

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SCOUT ENERGY MANAGEMENT, LLC, and
CHEVRON U.S.A. INC.,
Petitioner,

v.

PILOT INTELLECTUAL PROPERTY, LLC,
Patent Owner

IPR2024-00385
Patent 8,505,332 B1

Record of Oral Hearing
Held: May 13, 2025

BEFORE: KEN B. BARRETT, MICHAEL L. WOODS, and
ALYSSA A. FINAMORE, *Administrative Patent Judges*.

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IPR2024-00385
Patent 8,505,332 B1

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Dulany Street, Alexandria, Virginia.

P R O C E E D I N G S

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JUDGE BARRETT: Judge Woods, whenever you're ready.

JUDGE WOODS: All right, thank you, Judge Barrett. Good afternoon, everyone. We are here for oral argument in connection with IPR2024-00385, which challenges U.S. patent number 8,505,332. Please note that in addition to this video feed, there is also a public audio line so that interested members of the public may listen in to the hearing. I'm Judge Michael Woods, and I'm joined on the panel by Judges Ken Barrett and Alyssa Finamore. Moving on to introduction of counsel, will Counsel for Petitioner please state your appearance? And we understand that Mr. Piala will participate as a LEAP practitioner.

MR. OAKS: Yes, Your Honor, that's correct. My name is Brian Oaks, I'm lead counsel for Petitioners Scout Energy and Chevron U.S.A.. With me here today, as Judge Woods noted, is Alex Piala, who is going to be splitting the argument time for Petitioners with Mr. Michael Wolfe, and also with us is Counsel Daniel Zeilberger. Thank you.

JUDGE WOODS: All right, thank you. Now will Counsel for Patent Owner please state your appearance?

MR. ROGERS: Charles Rogers for the Patent Owner, Pilot Intellectual Property, LLC.

JUDGE WOODS: All right, thank you, Mr. Rogers. And thank you to both parties for timely submitting demonstratives. We have copies of these, so please refer to them by page numbers so that we can follow along with your arguments. Also, we thank Counsel for both parties for their well-

1 written briefs and stating their positions clearly. With that, please know that
2 the Panel has read your briefs, and with the limited time that we have today,
3 we may interrupt your presentations in order to focus on the issues that we
4 find most relevant in rendering a decision. As indicated in our Hearing
5 Order, Patent Owner has 45 minutes of argument time. Also, since we
6 granted Petitioner's request for Mr. Píala to present as a LEAP practitioner,
7 Petitioner has an extra 15 minutes of argument time for one hour total to
8 present its arguments.

9 As I'm sure you also know, Petitioner bears the burden of showing
10 unpatentability, and will present its arguments first, and may reserve rebuttal
11 time. As I'm sure you also know, our Trial Practice Guide provides that
12 during an oral hearing, a party may only present arguments relied upon in
13 the papers previously submitted. So with that, will Counsel for Petitioner,
14 either Mr. Píala or Mr. Wolfe, you may begin when ready. Oh, actually,
15 before you start, if I could ask how much time you'd like to reserve for
16 rebuttal?

17 MR. PIALA: Yes, Your Honor, I think we would like to reserve
18 20 minutes for rebuttal.

19 JUDGE WOODS: Twenty minutes, okay. And I can't see if -- Mr.
20 Píala, are you going to present first?

21 MR. PIALA: Yes, Your Honor.

22 JUDGE WOODS: Okay, so please, whenever you're ready.

23 MR. PIALA: Yes, Your Honor. We do have spiral-bound copies
24 of the presentation if the Board would like them. I hear that the Board
25 already seems to have copies, so, great, I'll begin.

26 Thank you. I'm going to be presenting on behalf of the Petitioners.

1 If we move to the next slide please, Slide 2. At a 30,000-foot level, this
2 technology is about the purification of natural gas liquid streams coming
3 from subterranean formations, and these streams are purified through a
4 series of separations. And here we have Figure 1 of the '332 Patent
5 describing at a very high level these separations.

6 Moving to Slide 3, the Petitioners have put forward four prior art
7 references that obviate the challenged claims. Two of these references,
8 Aycaguer and Ryan, are printed publications, they're journal articles. Two
9 of these references are U.S. patents, that is Arand and Soldati. Moving to
10 Slide 4, if we can compare the '332 Patent Figure 1 with Aycaguer Figure 1,
11 and we color code these streams according to their composition, the
12 similarities between the asserted art and the challenged claims becomes
13 pretty apparent. We see the series of separations disclosed in Figure 1 of the
14 '332 Patent can all be found in Aycaguer Figure 1.

15 Moving to Slide 5 now, we could compare this directly to the
16 challenged claims themselves, in particular, challenged claim 1. And we
17 have color coded and highlighted on the left claim 1 of the '332 Patent with
18 each stream colored according to the colors of Aycaguer. So for example,
19 we could take a hydrocarbon feed stream, which is highlighted in black on
20 the '332 Patent claim 1, and that has the same composition as the black
21 stream -- unfortunately it's the same as the background color, but the black
22 stream coming from the oil and gas reservoir of Figure 1 in Aycaguer. The
23 parties do not contest that that stream that comes from the oil and nature gas
24 reservoir as described in Aycaguer, contains, as required by claim 1, C3
25 through C8 hydrocarbons, carbon dioxide, acid gas, and C9+ hydrocarbons.

26 Moving along, the hydrocarbon feed stream is divided in the

1 Figure of Aycaguer, just as required by the first claim separation of claim 1
2 into a heavy hydrocarbon rich stream and a carbon dioxide recycle stream, in
3 purple and red arrows, respectively. Again, the parties don't contest that the
4 purple arrow of Aycaguer represents a heavy hydrocarbon stream with C9+.
5 The parties don't contest that the red arrow coming in and described in
6 Aycaguer has carbon dioxide, acid gas, and C3 through C8 hydrocarbons.

7 The produced gas recycling plant described in Aycaguer then
8 performs an additional two separations. It takes that red arrow, which is a
9 carbon dioxide recycle stream, that's separated and the sour natural gas
10 liquids are removed, and then that leaves behind the carbon dioxide stream.
11 The carbon dioxide stream, as you can see highlighted in Figure 1 of
12 Aycaguer, is then recycled back into the subterranean formation. The
13 remaining sour natural gas liquid stream then undergoes one final separation
14 to remove the sweet or purified natural gas liquids, and then the remaining
15 acid gas is reduced to elemental sulfur. Again, all in Aycaguer.

16 So that represents the separations described in claim 1. And the
17 parties, to the best of the Petitioner's understanding, don't really contest the
18 composition of those streams. So the question is --

19 JUDGE WOODS: Mr. Piala, if I could interrupt, I would
20 appreciate that. And I apologize, but I understand that you have limited
21 time, and I want to just get straight to the heart of the issue. And so first I'd
22 like to ask, because Aycaguer, does it recover methane or ethane? And if so,
23 where would that occur in this Figure 1?

24 MR. PIALA: Great question. The methane and ethane would
25 probably -- because it's a cartoon diagram, it's not disclosed separately, it
26 would be sort of part of the natural gas liquids. Methane, because Aycaguer

1 doesn't describe the exact process by which the separations should be
2 performed, it's hard to know at what point it would be separated, but
3 Aycaguer does explain that they would be removed from the initial feed
4 stream.

5 JUDGE WOODS: Would the methane and ethane, could it be
6 removed from the natural -- the CO₂ stream? Could it be removed from the
7 natural gas liquids stream, or both?

8 MR. PIALA: Yes, Your Honor, nothing in Aycaguer describes it
9 one way or the other, and those are both logical places to remove methane
10 and ethane.

11 JUDGE WOODS: Is it possible that methane and ethane would
12 just simply be recycled back in the oil and gas reservoir?

13 MR. PIALA: Yes, Your Honor, based on this diagram, but again,
14 Aycaguer has some information on it, and again these purifications are not
15 complete. So there's going to be some methane and ethane in, for example,
16 natural gas liquid stream, even if the majority of it is recycled back into the
17 CO₂ stream. They're imperfect distillations.

