross-examination, Dr. Canales indicated 8 that he did not apply the Davis framework as 9 envisioned but instead applies his own 10 variation. Dr. Verdon pointed out in reply 11 evidence that Dr. Canales also did not apply 12 the 2019 Verdon framework in keeping with the 13 guidance included in the original paper, the 14 result being in that instance that, in 15 Dr. Verdon's view, Dr. Canales applied that 16 framework incorrectly. 17 All of this suggests, in Obsidian's 18 submission, that CLM's approach to assessing 19 causation of the Reno cluster was and continues 20 to be somewhat arbitrary. CLM was not faithful 21 to the proper application of the induced 22 seismicity frameworks. 23 So where does this leave you given the 24 differences in the ratios I just discussed with 25 you? 26 Frankly, it puts you in a difficult spot.</p>	<p style="text-align: right;">825</p> <p>1 Obviously, Obsidian is of the view that 2 Dr. Verdon's evidence should be given more 3 weight for the reasons we've already discussed 4 but also given the breadth and depth of the 5 independent evidence underlying Dr. Verdon's 6 ratios. 7 I submit to you that the starting point for 8 your deliberations is, indeed, that underlying 9 independent evidence: Dr. Pooladi-Darvish's and 10 Ms. Marshall's reservoir models, Mr. Watson and 11 Dr. Fox's geological and geomechanical 12 assessments, and the reflection seismic 13 interpretation of Mr. Boeckx and Dr. Verdon. 14 If you accept and agree the pressure 15 analysis and dynamic reservoir model prepared 16 by Dr. Pooladi-Darvish, which we submit you 17 should, then Dr. Verdon's ratio for the 18 high-volume Leduc injectors should be preferred 19 over -- over Dr. Canales's ratio. 20 Similarly, if you accept and agree with the 21 reflection seismic interpretation and 22 extrapolation of the Belloy fault combined with 23 the anecdotal evidence that any such faulting 24 is not sealed -- again, we submit you should -- 25 then Dr. Verdon's ratio for the 6-14 well 26 should be preferred over Dr. Canales's ratio.</p>

<p style="text-align: right;">826</p> <p>1 Next, if you prefer one or both of 2 Dr. Verdon's ratios for one or both of the 3 high-volume Leduc injectors for the 6-14 Belloy 4 well, then you should prefer Dr. Verdon's ratio 5 as it relates to the Obsidian 14-18 well. 6 Why? Because, as Dr. Verdon explained, 7 given there are multiple industrial activities 8 being considered as the cause of the Reno 9 cluster, when you apply the Verdon framework to 10 one activity being considered, the existence of 11 the other activities will pull the ratio 12 positive for that one activity. 13 In short, the quantitative data and 14 information used as an input to the framework 15 and which arises from the real culprit will be 16 attributed in the framework to the other 17 possible culprits being assisted. 18 Obsidian respectfully submits, Mr. Chair 19 and Commissioners, that this suggested approach 20 should inform your deliberations and 21 decision-making. You've got -- you've got 22 ratios that span between two -- two individuals 23 who gave you evidence, and they span a long 24 ways. And if you look at the independent 25 evidence that's filed by Obsidian that 26 underlies Dr. Verdon's assessment, I submit to</p>	<p style="text-align: right;">827</p> <p>1 you that's your whole answer. 2 Now, moving to the questions that you set 3 down to be considered in this proceeding. The 4 first being whether the seismic events 5 specified in the EPO were induced by human 6 activity. 7 As provided in the opening statement of 8 Obsidian, Obsidian submits that, on the balance 9 of probabilities, the seismic events in the EPO 10 were induced by human activity -- that is, the 11 Reno cluster -- that it's likely but not 12 definitively induced. So it's likely but not 13 definitively. 14 Now, to the second question, which is 15 whether Obsidian's disposal operation of the 16 14-18 well is responsible for the seismic 17 events specified in the EPO. Obsidian submits 18 that, based on the comprehensive suite of 19 independent expert evidence it has placed 20 before you, again, as provided in Obsidian's 21 opening statement, the 14-18 well is 22 substantially less likely to have caused the 23 Reno cluster than other industrial activities, 24 those other activities being the high-volume 25 Leduc injectors and the 6-14 Belloy well, as 26 they are the more likely cause of the Reno</p>
<p style="text-align: right;">828</p> <p>1 cluster. 2 So now, Mr. Chair and Commissioners, I'm 3 going to move on to the issue of relief. And, 4 Commissioner Stock, you had -- I promised you I 5 would address the issue of relief in argument, 6 and I intend to do that. 7 First, however, I want to address the 8 intervening publication of the revised 9 Directive 65, something that the chair raised 10 with CLM -- with the CLM witness panel, and 11 it -- it -- it -- sorry. It provides important 12 context to the issue of relief. 13 So, Mr. Chair, in your exchange on this 14 point with the decision-maker, Mr. Kuleba, he 15 referred to the intention -- he referred to an 16 intention by CLM to essentially transfer the 17 14-18 well from the EPO to the requirements of 18 the new Directive 65 once that directive was 19 officially published. He further indicated 20 that CLM volunteered to pause this while this 21 proceeding was ongoing. 22 Now, what Mr. Kuleba was referring to was 23 an August 21st, 2024, motion by Obsidian to 24 stay Clause 12 of the EPO pending a decision in 25 this proceeding. 26 Clause 12 of the EPO is the operative</p>	<p style="text-align: right;">829</p> <p>1 clause that would allow CLM to transfer, to use 2 Mr. Kuleba's term, the 14-18 well and 3 operations from under the EPO to what are now 4 the new requirements in the new Directive 65. 5 Now, CLM responded to that motion, 6 indicating that it would not seek to rely on 7 Clause 12 of the EPO so as to permit the 8 incident appeal to be heard and adjudicated. 9 Now, I raise this in the context of relief 10 since now, like in August 2024, Obsidian seeks 11 a decision from you as to the cause of the Reno 12 cluster. 13 The reason why it wants a decision is 14 threefold. 15 First, the independent expert evidence 16 before you filed by Obsidian establishes that 17 the Obsidian's well -- that Obsidian's well is 18 substantially less likely to have caused the 19 Reno cluster than the other two industrial 20 operations we have been discussing. That is, 21 Obsidian has gone to great lengths to put 22 together a detailed picture of the events in 23 question, and it feels strongly that CLM has 24 been negligent in its own analysis and in 25 issuing the resulting EPO. 26 Second, since the EPO was issued, there</p>

<p style="text-align: right;">830</p> <p>1 have been real and substantial reputational and 2 other impacts to Obsidian. 3 And, now, I promised you, Mr. Chair, I 4 would not get into certain evidence in 5 argument, and I won't. But it goes without 6 saying that Obsidian's reputation has been 7 materially impacted, and it has incurred 8 additional operational and corporate costs as a 9 result of the EPO and in prosecuting this 10 appeal. 11 Issuing an EPO is a serious thing. It has 12 implications for the company or companies 13 receiving it. Obsidian has felt those 14 implications. 15 And, third, simply sweeping away the EPO 16 through another regulatory instrument like 17 Directive 65 does not mitigate the reputational 18 impacts I just mentioned. Further, it doesn't 19 sweep away the fact that the AER, who regulates 20 Obsidian, concluded that Obsidian was the sole 21 cause of the Reno cluster, which, not 22 surprisingly, has some potential impacts as it 23 relates to any potential civil claims that may 24 be brought against Obsidian in respect of 25 seismic events referred -- to the seismic 26 events referred to the EPO and in respect of</p>	<p style="text-align: right;">831</p> <p>1 its ability to operate in the area while 2 dealing with industry partners and 3 stakeholders. 4 Again, issuing an EPO against an operator 5 is a -- has serious implications to that 6 operator. 7 It's in this context that I will now 8 address the issue of relief. As you are aware, 9 under REDA, upon the hearing of a regulatory 10 appeal, you are empowered to confirm, vary, 11 suspend, or revoke the appealable decision. 12 Given the facts before you, namely the 13 potential for any one or more of the industrial 14 activities discussed in evidence causing the 15 Reno cluster, there are a number of ways you 16 could go about providing relief to Obsidian, 17 and, for this reason, I will address Obsidian's 18 requested relief along with alternative relief. 19 First, based on all the submissions I've 20 provided this morning, Obsidian submits that 21 the EPO should be revoked if you conclude that 22 the 14-18 well was not the cause of the seismic 23 events, and, obviously, Obsidian is strongly of 24 the view, based on the evidence before you, 25 that that's the case. 26 If in making this finding you conclude that</p>
<p style="text-align: right;">832</p> <p>1 one or -- one of the other industrial 2 operations caused the seismic events, then the 3 AER and CLM will presumably do what should be 4 done from a regulatory perspective. 5 Second, and in the alternative, if you 6 conclude that one or more of the other 7 industrial operations caused the seismic events 8 and also conclude that the 14-18 well 9 potentially contributed in a significant enough 10 way, then you have another -- have a number of 11 options. 12 And I'm going to pause here on the 13 "significant enough way". If you recollect, 14 CLM's evidence was, at the time that it issued 15 the EPO against Obsidian, it went and met with 16 the operator of the 13-11 well and extracted 17 voluntary measures -- presumably extracted the 18 voluntary measures because it didn't think that 19 the seismogenic nature of that well in question 20 was serious enough to issue an EPO. So that's 21 why I give you the qualifier with "in a 22 significant enough way". It appears that CLM 23 exercises its discretion, as it -- it is 24 afforded, to make that judgment. 25 So if you conclude that the 14-8 well -- 26 14-18 well potentially contributed in a</p>	<p style="text-align: right;">833</p> <p>1 significant enough way, you could revoke the 2 EPO and direct that a new EPO be issued naming 3 all operators and operations that caused or 4 contributed to the seismic events. 5 You could have also vary the current EPO to 6 have the same effect. 7 Finally, you could revoke the EPO and rely 8 on Directive 65 to address those operators and 9 operations that you found have caused the 10 seismic events. However, I note here that CLM 11 is currently of the view that Directive 65 has 12 no application to the 6-14 well. 13 Third, and also in the alternative, you 14 could conclude that all of the industrial 15 operations in the vicinity of the Reno, 16 North Heart, and North Peace River clusters are 17 or may be contributing to the induced 18 seismicity in those clusters. Then you could 19 revoke the EPO, and the AER could then exercise 20 its regulatory jurisdiction to put a regional 21 order in place. 22 However, if you were to proceed this way, 23 Obsidian respectfully requests that your 24 decision provide clear reasons as to why you 25 concluded this was necessary and that you do 26 clearly adjudicate, based on the evidence</p>

<p style="text-align: right;">834</p> <p>1 before you, whether or not the Obsidian 14-18 2 well, the high-volume Leduc injectors, and the 3 6-14 Belloy well caused or contributed to the 4 seismic events in the EPO. 5 This will, understandably, provide an 6 opportunity for Obsidian to mitigate, to some 7 extent, the reputational impacts it has 8 incurred as a result of the EPO and, again, 9 address potential civil claims in the future, 10 should they arise. 11 Straight up, Mr. Chair and Commissioners, 12 Obsidian very much wants you to make a decision 13 on the facts before you in respect of the three 14 potential causes that are before you. 15 Mr. Chair and Commissioners, Obsidian 16 considers itself a diligent and responsible 17 operator. It has established the mitigation 18 plans and protocols required by the EPO. 19 Obsidian has no intention to change or 20 varies -- vary these mitigation plans based on 21 the relief you ultimately conclude is 22 appropriate. Obsidian will continue to operate 23 diligently and responsibly, regardless of the 24 outcome of this proceeding. 25 Commissioner Stock, I trust that answers 26 your questions.</p>	<p style="text-align: right;">835</p> <p>1 Thank you, Mr. Chair and Commissioners, for 2 your patience in listening to Obsidian's 3 submissions. I appreciate they have been 4 rather lengthy. That concludes Obsidian's 5 argument-in-chief, and I'd be happy to attempt 6 to answer any questions you may have. 7 THE CHAIR: Okay. Thank you, 8 Mr. Langen. Just give us a minute. 9 Just -- just one clarification question, 10 Mr. Langen. You spoke in argument about the 11 impartiality of Dr. Shipman and Dr. Canales due 12 to their involvement throughout the analysis 13 and the process and how that should affect 14 our -- our weight that we would apply to their 15 evidence. 16 Do you see that extending to Mr. Galloway 17 as well, or is it Mr. Shipman and Mr. Canales 18 only? 19 D.P. LANGEN: Just Dr. -- 20 Drs. Canales and Shipman. Our understanding 21 from the record and from Dr. Galloway's 22 answers, he came -- he was late. He wasn't 23 involved in any substantial matter -- or 24 substantial manner leading up to the issuance 25 of the EPO. So it's just Drs. Canales and 26 Shipman.</p>
<p style="text-align: right;">836</p> <p>1 THE CHAIR: All right. Thank 2 you. Those are all the questions we have. 3 Thank you very much. 4 D.P. LANGEN: Thank you, Mr. Chair 5 and Commissioners. 6 THE CHAIR: Mr. Fitzpatrick, are 7 you ready to proceed? 8 P. FITZPATRICK: I do have a question 9 as to timing, given that we are at -- at 11:30, 10 whether you'd like me to start and then break 11 at noon for -- for lunch or whether you'd 12 prefer to -- to break now and come back early. 13 And I'm -- I'm fine with either. 14 THE CHAIR: Okay. Well, 15 let's -- if you're fine with either, let's 16 continue to around 12:00, but look for an 17 opportune time for a break around there that 18 works for you. 19 P. FITZPATRICK: Very good, sir. 20 Final Submissions by P. Fitzpatrick 21 P. FITZPATRICK: Mr. Chair and 22 Commissioners, I'm in agreement with my -- my 23 friend Mr. Langen on -- on a few things. 24 Certainly, of course, the -- the issue for the 25 hearing, which the -- the Panel set in its 26 decision issued November the 9th of 2023, which</p>	<p style="text-align: right;">837</p> <p>1 is simply whether the order, including all of 2 its content, should be confirmed, varied, 3 suspended, or revoked. 4 And as my friend also observed, the -- the 5 Panel stated as well, and that's in that 6 decision, that to focus the parties' 7 submissions in the proceeding, the Panel 8 invites the parties to also address the 9 following questions: One, were the seismic 10 events specified in the order induced by human 11 activity? Two, is Obsidian's disposal 12 operation responsible for the seismic events? 13 Now, I submit it's -- it's quite clear 14 that -- that Obsidian and CLM have each 15 answered either "yes" or "likely", probably, to 16 the first question; that is, were the seismic 17 events specified in the order induced by human 18 activity? 19 The phrasing of "not definitively", as we 20 submitted earlier, makes no difference, in our 21 submission, bearing in mind the applicable 22 standard, and, moreover, considering that 23 despite the best efforts of academics such as 24 Dr. Verdon, seismology is -- is not an exact 25 science. You look at various things, and 26 you -- you make your best educated guess, if I</p>