18 JUDGE WOODS: Okay, and if it is recovered, if methane and
19 ethane, if they are recovered, do they necessarily use cryogenic conditions,
20 membranes, or carbon dioxide recovery solvents?

21 MR. PIALA: Absolutely not, Your Honor, and that can be seen in
22 the Soldati reference.

23 JUDGE WOODS: Okay, thank you.

24 MR. PIALA: Moving to Slide 6, we can perform the same
25 operation on Figure 4 of Soldati, which begins with the recycled carbon
26 dioxide stream, and that gets purified, the CO₂ goes out the top of column 8,

1 the remaining sour natural gas liquids go out the bottom of column 8, that's
2 the green arrow. The green arrow goes into column 21, where the acid gas is
3 removed, this is hydrogen sulfide, primarily. And then we have the stream
4 28 goes down and out, which is a sweet natural gas liquid stream. And
5 again, the parties don't contest the composition of these streams, because
6 they're described in detail in the tables of Soldati.

7 So, you might wonder what's sort of being contested here, and
8 moving to Slide 7, we have what we believe to be -- well, when we looked at
9 demonstratives, what we believed to be the five disputes. Disputes 2, 3, and
10 4, based on the Patent Owner's demonstratives might not still be live issues,
11 so I'm going to be going over them relatively briefly. And finally the
12 secondary considerations, Dispute 5 is going to be argued by my colleague
13 Michael Wolfe.

14 So I'll start at the top, the dispute over the motivation to combine
15 or modify the asserted references. If we move to Slide 8, this has sort of two
16 disputes wrapped up in it. The Patent Owner has contested the enunciated
17 motivations to combine as described by the Petitioner, and then the Patent
18 Owner has put forward a sort of a teaching away argument. We're going to
19 deal with those one at a time, and frankly, we don't totally understand the
20 Patent Owner's enunciation of the teaching away doctrine, and we're going
21 to go into that in some detail.

22 Moving to Slide 9, starting with Ground 1, which is the alleged
23 modification of Aycaguer, frankly, we don't think that the Petitioners have
24 proposed a modification to Aycaguer, so we don't believe a motivation to
25 modify Aycaguer is required. Instead, Dr. Rockstraw looked at Aycaguer,
26 read it through the lens of a person of ordinary skill in the art, and the only

1 thing that we can find that would be a change is this understanding that
2 natural gas liquids, as used in Aycaguer, means -- or would include at least
3 C3 through C8. And don't think that's --

4 JUDGE WOODS: Mr. Piala?

5 MR. PIALA: Yes.

6 JUDGE WOODS: Again, I apologize for interrupting, but I do
7 have a question. So I understand the challenges, and that under Ground 1,
8 Aycaguer as relied on -- or teaching or disclosing every step -- and is it
9 possible that it's a 102 reference, and that it teaches and discloses and
10 anticipates claim 1 and that hydrocarbons necessarily inherently include
11 natural gas liquids that comprise C3 to C8 hydrocarbons?

12 MR. PIALA: We think that would be a very reasonable reading,
13 Your Honor. We present it as a 103 argument because it dovetails with the
14 other arguments in the Petition, but we think a 102 reading would be very
15 reasonable.

16 JUDGE WOODS: Okay, and just to clarify, the only reason it's a
17 103 is to kind of fill in that gap that a POSITA would understand that natural
18 gas liquids would include C3 to C8 hydrocarbons?

19 MR. PIALA: Yes, Your Honor.

20 JUDGE WOODS: Okay, thank you.

21 JUDGE FINAMORE: Counsel, to follow up on that question, if
22 we're going to use Aycaguer by itself, either as the basis of a 102 or a 103,
23 where is the teaching that this process lacks the use of cryogenic agents,
24 certain solvents, and membranes?

25 MR. PIALA: Yes, Your Honor. That teaching is the fact that
26 those conditions are not mentioned in Aycaguer. Unfortunately, the

1 document itself doesn't say don't do it, but it also definitely does not say do
2 it, and those conditions are unmentioned in Aycaguer.

3 JUDGE FINAMORE: So just to make sure I'm following, it's
4 Petitioner's position that given the absence of a disclosure, the reference
5 therefore satisfies the negative limitations in the claim?

6 MR. PIALA: Correct, Your Honor.

7 JUDGE FINAMORE: Thank you.

8 JUDGE BARRETT: If I could follow up on that. Do you have
9 evidence going to the negative limitation? Do you have an expert saying it
10 doesn't use cryogenic because, or something similar?

11 MR. PIALA: Yes, Your Honor. Dr. Rockstraw opined to that
12 effect. Additionally, the Soldati reference is an example of a separation that
13 doesn't use those elements. Any further questions?

14 JUDGE WOODS: Yes, I do have a follow-up question. So, if you
15 point us to the disclosure or teaching in Soldati that supports a finding that
16 methane and ethane can be recovered without cryogenic conditions,
17 membranes, or carbon dioxide recovery solvents?

18 MR. PIALA: Yes, Your Honor, we can. And we could get to that
19 in the cryogenics and CO2 sections, or if you would prefer to skip past
20 motivation to combine?

21 JUDGE WOODS: Yeah, I would like to know, I think now would
22 best. Those are some of the issues that's really, you know, we're grappling
23 with. And so if we could just go straight to it now, that would be great.

24 MR. PIALA: Sounds great. Michael, could you take us to the
25 teach away section, the teach away slides real quick? This goes to the Patent
26 Owner's teaching away argument, this idea that Soldati and Aycaguer

1 disclose or discuss Ryan/Holmes-type processes. First of all, Aycaguer
2 mentions Ryan/Holmes, and that's our motivation to combine, but it does not
3 say you must use Ryan/Holmes. But second of all, this idea that methane
4 and ethane recovery is required by the claims is not -- we don't believe is
5 correct, they're unmentioned by the claims. And if we go, so turn one slide
6 forward, yeah, forward. Forward again, forward again -- oh, actually, okay.
7 I apologize Your Honors, could we just bring up Soldati Table 4? Because I
8 believe Table 4 shows the conditions under which the process is performed
9 under the embodiment, and we can just look at the temperatures there. No
10 party has alleged that the temperatures there were cryogenic, and we'll just
11 put it up so the Board can see that.

12 Okay, it's Table 3, I apologize, Your Honors. So if we look
13 through these temperatures, you can see it's the second to last row before the
14 line, it says phase, then temperature, pressure ATA, line. We can see, you
15 know, minus 20, minus 35, 5.5, and if scroll -- we could scroll through each
16 of these streams. And none of these streams hit the below minus 50 degrees
17 C that is cryogenic, as according to the Patent Owner. So that's our position
18 on Soldati explicitly showing non-cryogenic conditions, we know the
19 condition of every stream, with regards to cryogenics.

20 JUDGE FINAMORE: So Counsel, let me just clarify the record.
21 Are you agreeing with Patent Owner's definition of cryogenic as negative 50
22 centigrade?

23 MR. PIALA: No, Your Honor, we don't. We agree that a
24 condition of minus 50 degrees centigrade is non-cryogenic, we don't
25 necessarily agree with them as to where cryogenic starts and stops, but we're
26 all in agreement of minus 50 being non-cryogenic. We haven't briefed or

1 discussed the issue in terms of what the line should be, but we just have
2 agreed as to what is not, and that's the claimed term.

3 JUDGE FINAMORE: Thank you.

4 MR. PIALA: So that's cryogenic. And if we bring up the slides
5 again, we can go to carbon dioxide recovery solvents. And that's going to be
6 Slide 21, starting on Slide 21. So what the Patent Owner has argued here,
7 and this is Figure 4 of Soldati, is that this stream that's highlighted in
8 gradient to show directionality in Figure 4, that this contains carbon dioxide
9 recovery solvents. And the Petitioners sort of vehemently disagree with that.
10 So from just a first impression, this stream, which turns into stream 10 when
11 it enters column 8, you can see on the right in Table 3 the composition of
12 stream 10, and it contains carbon dioxide, methane, ethane, propane, some
13 butane, pentane, and heavier hydrocarbons. And all of those materials are
14 materials, one, that came from the subterranean formation itself, and, two,
15 are all materials required to be in the feed stream of claim 1.