<p style="text-align: right;">838</p> <p>1 could call it that, but it's not like you can 2 go out and take a tape measure to determine 3 what's happening underground. 4 So I'll submit that it's -- it's undisputed 5 for the purposes of this hearing, in effect, 6 that the seismic events specified in the order 7 were induced by human activity. So, then, 8 we're really focused on Question 2: Is 9 Obsidian's disposal operation responsible for 10 the seismic events? 11 As to the standard of review, CLM agrees 12 that this is essentially a hearing de novo. 13 The Panel has considerable information before 14 it that was not available to the statutory 15 decision-maker, Mr. Kuleba, when he issued the 16 EPO. The Panel's task, I would submit, is, as 17 of today, based on all the information before 18 it, the order should be confirmed, varied, 19 suspended, or revoked. 20 I will make a few comments, though, about 21 the events leading to the issuance of the EPO. 22 Firstly, AGS believed initially the 23 November 29, 2022, seismic event, the 24 5.59 magnitude event, would -- was naturally 25 occurring based on the then-apparent depth of 26 the event. However, AGS took steps to gather</p>	<p style="text-align: right;">839</p> <p>1 data via -- via the nodal array that was 2 deployed, which Dr. Verdon agreed was prudent 3 for AGS to do. 4 There seems to be consensus on -- on -- 5 from the witnesses that, generally speaking, 6 more data is better than less, assuming the 7 data is of a good quality. 8 Well, from December 2022 to March 2023, 9 there were hundreds more seismic events in the 10 Reno cluster, which events were observed to 11 follow a pattern of persistence that indicated 12 the seismic events were probably induced rather 13 than naturally occurring. 14 Then, after having had the 5.59 magnitude 15 event in November of 2022, about 16 three-and-a-half months later, there was the 17 5.09 magnitude event in the Reno cluster. 18 Very shortly after that, AGS received the 19 nodal array data analysis from Nanometrics from 20 which AGS concluded that the seismic events 21 were induced by operation of the Obsidian well. 22 Mr. Kuleba discussed the information with 23 the subject-matter experts who met with him. 24 He asked questions as to whether other wells 25 might be responsible, and, after hearing the 26 answers, determined an EPO should be drafted.</p>
<p style="text-align: right;">840</p> <p>1 There was then the information meeting 2 with -- with Obsidian, the due process meeting, 3 and in the due process meeting, Mr. Kuleba 4 asked if Obsidian had any information to 5 provide, and Obsidian was unable to do so. The 6 EPO was issued later that day. 7 Now, respectfully, I'll -- I'll submit that 8 Obsidian would not have been in a position to 9 provide information that would have been 10 helpful to Mr. Kuleba in his decision-making a 11 week later or a month later or six months 12 later. 13 It bears recalling that the original 14 deadline -- and this is all on the record of 15 this proceeding. The original deadline for 16 Obsidian's submission on this appeal was 17 January 10th of 2024. On December 15th, 2023, 18 Obsidian advised that, as previously indicated, 19 they anticipated filing evidence that would be 20 highly technical in nature and would take a 21 lengthy time to prepare, and they requested an 22 extension of about six months to July 15, 2024, 23 to file their submissions, which was granted 24 and ended up being moved a day to July 16th. 25 Then on July the 8th, 2024, Obsidian 26 requested a further extension to July the 30th,</p>	<p style="text-align: right;">841</p> <p>1 which was granted. 2 So, in the end, it was about 16 months 3 after the EPO was granted for Obsidian to 4 provide information to dispute that the 5 Obsidian well was seismogenic. 6 Now, this is not a criticism of Obsidian. 7 Instead, it's simply an observation that it 8 would have made no difference to the ability of 9 Obsidian to provide information relevant to the 10 decision that was made to issue the EPO if 11 Mr. Kuleba had waited a week, if he had waited 12 a month. 13 And in the meantime, of course, we've had a 14 5.59 mag, followed three-and-a-half months 15 later by a 5.09 magnitude event, and then 16 there's the evidence of -- of Dr. Canales -- 17 this is a point that was uncontradicted, not 18 challenged, that when you -- when you have a 19 number of events that are of a similar 20 magnitude, it can tend to lead to larger 21 events. 22 So if you have a number of point 4 -- 23 number of Magnitude 4 events, it can lead to 24 a Magnitude 5; if you have a number of 25 Magnitude 5 events, it can lead to a 26 Magnitude 6. So that was the context that CLM</p>

<p style="text-align: right;">842</p> <p>1 and Mr. Kuleba were working with as of March of 2 2023.</p> <p>3 Now, I submit that it's not necessary to 4 your determination of this regulatory appeal to 5 assess the information available to Mr. Kuleba 6 when the EPO was issued. There's been a lot of 7 time spent by my friend on that issue, which 8 is, frankly, surprising, given his position 9 that this is a hearing de novo.</p> <p>10 What we're here to do today is decide -- to 11 decide, as of today, what is the information in 12 evidence before you and for the Panel to make 13 its own assessment, based on all that 14 information, should the EPO be maintained, 15 suspended, varied, or revoked.</p> <p>16 We are now 20 months after that, of 17 March 2023. There's much more information 18 available now than there was as of March 2023. 19 We have two more rounds of nodal array data, we 20 have the reprocessing by Nanometrics and by 21 AGS, we have the updated analysis by 22 Dr. Canales in light of additional rounds of 23 nodal array data, we have Mr. Galloway's work, 24 and we have the opinion evidence submitted by 25 Obsidian's witnesses.</p> <p>26 All of that information that was not</p>	<p style="text-align: right;">843</p> <p>1 available to Mr. Kuleba is, of course, 2 admissible pursuant to Rule 3 -- 31.1 of the 3 Alberta Energy Regulator Rules of Practice, and 4 there has certainly been no objection raised by 5 anyone to the Panel having complete information 6 up to date.</p> <p>7 Now, turning to the relevant legislative 8 framework. We referred to this in our original 9 submission in September. And to -- to 10 highlight the provisions of particular note, 11 I'll reiterate. So the Environmental 12 Protection and Enhancement Act, Section 113(1) 13 provides that: (as read)</p> <p>14 Subject to subsection (2), where the 15 director is of the opinion that, (a), 16 a release of a substance into the 17 environment may occur, is occurring, 18 or has occurred, and the release may 19 cause, is causing, or has caused an 20 adverse effect, the director may issue 21 an environmental protection order to 22 the person responsible for the 23 substance.</p> <p>24 And when we consider definitions in the Act, 25 "adverse effect" means: (as read) 26 Impairment of or damage to the</p>
<p style="text-align: right;">844</p> <p>1 environment, human health or safety or 2 property.</p> <p>3 "Person responsible", the definition of that, 4 of course, would apply to the operator of a 5 disposal well if that well is responsible for 6 the -- the release of the seismic energy.</p> <p>7 "Release" includes a number of things, 8 including an omission.</p> <p>9 And "substance" can include any sound, 10 vibration, heat, radiation, or other form of 11 energy.</p> <p>12 So, clearly, seismic events are a substance 13 within the meaning of EPEA. There was a 14 release of that substance within the meaning of 15 the EPEA by the seismic events in issue, and we 16 understand that Obsidian doesn't dispute those 17 points. It's simply a question of what was the 18 cause of this.</p> <p>19 And I'll reiterate as well that it's -- 20 it's important to bear in mind the legislator's 21 use of the words "and" and "or" in 22 Section 13(1) of EPEA. For the director to be 23 able to issue an environmental protection 24 order, the director must be satisfied both 25 subsections (a) and (b) have been met, the 26 criteria in them.</p>	<p style="text-align: right;">845</p> <p>1 It's sufficient for the criteria for 2 subsection (a) to be met -- for the director to 3 conclude a release of a substance into the 4 environment may occur, is occurring, or has 5 occurred.</p> <p>6 And it's also sufficient for -- sub (b), 7 for the director to conclude that the release 8 may cause, is causing, or has caused an adverse 9 effect.</p> <p>10 Now, when the EPO was issued, Mr. Kuleba, 11 who had the delegated authority as director to 12 issue orders under Section 113 of EPEA, was of 13 the opinion that induced seismic activity had 14 occurred, was occurring, and may occur in 15 future -- may occur in the future. And that 16 was more than sufficient for meeting the 17 criteria of subsection (a).</p> <p>18 And although he was not aware of any 19 adverse effects resulting from the seismic 20 events that had occurred up to the date of the 21 EPO, he was of the opinion that induced 22 seismicity -- seismic activity may cause 23 adverse effect as defined in subsection (b), 24 and that, of course, was sufficient for 25 purposes of meeting the criteria of 26 subsection (b) of EPEA.</p>

<p style="text-align: right;">846</p> <p>1 And, lastly, he formed the opinion that 2 Obsidian was a person responsible for the 3 release of the substances. That met the 4 criteria and warranted the issuing of an EPO in 5 his discretion. 6 Now, a lot of the information or arguments 7 have been presented to the Panel, including 8 information about other wells that -- that 9 Obsidian submits may have contributed to the 10 induced seismicity in the Reno area. 11 Despite all of that, I would submit the 12 Panel only needs to decide whether to confirm, 13 vary, suspend, or revoke the EPO. 14 To do that, the Panel must determine 15 whether, first, a release of a substance into 16 the environment may occur, is occurring, or has 17 occurred; second, the release may cause, is 18 causing, or has caused an adverse effect; and, 19 third, Obsidian is the person responsible for 20 the substance. 21 Again, the first question, I understand, is 22 noncontentious or should be. There is plenty 23 of evidence on the record that there's been 24 ongoing seismic -- seismic activity in the Reno 25 area, and Obsidian's witnesses have testified 26 that it's more likely than not that the</p>	<p style="text-align: right;">847</p> <p>1 seismicity is induced by industrial activity in 2 the area. 3 The second question is also understood by 4 CLM to be noncontentious. I note that Obsidian 5 specifically submitted -- in correspondence 6 submitted -- it's on the record that given the 7 magnitude of the seismic events, Obsidian did 8 not intend to dispute whether in certain 9 circumstances the seismic events at the time of 10 occurrence had the potential to cause an 11 adverse effect. 12 And as a result of that concession by 13 Obsidian, CLM did not lead evidence as to the 14 seismic activity may cause, is causing, or has 15 caused an adverse effect, as CLM understood 16 that to not be an issue in the proceeding. 17 There was -- at the same time, there was 18 some testimony on that point. It was in 19 response to questions from -- from the Panel. 20 And there was reference to the earthquakes 21 being felt hundreds of kilometres away and, as 22 I have noted earlier, the potential for 23 magnitude escalation. In my submission, 24 it's -- it's unquestionable that there was 25 potential for these seismic events, if they 26 were not dealt with, to cause adverse effects.</p>
<p style="text-align: right;">848</p> <p>1 Now, turning to other -- or some relevant 2 case authority. As we've noted in our 3 submission filed in September, Section 113(1) 4 of EPEA does not require a director, in this 5 case, Mr. Kuleba, to issue an EPO against all 6 persons responsible for the substances, in this 7 case, the seismic events, although the 8 director's discretion must be exercised 9 reasonably. 10 And those -- those are -- there's 11 authorities in our book of authorities that we 12 have submitted that speak to that issue, and 13 those authorities are available if you -- of 14 course, if you wish to refer to them. 15 Now, let's turn to the -- the evidence and 16 the question to be answered: Has the Obsidian 17 well caused or contributed to seismic events in 18 the Reno cluster? CLM's subject-matter experts 19 are of the view that the seismic events were 20 caused by operation of the Obsidian well and 21 that neither the Belloy well nor the 13-11 well 22 were clearly responsible for the seismic 23 events. Obviously, Obsidian's views -- 24 witnesses take a different view. 25 Let's consider what are the possibilities 26 of what the Panel might conclude.</p>	<p style="text-align: right;">849</p> <p>1 The Panel might conclude that CLM's experts 2 are correct; the Panel might conclude that 3 Obsidian's experts are correct; or, as often 4 happens in the courtroom and in -- in hearings, 5 the Panel might conclude that the witnesses are 6 all partly correct. 7 For instance, that while the operation of 8 the Obsidian well has contributed to the 9 seismicity in the Reno cluster, the Belloy 10 well, the 6-14 well, and/or the 13-11 or, more 11 generally, the -- the high-volume Leduc wells 12 that my friend has referred to have also 13 contributed to the seismicity in the Reno 14 cluster. 15 That's certainly an option that's open to 16 you on the evidence, I would submit, to -- to 17 make that finding. And it'll be for you to 18 determine on your assessment of the expert 19 testimony where -- where the truth actually 20 lies. 21 Now, let's turn to talking about whether 22 the Belloy well, the 6-14 well, caused or 23 contributed to the seismicity in the Reno 24 cluster. 25 By way of summary of reasons why CLM's 26 subject-matter experts are not persuaded, there</p>

850	<p>1 is an open fault from the Belloy to the 2 Precambrian. That is why the Belloy well has 3 not caused or contributed to the seismicity in 4 the Reno cluster. First, there's the point of 5 the seismicity not reaching the Belloy 6 Formation, and there's -- you're aware of 7 the -- the evidence on -- on that as to whether 8 that is -- is something that always occurs, is 9 common or not.</p> <p>10 Second, there is the -- the evidence 11 that -- or -- pardon me. There's no evidence 12 that the fault Obsidian's witnesses identified, 13 the Belloy fault, has been activated.</p> <p>14 What CLM's SMEs say are -- that there are 15 cases where earthquakes are not right at the 16 target formation, but, in such cases, there is 17 compelling geographic -- geological evidence. 18 Pardon me.</p> <p>19 CLM's witnesses also say there's no 20 evidence that the Belloy fault could act as a 21 conduit and say it's challenging to imagine how 22 that fault would be able to allow fluids to 23 flow a distance of 1.2 kilometres and there not 24 be any sealing or dispersion component in the 25 fault over that distance.</p> <p>26 Now, I do want to come back for a moment</p>	851	<p>1 about -- to the question of when the EPO was 2 issued. And -- and I have -- I've submitted 3 that it's not relevant to the question of 4 whether the order should be confirmed, varied, 5 suspended, or revoked today, but I will note 6 that Mr. Kuleba's evidence was that: (as read) 7 The subject-matter experts that 8 provided their conclusion to me for my 9 consideration, through advice, they 10 were confident in their conclusion, 11 and given the risk with the magnitudes 12 and the fact that it occurred above 5 13 twice within three-and-a-half months 14 and uncertainty as to when that might 15 happen again, it was prudent on me to 16 act on the information presented to me 17 to reduce the risk.</p> <p>18 Now, Obsidian complains that, Well, wait a 19 minute. There was discussion with the 13-11 20 operator about having a -- and that ended up 21 with a -- a voluntary MMR program. The fact is 22 that there is an MMR program in place in 23 respect of the 13-11 well.</p> <p>24 So when Obsidian says, Well, hey, let's 25 have -- have some kind of order that applies to 26 other operators, in my submission, that's --</p>