16 So if one of those materials were a CO₂ recovery solvent, then the
17 first element of claim 1 would be mutually exclusive with the exclusions,
18 because claim 1 is saying you have to have all those things in there, and then
19 the exclusion says you're not allowed to have it in there. So the claim would
20 be self-defeating, if those materials could be construed to be carbon dioxide
21 recovery solvents. So we don't think that's the proper definition.

22 Moving to Slide 22, we have the Exhibit 1003, which is the file
23 history where the Patent Owner discussed carbon dioxide recovery solvents
24 in the context of the Goddin reference, and there the Patent Owner linked it
25 to CO₂ solution adsorption, which is the dissolving of a material into
26 another material. So in this case, it would be taking some solvent, and the

1 CO2 dissolves into the solvent in order to remove the CO2 from the stream.
2 And if we move to Slide 23, there's sort of what we think an even more
3 fundamental problem with the Patent Owner's argument in that there is no
4 CO2 recovered in the column. So this is a cartoon representation of a four
5 column Ryan/Holmes process. Soldati is also a four column Ryan/Holmes
6 process, the cartoon's just a little easier to see.

7 In this cartoon, you see that this initial carbon dioxide recovery
8 stream enters into what is labeled as an ethane recovery column. So carbon
9 dioxide, ethane, C4+, they're all going into this column. Ethane and C4+ go
10 out the bottom, carbon dioxide goes undisturbed out the top. And that's why
11 this is described as an ethane recovery column, because the ethane is
12 removed from the feed stream and the CO2 goes up and out and is not
13 recovered and it goes undisturbed. And this is exactly how it works in
14 Soldati as well.

15 And we discussed this with the Patent Owner's expert, and he
16 agreed that when something is recovered, what it means is to be removed
17 from the inlet stream. There is no dispute that carbon dioxide is not
18 removed from the inlet stream. And that would be compared to something
19 like the Goddin reference, which was brought up during prosecution, where
20 the solvent is mixed with the stream, and it removes the carbon dioxide by
21 dissolving it and pulling it out of the stream.

22 So one, it's not a CO2 recovery solvent, because it would be
23 mutually exclusive with the first elements of claim 1, and we know it's not
24 even recovered, because it doesn't match the term recovery, because CO2
25 isn't recovered in the column that they've alleged contains a CO2 recovery
26 solvent. So it can't be there, and it can't be a CO2 recovery solvent.

1 And if we go to Slide 24, finally -- oh, yeah, this is essentially the
2 original discussion, which is these are all liquid hydrocarbon recirculations
3 described in -- oh, I don't think this is Figure 1. I apologize, I think this is
4 actually Figure 2 of the '332 Patent. There are all liquid hydrocarbon
5 recirculations in the '332 Patent, and these as part of a distillation process are
6 required in order for this distillation to work, as disclosed in the '332 Patent.

7 So the patent itself discloses the constant looping of natural gas
8 liquids. Those natural gas liquids are allegedly the CO₂ recovery solvents
9 disclosed by the Patent Owner. So again, if natural gas liquids are CO₂
10 recovery solvents, then they've basically removed all the embodiments of
11 their patent. And as disclosed in the briefing, Mr. Bors, the Patent Owner's
12 expert, we talked about this and Mr. Bors agreed that these natural gas
13 liquids in a column are going to have the same chemical properties
14 regardless of their situation, because as he said, and it's true, like dissolves
15 like. These C₄ hydrocarbons are going to have affinity for ethane, because
16 they're all hydrophobic hydrocarbons, and it's going to, just as here, it's
17 going to be pulling ethane down and out of the column, even in the
18 embodiments described in the '332 Patent.

19 So if it was sufficient to be a carbon dioxide recovery solvent, if all
20 that was needed was to pull some ethane out of the column to further purify
21 the system, that's going on right here in the patent's own embodiment. So
22 that can't be the definition, dissolving ethane, that can't be a CO₂ recovery
23 solvent. And I think that's the Petitioner's arguments on CO₂ recovery
24 solvents, so I'm happy to take questions before I move on, because I know
25 the Board was interested.

26 JUDGE FINAMORE: I just have one more, what about

1 membranes? How do we know there's no use of membranes?

2 MR. PIALA: For Soldati, we have the full schematic of Soldati,
3 and there are no membranes. Dr. Rockstraw has opined, this element is
4 satisfied, there are no membranes in there. No one has argued that there --
5 like, the Patent Owner hasn't argued that there are membranes, so all we
6 have is Dr. Rockstraw saying they're not, and one can look at the patent and
7 they're not there. I know this is sort of a core issue, so I'll make sure that,
8 before we move on -- okay. Moving on to -- if the Board is interested, I
9 could talk about motivations to combine, if they're not, we can move on to
10 the sour and sweet natural gas liquid streams?

11 JUDGE WOODS: If I could jump a little bit, I'd love to talk about
12 the Patent Owner's proposed claim construction in the Patent Owner's
13 Sur-reply.

14 MR. PIALA: Could we put up the Sur-reply? I don't recall the
15 proposed constructions changing, Your Honor, from the original POR, and
16 from the Petition, but we can put that up and discuss it.

17 JUDGE WOODS: Pages 1 and 2 of the Patent Owner Sur-reply.

18 MR. PIALA: Yes, I see. So we're talking about definition of one
19 defining NGL to be not, to explicitly not contain methane and ethane, Your
20 Honor?

21 JUDGE WOODS: Well, it really had to do with if you go -- scroll
22 up to the beginning of page one. So the Patent Owner states in the Patent
23 Owner Sur-reply, the challenged claims of the '332 Patent recite the
24 disregard for recovery of methane and ethane from the carbon dioxide
25 recycle stream as part of the claimed process steps.

26 MR. PIALA: We would say that it doesn't recite that, and Your

1 Honor, one can look at the text of claim 1 and it doesn't recite 'disregard.' It
2 doesn't mention C3 through C8, but all of these streams are described in
3 'comprising' language, and even within claim 1, NGLs is itself defined using
4 'comprising' language. And NGLs are defined as comprising C3 through
5 C8, and that itself suggests other things can be in there. So we don't believe
6 that we have -- we don't believe that there's any support for that suggestion.

7 And if we could go to the teaching away slides, because we do
8 discuss this issue. I think it's around Slide 9 or 10. So that's the teaching
9 away argument, if you go to Slide 14. If we pull up the claim language itself
10 -- oh, I'm sorry, 15, my apologies, Slide 15. Every single one of these
11 streams is described in terms of 'comprising' language. So every stream,
12 every composition is using 'comprising' language. There's nothing in here
13 that suggests that methane and ethane must be excluded. And one of the big
14 problems, if there was an exclusion required, then the very hydrocarbon feed
15 stream itself, which is the stream that's coming out of the ground, is the
16 exact same language to discuss its contents as one could see the receiving
17 hydrocarbon feed stream, which is that first paragraph, wherein the
18 hydrocarbon feed stream comprises carbon dioxide, natural gas liquid, heavy
19 hydrocarbon, and acid gas. If the feed stream coming out of the ground can't
20 have methane or ethane in it, because it uses the exact same language as
21 every other stream, then frankly, one, that would be not be consistent with
22 the teachings of the '332 Patent, because it discloses methane and ethane
23 coming out of the ground, and one would have to get rid of it before it even
24 gets to anything in the method, which is not consistent with the
25 embodiments.

26 If one looks at the embodiments of the Specification, they disclose

1 not just methane and ethane coming in from the feed stream, but they
2 disclose some ethane being recovered at the end, I believe it's five percent.
3 So it can't be excluded, if this language excluded it, again, they would
4 exclude all the embodiments in the Specification, and frankly we don't think
5 it would make a lot of sense, because then, I mean, heavy hydrocarbon
6 streams coming out of the ground, to the best of our knowledge have
7 methane and ethane in them. So, it would sort of -- we don't think there
8 would be any claim here.

9 JUDGE WOODS: I'm sorry, if I could follow up with another
10 question, and I appreciate your answering my questions on the fly here, this
11 is tough, I know. So let's assume for the sake of argument that we agree
12 with Patent Owner, and that you necessarily use membranes, carbon dioxide
13 recovery solvents, or cryogenic conditions to recover methane and ethane.
14 I'd like to focus on this language of claim 1, at the very -- beginning with
15 'between being received.'

16 MR. PIALA: Yes, Your Honor.

17 JUDGE WOODS: So as I read that, and tell me if you agree or
18 disagree, as I read that, that negative limitation is simply limited to that
19 region of the process whereby you have separation. But it wouldn't preclude
20 removal of methane and ethane, for example, downstream of the purified
21 carbon dioxide recycle stream. Do you agree with that?

22 MR. PIALA: Absolutely, Your Honor. If we turn to, this is going
23 to be in the slide, the CO₂ recovery slide, it's the cartoon from the Ryan
24 reference. Yeah, perfect. If we look here, it's exactly what Your Honor is
25 talking about, where the CO₂ which is going to include methane, and that's
26 the light blue arrow coming from the ethane recovery column, that then gets

1 fed into a subsequent CO2 recovery column and a de-methanizer, which are
2 all downstream, right? So it's exactly what Your Honor is talking about.
3 That's exactly correct. And again, the language of the exclusions in the
4 claim is itself limited to the ethane recovery column and what is here labeled
5 an additive recovery column, but the column that's getting rid of the
6 elemental sulfur and the acid gas. That's exactly right. And that's the same
7 as Soldati. If you could go up a slide, thank you. That would be columns 39
8 and 35 of Soldati, these upper two columns.

9 JUDGE WOODS: Thank you.

10 JUDGE FINAMORE: I'm sorry, Counsel, I didn't catch what you
11 said. It's downstream of what, exactly?

12 MR. PIALA: Sure, and this is on the cartoon diagram?

13 JUDGE FINAMORE: Yes, I'm looking at Ryan Figure 3 right
14 now. Thanks.

15 MR. PIALA: Perfect, yes. So if we look at the ethane recovery
16 column, the blue arrow that goes up and out, at that point is outside of the
17 scope of claim 1, the exclusions, because that is the purified carbon dioxide
18 recycle stream. You can do anything you want with that under claim 1,
19 because now it's outside the process. So you could refrigerate it to absolute
20 zero, you could soak it in carbon dioxide recovery solvents, it's now outside
21 the scope of claim 1.

22 JUDGE FINAMORE: I see, but I guess my question is, on the far
23 right side of this diagram it looks like you're still recovering NGLs?

24 MR. PIALA: Correct, Your Honor. That's what comes down and
25 out of the ethane recovery column, goes into the second column, and that's
26 where the sour stream is, sweet goes out the bottom, acid gas goes out the

1 top.

2 JUDGE FINAMORE: So I guess I was just wondering why that's
3 outside the scope of claim 1 --

4 MR. PIALA: It is not, Your Honor. That's within the scope, it's
5 the middle two that are outside, Your Honor.

6 JUDGE FINAMORE: The ethane recovery and the CO2 recovery,
7 those subsequent recovery streams are outside the scope of claim 1?

8 MR. PIALA: Oh, I see what you're saying, Your Honor. No, the
9 subsequent columns going out the top of the ethane recovery column, Your
10 Honor. So that would be the CO2 recovery column and the de-methanizer,
11 because you can see it goes up and into the CO2 recovery column, and that
12 goes up and out into the de-methanizer. So that's all downstream of the top
13 of the first column, and everything that goes out the top of the first column is
14 now outside of claim 1, it's left the system.

15 JUDGE FINAMORE: Because that's the purified CO2 recycle
16 stream?

17 MR. PIALA: Yes, Your Honor.

18 JUDGE FINAMORE: Thank you.

19 JUDGE WOODS: Mr. Piala, you have about 10 minutes left
20 before you hit your rebuttal.

21 MR. PIALA: So I think I've answered the questions on the sort of
22 technical side. I would happily turn things over to my colleague on
23 secondary considerations, unless the Board has any other questions on the
24 technical stuff? Great, thank you, Your Honors.

25 JUDGE WOODS: No other questions, thank you.

26 MR. WOLFE: And we're on Slide 29, Your Honors. Michael

1 Wolfe for Chevron U.S.A. Inc., Petitioners, I'll be discussing the secondary
2 considerations, and I would like to start with the legal standard and why
3 there's no nexus here. We can turn to Slide 30, please.

4 So looking at the legal standard for secondary considerations, as
5 Your Honors know, the evidence in order to be afforded substantial weight,
6 has to be tied with a nexus to the claimed invention. And can we turn to
7 Slide 31, please? What is a nexus? That's a legally and factually sufficient
8 connection between the proven successes in that case and a patented
9 invention, so basically the connections between the evidence and the claims.
10 Now let's turn to Slide 32, please.

11 And in some circumstances, the Patentee can be afforded what's
12 called a presumption of nexus, when they show that a particular product is
13 the subject of the evidence that they're putting into evidence, and they have
14 to show that that particular product is coextensive with the claims. The
15 Federal Circuit calls that the coextensiveness requirement, and that's from
16 *Fox Factory*. In other words, the evidence has to be limited to the features
17 of the claimed invention, the product needs to be, to get a presumption of
18 nexus. Now, what does that mean? When the product has unclaimed
19 features that are critical to that product, then you don't get a presumption of
20 nexus. Let's turn to Slide 33, please.

21 Putting aside the presumption of nexus and looking just at the
22 underlying finding of nexus, or the fact-finding of nexus, it's also
23 undermined when there are unclaimed features that are pointed to for
24 secondary considerations. For example, for success, if they point to success
25 that comes from unclaimed features, that success is not pertinent to the
26 obviousness inquiry. If we could turn to Slide 34, please?

1 Turning to Pilot's arguments about why it's entitled to a
2 presumption of nexus, all it does to address the coextensiveness requirement
3 is chart some of its NGL plants to the claims. And even then, you can see on
4 the right-hand side, Your Honor, this is sort of a summary that's put together
5 by Patent Owner of its individual claim charts, beginning in Exhibit 2052,
6 where you can see there are differences in even their NGL plants in that
7 some of them don't meet some of the dependent claims, thus disproving
8 nexus, at least for some of the success for some of the claims. But even if
9 the claims had mapped perfectly onto the NGL plants themselves, that
10 wouldn't be enough. And here's why. Let's turn to Slide 35, please.

11 As the Federal Circuit has held, they have rejected attempts to
12 reduce the coextensiveness requirement to an inquiry of whether the patent
13 claims broadly cover the product that is the subject of the evidence of
14 secondary considerations. But that's exactly what Pilot's trying to do here,
15 they are saying that the NGL plants that they have are embodiments of the
16 claims, but they're not saying the separate requirement of coextensiveness.

17 And if we could turn to Slide 36, please. So looking to what Pilot
18 argues for nexus, it's clear from the Sur-reply that its arguments of nexus are
19 centered around this concept of disregarding the methane and the ethane.
20 And as you can see, for commercial success, on the right-hand side in their
21 Sur-reply, they tie that directly. They say commercial success directly
22 resulting from the CO2Flex process, disregarding the recovery of methane
23 and ethane. So they're tying their own commercial success to this
24 disregarding methane and ethane concept, but that is an unclaimed feature.

25 And if we could turn to Slide 37, please. This is the claims, all up
26 on the screen, 1, 4, and 7, and as my colleague Dr. Pinala talked about earlier,

1 if you can look at the right-hand side, which is claim 1. I know it's a little bit
2 long, but you can search there, and you won't see any mentions of C1, C2,
3 methane or ethane. It's just agnostic to that, where it goes. And as Your
4 Honor Judge Woods pointed out, the negative limitations are stream
5 specific. They're talking about individual streams where you don't use
6 cryogenic conditions, nothing about the purified CO2 recycle stream, which
7 could have also had its own negative limitation but does not.