852	<p>1 that's in some way superfluous to there already 2 being a voluntary MMR in place, at least in 3 respect of the 13-11 well.</p> <p>4 And this might actually be an appropriate 5 time to -- to break, if -- if it suits the 6 Panel.</p> <p>7 THE CHAIR: Sure, that will 8 work.</p> <p>9 It is ten to 12. Let's resume at 1 PM.</p> <p>10 P. FITZPATRICK: All right. Thank 11 you.</p> <p>12 _____ 13 PROCEEDINGS ADJOURNED UNTIL 1:00 PM 14 _____</p>	853	<p>1 Proceedings taken at the Govier Hall, Calgary, 2 Alberta</p> <p>3 _____</p> <p>4 December 6, 2024 Afternoon Session</p> <p>5</p> <p>6 A. Bolton The Chair 7 B. Zaitlin Hearing Commissioner 8 T. Stock Hearing Commissioner</p> <p>9</p> <p>10 B. Kapel Holden AER Counsel 11 O. Chijioke AER Counsel 12 A. Huxley AER Counsel 13 (Via Videocast) 14 A. Lung AER Staff 15 A. Stanislavski AER Staff 16 F. Hamdan AER Staff</p> <p>17</p> <p>18 P. Fitzpatrick For Regulatory Compliance 19 Branch 20 J. Allison For Regulatory Compliance 21 Branch 22 A. Hall For Regulatory Compliance 23 Branch</p> <p>24</p> <p>25 D.P. Langen For Obsidian Energy Ltd. 26 A. Barrington For Obsidian Energy Ltd.</p>

<p style="text-align: right;">854</p> <p>1 K. Di Rocco, CSR(A) Official Court Reporter 2 _____ 3 (PROCEEDINGS COMMENCED AT 1:00 PM) 4 THE CHAIR: Thank you. Please 5 be seated. 6 Whenever you're ready, Mr. Fitzpatrick. 7 Final Submissions by P. Fitzpatrick 8 P. FITZPATRICK: Thank you, 9 Mr. Chairman. 10 This afternoon I'd like to begin by 11 addressing briefly some comments that were made 12 by my friend Mr. Langen this morning about 13 reputational impact. 14 And I note that this was a subject matter 15 that was not pursued in evidence from 16 Obsidian's witness panel. Moreover, my friend 17 expressly advised the Panel during the hearing 18 that issue would not be pursued, the impact of 19 the order on Obsidian. And, yet, after 20 expressly abandoning that issue, not pursuing 21 it in evidence, he's now purporting to 22 resurrect the issue from the lectern in closing 23 arguments. 24 In my submission, respectfully, the Panel 25 ought to simply disregard that submission from 26 Mr. Langen as being completely out of order in</p>	<p style="text-align: right;">855</p> <p>1 the circumstances. 2 Now, as to my friend's comments regarding 3 witnesses and experts, independence is one 4 factor for you to consider in weighing their 5 evidence. Absolutely. I don't dispute that. 6 I also submit that it's appropriate for you 7 to consider your observations of the witnesses 8 before you, their demeanour. Did they appear 9 dispassionate and objective during their 10 testimony? Did they appear otherwise than 11 dispassionate and objective? Did they respond 12 to questions that were asked of them 13 reasonably? Did they appear to be evasive at 14 times? As well, to what extent are the 15 opinions they gave consistent with other 16 evidence and with your assessment of what -- 17 what makes sense? Is somebody trying to step 18 forward as -- as an expert to tell you that two 19 plus two equals five? Well, if you get an 20 expert that tells you that, then certainly it's 21 within your purview to say, Well, that doesn't 22 make sense. I'm not going to accept it. 23 These are all considerations that go into 24 your weighing the expert evidence, and it's not 25 just a matter of -- of whether someone works 26 for -- for the AER or not.</p>
<p style="text-align: right;">856</p> <p>1 I also wanted to address just briefly a 2 number of comments that were made by my friend 3 this morning that placed what I would call 4 "characterizations" on certain communications 5 within the AER. All I'll say about that is 6 that my friend's going to provide evidence 7 references to where in the exhibits those -- 8 those communications were, and I certainly 9 encourage the Panel to take a look at the 10 evidence references and make your own 11 assessment. Were the characterizations fair 12 and reasonable? Or were they somewhat taking a 13 liberty at what's reasonable? 14 Okay. Now, having said all that, I return 15 to the main question the Panel must answer, and 16 that is whether Obsidian is a person 17 responsible for the seismic activity, that is, 18 vibrations. In CLM's submission, there is 19 compelling evidence to determine that it is 20 more likely than not that Obsidian's operations 21 at the 14-18 well has caused, is causing, and 22 may continue to cause seismic activity. 23 They need not be the only person 24 responsible for the order to be confirmed. 25 Even if the Panel finds that Obsidian's 26 operations at the 14-18 well contributed to the</p>	<p style="text-align: right;">857</p> <p>1 seismic activity, that would be ample ground 2 for the Panel to confirm the EPO. 3 I'd also note that the onus ultimately 4 remains on Obsidian. Despite this being a 5 hearing de novo, they are the regulatory appeal 6 requester, and it's their onus to demonstrate 7 that the 14-18 well more likely than not was 8 not, is not, and may not be responsible for 9 seismic activity. 10 This is, in part, because of the general 11 maximum that the person that raises an issue or 12 claim bears the burden of proving it. And I've 13 got a couple of case citations that are in the 14 book of authorities. 15 One of them is to Garry v. Canada. It's a 16 2007 case from the Alberta Court of Appeal, 17 number 234, at paragraph 8, saying the general 18 rule is that he who asserts must prove. 19 And Rudichuk v. Genesis Land Development 20 Corp., 2017, Alberta Court of Queen's Bench, as 21 it then was, 285, at paragraph 27, the 22 proposition that he who asserts must prove 23 applies across all areas of law, unless there 24 is a specific reverse onus. 25 And there is no specific reverse onus in this 26 case. The onus remains on Obsidian.</p>



<p style="text-align: right;">858</p> <p>1 This onus is also reflected in the order of 2 presentation per the Rules of Practice and how 3 we proceeded with the -- with the appeal. 4 Obsidian put its evidence forward first and CLM 5 next, and Obsidian has a right of -- had a 6 right of reply in evidence, and as well it will 7 have a right of reply in oral submissions. 8 Now, with that, I want to turn on to the 9 opinion evidence of Obsidian's witnesses. 10 And it's, of course, trite law that a 11 finder of fact may accept all, none, or some of 12 any witness's testimony. That principle 13 certainly applies to the Panel's assessment of 14 the evidence from the witnesses as to which 15 well or wells induced the seismicity in the 16 Reno cluster. My friend -- I believe I heard 17 him suggest to you, in effect, he would like 18 you to choose one set of evidence over the 19 other. It's an all or nothing thing. 20 And, respectfully, that's not quite right 21 because, again, it is within your purview to 22 accept all, some, or none of the evidence from 23 any witness, including opinion -- evidence from 24 experts, and for you to determine that the 25 facts that actually occurred may lie somewhere 26 between -- in between the -- the versions that</p>	<p style="text-align: right;">859</p> <p>1 are being put forward by the -- by the parties. 2 Now, of course, Obsidian relies on the 3 opinions proffered by its witnesses, 4 culminating in Dr. Verdon's opinions, including 5 the application of the VBB-2019 framework. 6 And if we could call up Exhibit 50.06, 7 please. There are several things I would like 8 to highlight in respect to that, perhaps to 9 recap. Okay. And if we could go to page -- 10 PDF page 121, please. 11 So this, again, is -- is the paper by 12 Dr. Verdon and his colleagues. And you'll note 13 that the title is certainly indicative of 14 what's -- what's the purpose of this paper? 15 It's "An Improved Framework for Discriminating 16 Seismicity Induced by Industrial Activities 17 from Natural Earthquakes". What's their focus? 18 It's to assess is something natural, or is it 19 induced? Any assessment of, well, if it's been 20 induced, which well is responsible -- well or 21 wells -- is, I would submit, secondary. 22 The title is indicative the main purpose 23 is, firstly, discriminate between what is 24 natural versus what is induced. 25 I also reiterate -- if we could scroll down 26 to the top of the next page, please. Thank</p>