8 So if you look at the left-hand side, claims 4 and 7, those are the
9 dependent claims, and what do those tell us? They tell us certain limitations
10 on the content of the NGL rich streams. It doesn't tell you where the
11 methane and ethane goes, and it doesn't tell you that it's disregarded, it's just
12 simply agnostic to that. And if we could turn to Slide 38, please.

13 Now, before, Pilot also argued in its Patent Owner's Response that
14 there was nexus based on sort of limited recovery of propane, or C3. For
15 example, for the long-felt need, it said the Prim '332 process, which recovers
16 an economical amount of C3 propane. And then later in their unexpected
17 results section they said low 25 percent propane recovery led to unexpected
18 results. But it seems like Pilot, and they can correct me if I'm wrong, have
19 disclaimed that as being a nexus to the claims in their unexpected results,
20 saying relatively low propane recovery is not recited in the challenged
21 claims. So that's not a basis for nexus, either.

22 JUDGE WOODS: Mr. Wolfe, if I could interrupt and ask a
23 question, I would appreciate that.

24 MR. WOLFE: Please.

25 JUDGE WOODS: So on page 46 of the Patent Owner Response,
26 as part of its secondary consideration and evidence, the Patent Owner refers

1 to five main components for performing the CO2Flex process, and it
2 includes a distillation tower with an overhead condenser/reflux, a re-boiler, a
3 sweetener for moving sulphuric acid, and an NGL product storage sales
4 component. So it jumps out at me that these are five main components for
5 performing the process, but I'm not sure they're in the recited claims. Do
6 you believe there's an issue with nexus in regards to those, the Patent
7 Owner's position with respect to the five main components?

8 MR. WOLFE: Yes, absolutely, and that's in our copying slide on
9 page 40, if you will. Slide 41, sorry. Pilot makes a few arguments for
10 copying, but one of them is what Your Honor mentioned, Judge Woods, that
11 they're reciting this sort of architectural overview, saying that there has to be
12 five main components that you were talking about, but those are the most
13 basic components that you have for a distillation process. You have a
14 distillation tower, which is essential, and then you have the condenser, and
15 then you have the re-boiler on the bottom, then it goes to sweetening, it has
16 product storage. I don't know where product storage touches the ground for
17 these claims, but even Pilot themselves concede, at the Patent Owner's
18 Response at 52, that being architecturally identical does not end the inquiry.
19 In other words, those five components don't show copy. So I think that that
20 doesn't have nexus either.

21 And if Your Honors would like, I can go through other elements of
22 the copying, if you're interested in that, but because the secondary
23 considerations are Patentees' burden, we were actually planning to stop here,
24 unless Your Honors had specific questions about any of the individual ones.
25 And we're happy to address those, otherwise I can address them on rebuttal,
26 after they've argued.

1 JUDGE WOODS: Well, I guess to follow up on my earlier
2 question, I guess my question is, is there a coextensiveness issue involving
3 these five main components in the claims?

4 MR. WOLFE: Yes. They are not entitled to a presumption of
5 nexus by just showing these five components, because these have unclaimed
6 elements. For example, this storage, there's nothing about that. And for
7 example, this sulfa treat here, that's actually not an acid gas stream. And so
8 that goes to copying as well, because that's a solid adsorbent that results in
9 not a stream at all. But yes, I do agree that there is no nexus to these five
10 elements, to necessarily -- to claim 1.

11 JUDGE WOODS: All right, thank you, and you have about two
12 minutes left before you enter your rebuttal time.

13 MR. WOLFE: Thank you very much, and we'll reserve the rest of
14 our time.

15 JUDGE WOODS: Thank you. Any questions from my
16 colleagues, Judge Finamore, Judge Barrett?

17 JUDGE FINAMORE: None from me, thank you.

18 JUDGE BARRETT: No.

19 MR. WOLFE: Thank you, Your Honors.

20 JUDGE WOODS: Okay, great, thank you. Mr. Rogers, Patent
21 Owner has 45 minutes to present its arguments. Would you like to reserve
22 any time for rebuttal?

23 MR. ROGERS: Yes, 10 minutes, please, but I'd ask that you not
24 start my clock until I get the HDMI cable from these folks.

25 JUDGE WOODS: Of course, we'll start when you're ready.

26 MR. ROGERS: Thank you. Good afternoon, may it please the

1 Board. Once again, my name is Charles Rogers, lead counsel for the Patent
2 Owner, Pilot Intellectual Property, LLC. Eric Prim is the inventor of Pilot's
3 CO2Flex process, which is the natural gas liquid recovery process recited in
4 the challenged claims. When Eric Prim was developing the CO2Flex
5 process, he was trying to bridge the gap between two existing technologies
6 at the time, the Ryan/Holmes process, which you can think of as the
7 Cadillac, and the mechanical refrigeration units, MRUs, which you can think
8 of as the budget alternative.

9 The Ryan/Holmes process focuses on very high recovery of C1
10 methane and C2 ethane, which is very difficult to accomplish. It uses
11 hydrocarbon solvents, additives, and an extensive amount of process
12 equipment, up to four distillation columns, to get very high recovery of
13 methane and ethane. It's very expensive to build and operate, but you get
14 high recoveries of methane, ethane, and C3 through C8.

15 The mechanical refrigeration units, the budget alternatives, are
16 relatively inexpensive compared to Ryan/Holmes, but no recovery of C1,
17 C2, methane, ethane, and limited recoveries of C3 through C8. Eric Prim
18 succeeded in bridging this gap to provide a middle ground between
19 Ryan/Holmes and MRUs. He bridges the gap by not recovering methane or
20 ethane, but still recovering C3 propane and the rest of the NGLs, C4 butane
21 through C8, and better NGL recoveries than MRUs. So no C1, C2, methane,
22 ethane, but yes for C3 through C8 NGLs.

23 JUDGE FINAMORE: Counsel, can I interrupt you real quick?

24 MR. ROGERS: Yes.

25 JUDGE FINAMORE: Just a quick question on the Ryan/Holmes
26 process. Are the methane and ethane recovered from the purified carbon

1 dioxide recycle stream?

2 MR. ROGERS: I'd have to look. I've never looked at that as far as
3 trying to figure out -- you know, I know you were asking these questions
4 earlier, but I'd have to look at the diagram. And I don't know if there's a
5 difference between the three and four column.

6 JUDGE FINAMORE: I guess my question is, for lack of a better
7 term, where does the methane and the ethane go? Like, what stream is it
8 recovered from? How do we get the methane and ethane out?

9 MR. ROGERS: Okay, the best example I can do for that is we can
10 look at Soldati, which is a four column. Figure 4 in Soldati is a four column
11 Ryan/Holmes process. We could look at Slide 6 from the Petitioner's slides,
12 they've got a Soldati diagram there, and we can see -- I can tell you where
13 the methane and the ethane come out, from that system. And in the top
14 right-hand corner, 57, I believe that is the sales gas stream, which is the
15 methane. And I think 47 is the CO₂ recycle stream. Now, the ethane comes
16 out of the final column of the Ryan/Holmes process. So whether it's the
17 three column Ryan/Holmes or the four column Ryan/Holmes, the last
18 column, the additive recovery column, coming out the top is where the
19 ethane is recovered. And they refer to that as their sour NGL stream. That
20 then goes into an amine sweetener, which is not shown in the diagram, to go
21 out as a sweet NGL stream, and that's where the ethane comes out.

22 JUDGE FINAMORE: Got you, thank you.

23 MR. ROGERS: It's usually a 50/50, about a 50/50 mix of ethane
24 and propane coming out of that, and that's an important topic to talk about
25 when we get to the Grounds 3 and 5 challenges to claims 4 and 7. And I
26 think I got a rough start to answering your question, but I hope I closed it out

1 at the end. Did I answer everything you needed?

2 JUDGE FINAMORE: You did, thank you.

3 MR. ROGERS: Okay, thank you. So by finding this middle
4 ground with the solution to a problem that has persisted for over two
5 decades, the CO2Flex process became a huge commercial success. Six
6 CO2Flex NGL recovery plants built within Pilot's first 10 years of operation.
7 By the end of 2023, total revenue is \$330 million, operating profits of \$245
8 million. Annual revenue in 2023 is \$23 million, annual operating profits in
9 2023 are \$16 million. The projected total revenue through the expected life
10 of just these first six CO2Flex plants that have been built so far, \$760
11 million. And projected total operating profits through the expected life of
12 those reservoirs is \$540 million.

13 So why are we here? Pilot patented its CO2Flex process, the '332
14 Patent. Pilot became convinced that Chevron had copied its CO2Flex
15 process and infringes the '332 Patent. Pilot sued Chevron for patent
16 infringement, and Scout, who purchased from Chevron the accused gas
17 processing plant. Chevron/Scout filed this IPR.

18 So the first issue to address, that I'd like to address, is whether the
19 asserted prior art should even qualify to be used for obviousness. All six of
20 the obviousness grounds asserted in the Petition rely upon the basic assertion
21 that the Ryan/Holmes process renders the challenged claims obvious.

22 The asserted Ryan/Holmes prior art is the same process for which
23 Eric Prim specifically designed his CO2Flex process to be different.
24 Ryan/Holmes uses hydrocarbon solvents, additives, and an extensive amount
25 of process equipment, up to four distillation columns, to solve two particular
26 problems in the separation of methane and ethane from carbon dioxide

1 recycle streams. It's the CO2 freeze up that interferes with methane
2 recovery, and the ethane CO2 azeotrope that interferes with the separation of
3 ethane from CO2.

4 JUDGE FINAMORE: Counsel, speaking of Ryan/Holmes again,
5 what is Patent Owner's response to Petitioner's argument that, I believe it
6 was Table 3 of Soldati, Ryan/Holmes shows non-cryogenic temperatures?
7 Their argument being that the Ryan/Holmes process doesn't always use
8 cryogenic temperatures?

9 MR. ROGERS: Yes, and so the way the Ryan/Holmes process
10 works is they have a cryogenic de-methanizer. And you'll see Ryan/Holmes
11 journal articles, patents, they call it a cryogenic fractionation process. But
12 they did come up with a method where they increased the use of the
13 additives, an incredible amount of flow of additives, to end up being able to
14 remove the methane or the ethane with warmer temperatures. So there is a
15 configuration of Ryan/Holmes that gets temperatures warm enough to be
16 non-cryogenic, but that's done by an incredible number of additives. So the
17 way we phrase our contentions is, you either have to have cryogenic
18 conditions and/or CO2 recovery solvents in order to remove the methane and
19 ethane.

20 JUDGE BARRETT: Just to make sure I understand, so you're
21 saying in your opinion, every Ryan/Holmes process must use either
22 cryogenic or these solvents?

23 MR. ROGERS: Yes. So Ryan/Holmes solved this problem of
24 removing methane and ethane, and in stark contrast, the Prim CO2Flex
25 process, as recited in each of the challenged claims, disregards recovery of
26 methane and ethane to allow for a significantly more economical recovery of

1 NGLs by using relatively little process equipment or energy. And I'm
2 looking forward, Judge Woods, to your questions about how the claims
3 recite the disregard for recovery of methane and ethane, but I'd like to get
4 through this teaches away argument, and then you can hit me with those.

5 So considering that the Prim '332 process conserves costs by
6 disregarding the recovery of methane and ethane from the carbon dioxide
7 recycle stream, it would make no sense for a POSITA to use Ryan/Holmes
8 methane/ethane recovery process as a starting point, to modify or combine it
9 with other teachings to develop the Prim '332 Patent process. The
10 Ryan/Holmes focus on recovery of methane and ethane would lead a
11 POSITA in a direction divergent from the path that was taken by Prim to
12 develop the '332 Patent process. The Ryan/Holmes process and the Prim
13 '332 Patent process go in opposite directions for recovering salable
14 components of carbon dioxide recycle streams.

15 The Ryan/Holmes process thereby teaches away from the Prim
16 '332 Patent process. A POSITA would not be motivated to modify or
17 combine the Ryan/Holmes process with other teachings to develop the Prim
18 process. The Ryan/Holmes process, therefore, cannot be the basis for an
19 obviousness finding as asserted by Petitioners in each of their six
20 obviousness grounds. And Petitioners respond by asserting that none of the
21 challenged claims recite this disregard for recovery of ethane and methane.
22 A proper recognition that the challenged claims do recite the disregard for
23 recovery of methane and ethane as part of the claim process steps, confirms
24 that Ryan/Holmes teaches away and cannot serve as the basis for asserting
25 obviousness of the challenged claims. So I'm going to move to Slide 6.

26 JUDGE WOODS: Mr. Rogers, I appreciate -- so, before we go to

1 claim construction, which I do want to talk about, let's focus on that teaching
2 away argument. So the Federal Circuit has raised the bar very high with
3 respect to teaching away. It requires that you have to have a criticism, there
4 has to be a discredit or a discourage of the claimed solution in the prior art.
5 Can you point to something in Aycaguer that actually discredits, criticizes,
6 or discourages that negative limitation that we're focusing on?

7 MR. ROGERS: And which negative limitation are you focusing
8 on?

9 JUDGE WOODS: That's the limitation that precludes the use of
10 cryogenic conditions, membranes, or carbon dioxide recovery solvents.

11 MR. ROGERS: Well, first of all, when you look at Aycaguer, you
12 have to understand the contentions of the Petitioners in this case. At page 35
13 of the Petition, they effectively incorporate the Ryan article and the
14 Ryan/Holmes process into Aycaguer by referring to the footnotes in
15 Aycaguer that say we're talking about a Ryan/Holmes process here, and then
16 they say -- the Petitioners say that that represents the knowledge of the
17 POSITA at the relevant time. So when you look at Aycaguer, according to
18 the Petitioner's contentions, you have to understand that they're saying,
19 looking at Aycaguer, you're also looking at Ryan.

20 And so I don't know if that helps answer your question, because in
21 the Ryan/Holmes process, they always use cryogenic conditions or the
22 hydrocarbon solvents in order to remove methane and ethane. If you don't
23 have those two, you can't remove it. So when we're talking about a process
24 that disregards the recovery of methane and ethane, then I think when you
25 look at Aycaguer as a Ryan/Holmes process, I think you have to read into it
26 that you have to exclude the use of cryogenic conditions and recovery

1 solvents if you're going to disregard ethane and methane.

2 JUDGE WOODS: All right, thank you. And as a segue into the
3 claim construction that's in the Patent Owner's Sur-reply, I'd love to turn in
4 that direction, if you were willing to answer some questions regarding claim
5 construction.

6 MR. ROGERS: I'm already there, I'm at Slide 6, I'm ready for
7 you. And I'll just start out and then you can cross-examine me on it. The
8 disregard for recovery of methane and ethane is found in independent claim
9 1 in at least four places, which are, one, reciting the hydrocarbon feed stream
10 as including natural gas liquid, defined in the Specification as C3 through C8
11 hydrocarbons. Then, reciting the NGL to comprise C3 through C8
12 hydrocarbons, not C1 ethane (sic) and not C2 ethane. And I understand
13 we're going to talk about the use of the word 'comprising,' it is relevant here.

14 Number two, the reciting of the sweet and sour NGL streams as
15 rich. Sweet NGL rich stream, sour NGL rich stream, and then at column 5,
16 lines 1 and 2 of the patent, it tells us that 'NGL rich' means relatively lean
17 with respect to methane, ethane, and acid gases. And then finally, three and
18 four, excluding cryogenic conditions and carbon dioxide recovery solvents
19 from the process, which we contend, as we said, are necessary for the
20 recovery of methane and ethane.