<p style="text-align: right;">860</p> <p>1 you. That's perfect. 2 The top of the left column, where the 3 authors say: (as read) 4 We stress that the specific details of 5 the framework are only a suggestion, 6 and others may wish to adapt and 7 adjust these features. 8 They make similar comments on page a hundred 9 and twenty -- just a moment, please -- 10 page 127. And this is under the column -- the 11 left-hand column, under the heading "The 12 Proposed Criteria for Fluid Injection and 13 Extraction -- Extraction". Pardon me. And 14 they say about six lines down in that 15 paragraph: (as read) 16 We wish to emphasize two particular 17 points, the first being that both the 18 criteria and the associated scores 19 presented herein are our own best 20 judgment put forward as a suggestion. 21 These are not intended as a 22 prescription. We would expect users 23 to make their own choices regarding 24 the details both with regard to the 25 questions asked and these scores 26 assigned to them.</p>	<p style="text-align: right;">861</p> <p>1 Now, if we could scroll from there to -- 2 perfect. Yeah. That's perfect right there. 3 So in the last paragraph on the left-hand 4 column, they also say: (as read). 5 Our questions together with the 6 possible scoring scheme are listed 7 below. 8 Interesting. It's not -- they're not saying 9 this is a cast-in-stone final, must be followed 10 by rote scoring scheme. They say it is a 11 possible scoring scheme. 12 And you'll recall the -- the evidence that 13 I walked through with Dr. Verdon, many of the 14 questions include non-precise terms which 15 plainly contemplate exercises of judgment, and 16 in respect to which, it is inevitable there 17 will be variations in calculated IARs as 18 between scientists and practitioners. 19 And Dr. Verdon conceded in his testimony 20 that there would be some variation, you could 21 expect, but he felt, Well, it's not going to be 22 that extreme. But there -- you're going to 23 have some -- some variation would be reasonable 24 to expect. 25 There's also a -- one other quote that I 26 submit is of note is at page 139. Okay. And</p>

<p style="text-align: right;">862</p> <p>1 that's in the last paragraph before "data and 2 resources", where they say: (as read) 3 We recognize that other scientists and 4 practitioners may wish to add 5 additional questions to those 6 specified here or to change the 7 relative score values assigned to the 8 different questions. 9 And the last quotation I would like to take you 10 to, which is -- is quite notable in reference 11 to Dr. Pooladi -- the reservoir engineer's 12 evidence -- and forgive me for forgetting his 13 full name at the moment. 14 If we could go to page 124. And that's -- 15 that's fine right there. 16 So on the right-hand column, a little bit 17 more than halfway down on -- on that right 18 side, there's a paragraph that starts with the 19 sentence: (as read) 20 An assessment framework should weight 21 different pieces of evidence according 22 to their significance. For example, 23 an observation of strong temporal 24 correlation between injection and 25 seismicity may count as stronger 26 evidence for events being induced than</p>	<p style="text-align: right;">863</p> <p>1 does a reservoir model, indicating 2 that any induced pore pressure changes 3 could not have reached the hypocentre 4 location count against events being 5 induced. 6 That's what Dr. Verdon says in his paper. 7 And you'll recall that there's a reliance 8 by Obsidian on -- on Dr. -- on their reservoir 9 engineer's evidence. And, again, forgive -- 10 I'll ask his forgiveness for forgetting his 11 full name at the moment. 12 And part of that evidence was giving the 13 opinion that -- that pressure from the Obsidian 14 well could not reach a certain distance. Well, 15 Dr. Verdon is saying in his paper that's 16 something that -- that should be given less 17 weight. 18 Now, let's go to page 26 of the same 19 exhibit 'cause I do want to revisit 20 Dr. Verdon's own application. And we can 21 scroll to the bottom. Again, this the 22 application to the Peace River events. And we 23 go to the next page. If we scroll down to 24 question 3. Thank you. And then a little bit 25 further so we can see the top of the next page 26 as well. Perfect. Okay.</p>
<p style="text-align: right;">864</p> <p>1 This is the only place in the -- the -- the 2 VBB-2019 framework where Dr. Verdon sees a 3 difference between -- in his scoring as between 4 the Obsidian well and the Belloy well. That's 5 it. This is where it is. And he says in 6 respect of the Obsidian well that the 7 earthquakes are coincident with the industrial 8 activity, but there is minimal correlation. 9 And in respect of the Belloy well, he says 10 there is some temporal correlation between the 11 seismicity and the industrial activity, and 12 that results in an 8-point swing. It's either 13 going to be minus 4 or it's going to be plus 4 14 depending on whether that's a yes, no, on, off. 15 No degree of -- of assessing is there a maybe 16 here? Is it somewhere in between? It's either 17 a plus 4 or minus 4, period, and clearly 18 involves an exercise of judgment. 19 What I would submit in relation to this is 20 that if -- if you are of the view that the 21 temporal correlation of the injections into 22 the -- into the two wells are, in fact, 23 similar, that there is not a reasonable basis 24 to make this distinction that Dr. Verdon does, 25 and if you conclude as well that there are -- 26 there is a physical mechanism that would</p>	<p style="text-align: right;">865</p> <p>1 explain how the induced -- the injected water 2 could reach the seismic fault, then I would 3 submit the inevitable conclusion is -- is that, 4 on Dr. Verdon's own model, applying his own 5 framework, that the Obsidian well and the 6 Belloy well are equally likely to have caused 7 the seismicity. It follows automatically from 8 that if you determine that, that Dr. Verdon's 9 answer to this question was not appropriate, 10 and that he should have scored the same way for 11 the Obsidian well as he did for the Belloy 12 well. 13 Now, you'll also note that, on this 14 question, Dr. Verdon says that there is some 15 temporal correlation between the seismicity and 16 the industrial activity in relation to the 17 high-volume Leduc wells. So that's -- that's 18 the set where he is making the similar finding 19 in respect of the Belloy well but contrasting 20 it in respect of the Obsidian well. 21 I do want to go from there to the bottom of 22 that table just briefly. A little further. 23 Perfect. That's -- that's -- right there. 24 So I return to the numbers that Dr. Verdon 25 calculated. And this is -- this is the best 26 that he can do, my submission. And -- and</p>