21 So the disregard for recovery of methane and ethane is further
22 recited with specific limits for methane and ethane in dependent claims 4
23 and 7. Claim 4 limits the amount of methane and ethane in the sweet NGL
24 rich stream no more than 1 molar percent each. Claim 7 limits the amount
25 of methane and ethane in a sour NGL rich stream to no more than 1 molar
26 percent methane and no more than 5 molar percent ethane.

1 So claim 1 specifies that the NGL rich streams are rich, meaning
2 that the streams have relatively high amounts of NGLs, C3 through C8,
3 compared to the non-C3 through C8 components in the stream, C1 methane,
4 C2 ethane, and acid gases, with corresponding relatively lower amounts of
5 methane, ethane, and acid gases contrasted to be lean, as defined at column
6 5, lines 1 and 2. So claims 4 and 7 specify particular levels of richness for
7 the NGL rich streams, specifying very low upper limits for the percentages
8 of methane and ethane in the sweet and sour NGL rich streams.

9 JUDGE BARRETT: Counsel, I know I'm a little slow on the
10 uptake here, but help me out. You talk about why some of the feeds or the
11 NGLs, things like that, are pretty pure. How is that a disregard for the
12 recovery of methane and ethane?

13 MR. ROGERS: You mean the low limits?

14 JUDGE BARRETT: Yeah, so if you have a low limit, how is that
15 disregarding their recovery? Because it seems like if you have low limits --
16 well, I'll let you answer.

17 MR. ROGERS: So, the way it works is you've got the ethane --
18 the methane and the ethane in the feed stream, and you're going through
19 these separations, and then by the time you get to the sour NGL rich stream
20 and then the final product, the sweet NGL rich stream, if you put limits on
21 how much ethane and methane can be in those streams, then that tells you
22 you're requiring the disregarding of the recovery.

23 Because those are the recovery streams, and so if -- well, we'll just
24 call it the sweet NGL rich stream, that's the final product coming out, okay?
25 And so if you have requirements that limit that to these low percentages, 1
26 percent and 5 percent, the only way to reach those is to not recover methane

1 and ethane. So that's how these claims require the disregard for recovery of
2 methane and ethane.

3 JUDGE BARRETT: Okay, thank you.

4 JUDGE WOODS: And if I could follow up on that? So why can't
5 the methane and ethane be in the purified carbon dioxide recycle stream, and
6 why can't it be recovered from there? And even if you use cryogenic
7 conditions, membranes, and carbon dioxide recovery solvents, that to me
8 would be outside the scope of the claim, because that limitation we're talking
9 about is limited to the receiving and the separation. So it wouldn't apply to
10 downstream processes from the purified carbon dioxide recycle stream. So
11 can you explain to me if I'm correct or wrong?

12 MR. ROGERS: I'm not really following, because what we're
13 talking about is a disregard for recovery of methane and ethane is not going
14 through the cost and expense that's required to remove that methane and
15 ethane, and that makes this process more economical. And so in order to
16 recite a limitation in the claim or require something in the process, all you
17 have to do is what they've done here, is take the final recovery stream, the
18 sweet NGL rich stream, and say don't have methane and ethane in there.
19 And if there is methane and ethane in there, that means that someone along
20 the way in that process spent a whole lot of resources to get that methane
21 and ethane out of the CO2 recycle stream and get it into the sweet NGL
22 stream that's the recovered product.

23 JUDGE WOODS: Can we focus on the language of claim 1? The
24 very last limitation, beginning with 'between being received and being
25 separated'? So my understanding is, when I read that negative limitation
26 regarding cryogenic conditions, membranes, and carbon dioxide recovery

1 solvents, I understand that negative limitation is only applied between being
2 received and being separated. And so the purified carbon dioxide recycle
3 stream, the claim uses open-ended claim term, 'comprising,' and so you
4 could include a step whereby the ethane and methane are later subsequently
5 recovered from the purified carbon dioxide recycle stream. Is my
6 understanding of the claim correct?

7 MR. ROGERS: I think it may be, but I don't see how it's relevant
8 to this disregard for recovery of methane and ethane.

9 JUDGE WOODS: Well, I think that's why, because when we say
10 there's a disregard for the recovery of ethane and methane, the claim doesn't
11 seem to reflect that. At least in my mind it allows for recovery of ethane and
12 methane from the purified carbon dioxide recycle stream.

13 MR. ROGERS: I don't see how it would allow for it, if the
14 recovery, that is the NGL recoveries, is the sweet NGL stream, the product
15 that's coming out.

16 JUDGE WOODS: Well, those limitations that we're --

17 MR. ROGERS: Go ahead, I'm sorry.

18 JUDGE WOODS: I'm sorry. Those limitations that we're
19 referring to in claims 4 and 7 refer to the natural gas liquid stream, whether
20 it's rich or sour. And so that's not to say that there are limits on the amount
21 of ethane or methane in the purified carbon dioxide recycle stream, and the
22 ethane and methane can be removed from that purified carbon dioxide
23 recovery stream at a later point.

24 MR. ROGERS: I don't think this process contemplates removal
25 anywhere else, other than when you're making the separations, that you end
26 up with the sweet NGL product stream. There's no other place contemplated

1 in here where there's any other removal.

2 JUDGE WOODS: Is it possible for ethane and methane to be in
3 the purified carbon dioxide recycle stream?

4 MR. ROGERS: Well, absolutely, they're left behind. When you
5 disregard the recovery in the NGL recovery process, when you disregard the
6 recovery of methane and ethane, you don't recover it, you leave it in the
7 recycle stream, you inject it back into the formation.

8 JUDGE WOODS: And is it possible to later recover that ethane
9 and methane from the purified carbon dioxide recycle stream?

10 MR. ROGERS: Not in this system, because in this system you
11 have a distillation column where you make the separations for your NGL
12 recovery, and then the remaining CO₂ recycle stream that has things not
13 removed, like methane and ethane, are in the recycled gas, and it gets
14 injected back into the formation. There're no other separations.

15 JUDGE WOODS: All right, thank you.

16 MR. ROGERS: I mean, I just want to make sure we get this
17 straight. Are you saying that you could take the Prim process, where you've
18 got this distillation column, and that's where the NGL recovery separations
19 take place -- I understand there's separations before that, when the oil comes
20 out of the ground and you do the three phase separation to get the water and
21 the heavy, crude oil out. But once you get your CO₂ recycle stream, and
22 you perform the separations on it to do your NGL recovery, that's the only
23 place that these NGL recovery separations are taking place. And so we have
24 these limitations on the sweet NGL rich stream, the sour NGL rich stream
25 also, to make clear that you're not recovering methane and ethane. Limit to
26 a small amount, and there are some small amounts of methane and ethane in

1 there, because like the Petitioner said, these distillations, they're imperfect
2 separations. So even though you're disregarding recovery of methane and
3 ethane, you're not expending resources to get it out. You're still going to
4 have some methane and ethane flow through, I think the experts call it a
5 soluble amount.

6 So that's why when we put these limitations on methane and ethane
7 in the sweet NGL rich stream, it's not zero, it's 1 percent, it's 5 percent. And
8 these imperfect separations are also the reason why all these claims say
9 'comprising' when they're talking about these material streams and what the
10 components are. You can't say 'consisting,' because the separations are
11 imperfect.

12 But in the system, the NGL recovery is one distillation. You take
13 out the NGLs and you sell them. And whatever you didn't take out, you
14 inject back into the formation. And so I don't think it would be fair to put a
15 twist on these patent claims and say, well, you could take that CO2 recycle
16 stream after you've done all your separations, and it's supposed to be going
17 back in the ground, but then you could hook something up there that
18 recovers methane and ethane and then use that theory and invalidate these
19 claims? I don't think that'd be in the interest of justice at all.

20 JUDGE BARRETT: Counsel, we appreciate that, and understand,
21 we're not trying to twist the claims or anything like that. We're not looking
22 to rewrite them just to create an invalidation, we're just trying to understand
23 the scope. And I think you understand where we're coming from. You talk
24 about limitations on ethane and methane, and those might be in the
25 dependent claims, but it's not literally explicitly written in the independent
26 claim, so we're just trying to understand the basis of your argument. So,

1 help us help you.