<p style="text-align: right;">866</p> <p>1 we've got to bear in mind as well that this is 2 after over a year of -- of Obsidian engaging 3 multiple experts, spending, by its own account, 4 many hundreds of thousands of dollars on those 5 experts, and this is -- this is pretty much the 6 best that they can do with all that -- that 7 effort and all that expense. 8 And we see that the induced assessment 9 ratio for the Obsidian well is firmly positive. 10 It's plus 31 percent even with Dr. Verdon 11 drawing that distinction from the Belloy well 12 on the issue of -- of timing for when the 13 activity was occurring. 14 If you accept that Dr. Verdon ought to have 15 scored the same on the issue of the temporal 16 correlation and that, therefore, the Obsidian 17 well should also be in the plus 49 percent 18 scoring, in my submission, the inevitable 19 conclusion that you would reach is all three 20 wells must have contributed, if you accept 21 Dr. Verdon's evidence, but for this variation 22 in terms of the correlation of the activity. 23 So let's look again at the question of, 24 okay, well, is there minimal correlation or 25 some correlation. And for that, let's go to 26 page 31 of the same exhibit. Can we scroll</p>	<p style="text-align: right;">867</p> <p>1 down to those two tables, please. 2 Very conveniently located because these 3 are -- these are the charts, I should say, in 4 respect of injection for the -- the northern 5 and central wells and the Obsidian and Belloy 6 well. 7 And you'll recall that I spent some time in 8 cross-examination of -- of the Obsidian witness 9 panel discussing this. And you'll note a few 10 things -- or I'll highlight them -- that, 11 firstly, on the -- for the chart on the right, 12 it only tells part of the story because there 13 was injection for 20 years before this chart 14 even begins going back to 1986. And then we 15 end up with -- we get into the 2000s. There's 16 a few earthquakes here and there. And it's 17 once we get into 2014 and after that there's 18 significant earthquake activity. 19 And I would submit it -- it follows very 20 logically that what may well have happened is 21 that there's been a build up of pressure over 22 time from the injection, over 20 or 25 or 23 30 years, to the point where there's seismicity 24 that's starting to occur as a result of that 25 buildup of pressure over time. And we don't 26 see in -- in this chart a sudden uptick of --</p>
<p style="text-align: right;">868</p> <p>1 of injection before the seismicity occurs. 2 Now, when we contrast that to the chart at 3 the left, Dr. Verdon says that -- that there 4 is -- there is a sudden increase in respect of 5 the Belloy well, not in respect of the Obsidian 6 well. And we can see that the Obsidian well 7 was injecting for about eight years before 8 there's a cluster of -- of earthquakes that 9 occurred in 2021. And as I pointed out in 10 cross-examination, that's after a period in 11 which the injection rate in the Belloy well 12 actually had been decreasing. 13 So -- so Dr. Verdon, in drawing his 14 distinction, he relies and focuses on the last 15 part of this chart in 2022, and he says, okay, 16 well, what about these increased volumes that 17 occurred here, and then we've got the larger 18 cluster of earthquakes that happens after that. 19 You'll note, as I pointed out in 20 cross-examination, that despite that, the 21 volumes that were being injected in the 22 Obsidian well are still substantially higher 23 than the Belloy well. 24 Well, there's something else, actually, 25 that you may wish to consider. Should we be 26 looking at this chart on the left of injections</p>	<p style="text-align: right;">869</p> <p>1 into the Obsidian well and the Belloy well as 2 if these were separate events completely 3 unrelated to each other. They're injecting 4 into the same area. Like, we're talking about 5 the same area of interest where the seismicity 6 occurred. 7 So if you were notionally to -- to think 8 of, well, what if we put those two lines 9 together? What if we said, okay, we've had 10 this injection that started in 2013 with the 11 Obsidian well. We know that it's increased 12 somewhat once we get to about 2017 because 13 we've now got another well that's injecting a 14 few kilometres away, and then we've got 15 somewhat of an uptick that happens in 2022. 16 But when you -- when you merge those 17 together and you ask yourself, okay, well, if 18 we put all of those volumes together, is this 19 something that is indicating an -- a -- an 20 uptick in volume as well as, of course, the 21 injection of volume over time cumulatively? 22 And is that something that is consistent with: 23 Both of these wells contributed to the 24 seismicity -- contributed to the pressure, 25 therefore, to the seismicity. 26 I would add as well, of course, that if you</p>

<p style="text-align: right;">870</p> <p>1 accept that there is a plausible mechanism in 2 respect to both wells for -- for contribution 3 to the pressure and seismicity -- and I would 4 submit that the evidence of the witnesses is 5 consistent on this, that there's a plausible 6 mechanism for both wells -- that it follows 7 that if you find the Belloy well was -- was a 8 cause of the seismicity, that it is logically 9 difficult, if not impossible, to at the same 10 time find that the Obsidian well was not. 11 As to the evidence regarding pressure and 12 the reservoir model, there's a few comments 13 that I would make in respect of that at a -- at 14 a fairly high level. One is the quotation from 15 Dr. Verdon's paper that I've referred to a few 16 moments ago in terms of -- for example: 17 (as read) 18 An observation of a strong temporal 19 correlation between injection and 20 seismicity may count as stronger 21 evidence for events being induced than 22 does a reservoir model indicating that 23 any induced pore pressure changes 24 could not have reached the hypocentre 25 location count against events being 26 induced.</p>	<p style="text-align: right;">871</p> <p>1 So, again, by Dr. Verdon's own writing in his 2 own paper in 2019, he's saying, well, this is 3 something we should give some lesser weight to. 4 Then there's the questions as to the DST 5 test results and their level of accuracy. 6 That's something for you to assess. 7 But, more importantly, there's the absence 8 of pressure data between the central wells and 9 the Obsidian well. So I went through that 10 during cross-examination. There's a distance 11 of two townships from the 14-18 well to the 12 central wells that -- for which there were 13 pressure measurements that were taken. 14 I would submit you should also consider the 15 evidence that -- that accepts that there is 16 fluid migration in the Leduc to the west and 17 the southwest. So when we're talking about 18 continued injection into the north and the 19 central wells, there's going to be migration to 20 the west and the southwest. And that's 21 something that factors into, okay, well, 22 what's -- what's actually having an impact over 23 those 20 or 30 years as well as what's having 24 an impact right now. 25 Now, I also wanted to -- to touch briefly 26 on the question of the locations of the major</p>
<p style="text-align: right;">872</p> <p>1 seismic events, and two things about that. 2 One is that the -- for the March 2023 3 event -- that's the 5.09 event. That was when 4 there was the -- the nodal arrays were 5 deployed. So there wasn't just the regional 6 array data then. There was the -- the nodal 7 arrays. 8 And the location of -- of that event was 9 actually to the east of the Obsidian well. And 10 I'll give you those evidence references. 11 They're in the notes that I'll submit. But 12 there's -- you'll want to look at, firstly, the 13 regional catalogue, Exhibit 6.02, page 98; then 14 the nodal array catalogue, Exhibit 57.01, 15 page 473, line 75, and that was from the third 16 round of data; and the location also appears in 17 the nodal array catalogue processed by 18 Nanometrics as to the third round of data, 19 that's Exhibit 71.13, line 142; and, lastly, 20 if -- another reference is Figure 4 on page 57 21 of Exhibit 57.01, which indicates that the 22 location of the 5.09 magnitude event 23 corresponds to the eastern cluster. 24 Okay. I want to segue for a moment to -- 25 to a couple of other unrelated points, one in 26 respect of the continued need for the order.</p>	<p style="text-align: right;">873</p> <p>1 The evidence from -- from the witnesses -- 2 and I've got an evidence reference that I'll 3 include with the notes that I submit. Their 4 intention was always for the order to be 5 temporary until a more appropriate regulatory 6 tool was in place. And that's why clause 12 7 was included in the -- in the order. 8 And with the new requirements of Directive 9 65 coming into effect, the intention was to 10 essentially transfer the 14-18 well over to 11 that Directive 65 regime. That's been put on 12 hold pending the outcome of this hearing as 13 Obsidian requested. 14 As to a regional approach, I'll simply note 15 in respect to that that that's the purpose of 16 the new induced seismicity requirement in 17 Directive 65, but I'd add to that the 18 mitigation plans and traffic light protocols. 19 They need to be specific to the location of the 20 well as the -- the surface risk and subsurface 21 amplification varies. 22 D.P. LANGEN: Is that on the 23 record? 24 P. FITZPATRICK: I have an evidence 25 reference to it. So ... 26 Okay. Now, I do want to go from there to</p>

<p style="text-align: right;">874</p> <p>1 talking about the implications in respect of 2 the Belloy well, the 13-11, and the north and 3 central wells generally. 4 We've noted earlier that the operator of 5 the 13-11 well voluntarily implemented a 6 monitoring mitigation and response plan, and 7 they have taken steps to mitigate the seismic 8 activities induced by the well's operation. 9 But, moreover, in respect of the operator 10 of that well and the operator of the Belloy 11 well and operators of the other north and 12 central wells, they're not participants in this 13 hearing. They've not made submissions. 14 They've not put in evidence. So, respectfully, 15 I would -- I would submit that it would -- for 16 those reasons alone, it would not be 17 appropriate for -- for an order to be 18 pronounced as against any party other than 19 Obsidian. They've -- they've not had an 20 opportunity to participate in the hearing, 21 and -- and that would be a clear violation of 22 the audi alteram partem principle. 23 I also do wish to note, respectfully -- and 24 I -- I don't mean to be critical either to 25 Obsidian -- certainly not to the Panel about 26 this. Much of the evidence that's relied on by</p>	<p style="text-align: right;">875</p> <p>1 Obsidian to say, well, it's other wells, 2 it's -- it's the -- especially with the Belloy 3 well -- is confidential. And there's an order 4 that says CLM cannot use that -- that evidence 5 for any purpose other than this proceeding. So 6 CLM is not in a position to turn around 7 tomorrow or next week and say, well, we got 8 this information from Obsidian, and here's what 9 it indicates. Can't do that because they're 10 prohibited from doing that. 11 Now, if -- my friend might suggest in reply 12 that, well, CLM should do what Obsidian did and 13 spend many hundreds of thousands of dollars on 14 external experts in order to -- to assess, 15 well, is there seismicity in the -- in the 16 Belloy well? In my submission, that -- that -- 17 that goes far beyond the statutory standard 18 that's on the AER. 19 There's nothing in the EPEA that says the 20 AER must spare no expense, leave no stone 21 unturned before issuing an EPO, nor is there 22 anything in the Act that says there must be 23 certainty before an order is issued. 24 We have to approach these things with a 25 level of -- of -- of common sense, in my 26 submission, that if -- if it were the case that</p>
<p style="text-align: right;">876</p> <p>1 the AER would be obligated to go to those kinds 2 of expense, what's the implication for -- for 3 use of scarce financial resources? Because it 4 wouldn't just be Obsidian. It would be anyone 5 affected by an EPO that would be asking for 6 these kinds of lengths to -- to be taken. 7 And, also, what's the -- what's the 8 implication for timing? Because I come back to 9 the point that Obsidian took 16 months from -- 10 from the order being issued to -- to gather -- 11 I guess, engage their experts, obtain opinions, 12 and to file them. 13 And -- and that simply is not going to be a 14 reasonable time period for -- for the AER to be 15 dealing with events such as this when there's a 16 couple of 5-plus events within three-and-a-half 17 months and there's apparent risks that these 18 may well continue if -- if something isn't done 19 to take remedial measures. 20 I also want to address the relief requested 21 by my friend this morning, which is one thing 22 that I would characterize, respectfully, as 23 late-breaking to use his phrase. There's 24 aspects of the relief that have not been 25 referred to in any materials, and we've not 26 heard them until my friend spoke them earlier</p>	<p style="text-align: right;">877</p> <p>1 today. 2 CLM has, respectfully, serious concerns 3 that Obsidian is asking the Panel to grant 4 relief that is not within the Panel's 5 jurisdiction. This is not a superior court. 6 There is no inherent jurisdiction in the Panel. 7 The Panel's jurisdiction is to confirm, vary, 8 suspend, or revoke the order. 9 I submit respectfully that varying the 10 order does not include, in terms of 11 jurisdiction, to, in effect, issue an order 12 against somebody else. That would be more akin 13 to issuing a new order. 14 What I would just add to that is -- is, to 15 the extent the Panel wishes to consider some of 16 the alternatives put forward by my friend, I -- 17 I do respectfully ask the Panel to -- to obtain 18 the advice from its own legal counsel as to 19 what is within the powers of the Panel and what 20 would be beyond the powers of the Panel. 21 Now, speaking of the EPO, there's evidence 22 of what happened after the EPO was put in 23 place. And recall that was put in place in 24 March of 2023. So what happened after that, 25 within the next two months? 26 A couple of times of the -- of the traffic</p>

<p style="text-align: right;">878</p> <p>1 light protocol being invoked. First time on 2 April 29, 2023, after an event magnitude of 3 3.28. The second time was less than a month 4 later; in fact, a little over two weeks later, 5 May 19th, 2023, after an event magnitude of 6 3.4. 7 So the yellow light protocol gets 8 implemented. Since then, no other yellow-light 9 events have been reported, but the seismicity 10 remains active. So what do we have as a 11 result? We still have earthquakes, but they're 12 below the threshold of the -- of the 13 traffic-light protocol. 14 I submit it could be inferred readily from 15 that that where we now have a traffic-light 16 protocol being implemented on the Obsidian 17 well, and after its implementation, that we're 18 not seeing seismicity getting back up to those 19 levels again, that's a pretty good indication 20 of CLM got it right, that this is the well that 21 was caused the -- inducing the seismicity 22 because it's the well that is now subject to 23 the traffic-light protocol with the -- the 24 results that have followed. 25 The remainder of my submissions are going 26 to deal with confidential material. I am --</p>	<p style="text-align: right;">879</p> <p>1 I'm certainly open to answering any questions 2 in the public portion before we go into in 3 camera, or, for that matter, after we finish in 4 camera. Whatever the Panel prefers. 5 THE CHAIR: Let's maybe leave 6 them until the end, when we come back into the 7 public session. 8 So you would like to go in camera now? 9 P. FITZPATRICK: Yes, sir. 10 THE CHAIR: Okay. If we could 11 cease the public video, and let us know when 12 that has occurred. And I believe the gallery 13 just emptied itself of its one observer. 14 (PUBLIC PROCEEDINGS ADJOURNED) 15 _____ 16 17 18 19 20 21 22 23 24 25 26</p>
<p style="text-align: right;">880</p> <p>1 CERTIFICATE OF TRANSCRIPT: 2 3 We, K. Di Rocco and A. Porco, certify that 4 the foregoing pages are a complete and accurate 5 transcript of the proceedings taken down by us 6 in shorthand and transcribed from our shorthand 7 notes to the best of our skill and ability. 8 Dated at the City of Calgary, Province of 9 Alberta, this 6th day of December 2024. 10 11  12 _____ 13 K. Di Rocco, CSR(A) 14 Official Court Reporter 15 Commissioner for Oaths Appointee No. 0728318 16 ASRA Membership No. 57 17 18  19 _____ 20 A. Porco, CSR(A) 21 Official Court Reporter 22 Commissioner for Oaths Appointee No. 0734405 23 ASRA Membership No. 185 24 25 26</p>	