2 MR. ROGERS: Okay, I appreciate that. And I didn't mean any
3 bad will in using the word twist, so I apologize if it came out that way. So
4 this contingency that we have, the disregard for recovery of methane and
5 ethane, it's not just in claims 4 and 7. It's clearly in claims 4 and 7, but even
6 though claim 1 doesn't even use the words methane or ethane, it's in there,
7 because you know methane and ethane are in that stream, and the use of the
8 word 'rich,' for NGL rich streams, has a meaning. And that's expressed in
9 the Specification that tells us that using the word 'rich' is reciting the
10 disregard for recovery of methane and ethane in claim 1. And then this
11 richness, the level of richness, it's an extreme level of richness in claims 4
12 and 7.

13 So, reading the Slides 6 and 7, where you see the use of this word
14 'rich,' and the concept of rich versus lean, even if the Board were to reject
15 Pilot's proposed claim constructions for cryogenic conditions and carbon
16 dioxide solvents, all the challenged claims recite that the CO2Flex process
17 disregarded recovery of methane and ethane through the 'NGL rich'
18 terminology, and the richness levels in claims 4 and 7.

19 So Pilot respectfully requests that this Board recognize that the
20 challenged claims do recite the disregard for recovery of methane and ethane
21 as part of the claim process steps, and confirm that Ryan/Holmes teaches
22 away and cannot serve as the basis for asserting obviousness of the
23 challenged claims. And then also, by recognizing that the challenged claims
24 recite the disregard for recovery of methane and ethane, also apply that to
25 reject the Petitioner's attempts to discredit the incredible commercial success
26 that Pilot has had. They try to block the nexus between commercial success

1 and the claims by saying that the success is due to unclaimed features. And
2 so I'm emphasizing here that this disregard is claimed features, and I
3 respectfully request that you accept Pilot's view of these claim limitations.

4 JUDGE WOODS: All right, thank you, Mr. Rogers. You have
5 about four minutes left before your rebuttal time.

6 MR. ROGERS: Okay, I need to get something really important
7 here, so I may even want to dig into that rebuttal time. Let's see how fast I
8 can get this done. So I want to skip to -- all right, I've got on the screen here
9 Slide 25. This is very important, I need to get through this.

10 Petitioner's Slide 25 is Soldati Figure 4, and this goes to Grounds 3
11 and 5, okay? Where they try to use just this crazy modification of Soldati
12 Figure 4, which is a Ryan/Holmes four column process, and try to say that
13 the additive recovery column is the sweet NGL rich stream. And I will refer
14 to this as a crazy interpretation of this process, and here's the reason why.

15 So Petitioner's Slide 25 is Soldati Figure 4, which is a diagram of
16 the Ryan/Holmes four column process, which Petitioners are trying to read
17 on the claimed sweet and sour NGL rich streams recited in challenged
18 claims 1, 4, and 7. The dispute arises here because Ryan and Holmes
19 specify their stream 27 is the sour NGL stream, which is further processed to
20 produce sweet NGL product. The issue -- and the sources cited here are at
21 pages 22 and 23 of Pilot's Response to the Petition, and I say that because I
22 want you to see where the sources are, because I'm not referring to my
23 demonstratives, so I don't have the sources listed, it's their demonstrative 25,
24 all right?

25 Petitioners have a problem, because the claim 1 disregard for
26 recovery of methane and ethane and the further recitation of disregard for

1 methane and ethane with specific limits in dependent claims 4 and 7, which
2 limit the amounts of ethane and methane in the sweet NGL rich streams no
3 more than 1 molar percent, claim 4, and the amount of ethane in the sour
4 NGL rich stream to no more than 5 molar percent in claim 7.

5 Because of the Ryan/Holmes focus on the recovery of methane and
6 ethane, this four column Ryan/Holmes process in Soldati Figure 4 recovers a
7 lot of ethane. And the recovery of ethane flows through the system in their
8 sour NGL stream 27, which contains about 50 percent ethane. So they've
9 got a problem here trying to apply this to claims 4 and 7 that have limits of 1
10 and 5 percent ethane, when in actuality this reference they're trying to apply
11 recovers 50 percent ethane in that sour NGL stream 27. Which also
12 downstream of that is the sweet NGL stream, so that's going to have more
13 than 50 percent ethane in it anyway. And these compositions are shown in
14 Soldati Table 3.

15 Stream 27 is the overhead output of column 21, on the far right-
16 hand side of 25. It's the additives recovery column. The bottom output of
17 column 21 is the liquid hydrocarbon stream, a.k.a. additive stream 28, most
18 all of which is recycled back into the system, not recovered. And I say most
19 all of which, it's over 99 percent, okay? They're relying -- Petitioner's entire
20 Grounds 3 and 5 argument for asserting Soldati to apply to claims 4 and 7
21 rests upon an assertion that this additives recycle stream could somehow
22 count as a sweet NGL product, which Ryan/Holmes specifies is downstream
23 of the sour NGL stream 27, not the additive stream 27 that's being recycled
24 back into the system.

25 They're relying upon this 31, where the patent says that could be
26 considered recovery, if there was anything coming out of it, but there's

1 nothing coming out of it. What they refer to as the sweet NGL rich stream
2 coming out of column 21 is not recovered. It's going up, back into the
3 system as additives. And if you look at the Exhibit 2028 of Trevor Bors'
4 Declaration, at paragraph 85 he shows that 99 percent is being sent back in
5 and not recovered.

6 And so in order for them to read this claim, or this configuration on
7 the claim, they have to ignore the fact that they're actually recovering 50
8 percent ethane. And they try to mix around the streams and say, oh, this
9 additive stream has got some, it's got less than the 1 percent ethane in it, and
10 it's coming out of 31. But what's coming out of 31 is less than 0.9 percent of
11 the flow. Over 99 percent is being recycled. So it's a ridiculous assertion
12 that that somehow could be -- make you ignore the fact that what this is
13 really doing is recovering ethane at the 50 percent level, coming out of the
14 top of the column 21.

15 So with that said, Pilot respectfully requests that the Board reject
16 Petitioner's attempt to apply a four column Ryan/Holmes process which
17 recovers 50 percent ethane in the sweet and sour NGL streams to claims 4
18 and 7 which limit the amount of ethane in the sweet NGL rich stream to no
19 more than 1 molar percent, claim 4, and the amount of ethane in the sour
20 NGL rich stream to no more than 5 percent, claim 7. In other words, reject
21 the Grounds 3 and 5 challenges to claims 4 and 7. Thank you. I don't know
22 if I have any time left, but you can let me know.

23 JUDGE WOODS: Thank you, Mr. Rogers. Yes, you do, I believe
24 you have about eight minutes remaining, if you'd like to reserve that for
25 rebuttal.

26 MR. ROGERS: Yes. Appreciate your time today. Do you want

1 the HDMI back?

2 MR. PIALA: Yes, please.

3 JUDGE WOODS: Okay, Petitioner's counsel, Mr. Wolfe, Mr.
4 Piala, I understand you have about 22 minutes left for rebuttal, and I'll start
5 the clock when you're ready.

6 MR. PIALA: Thank you, Your Honors. We're putting the slides
7 up right now. So first and foremost, I do want to mention, at this point
8 everybody's looked at claim 1, 'disregard methane and ethane' is not in claim
9 1. Nobody's found that language, every stream is described in 'comprising'
10 language, the NGLs themselves are discussed in 'comprising' language. A
11 disregard of methane and ethane isn't there. And if we look at claims 4 and
12 7, which the Patent Owner has said discuss the disregard of methane and
13 ethane, then one, that suggests that claim 1 is broader and that the Patent
14 Owner knows how to claim a disregard of methane and ethane when they
15 want to, and two, if we look at the streams of Soldati, the streams of Soldati
16 satisfy claims 4 and 7, those concentrations.

17 So if we look at the composition of stream 12 of Soldati, and then
18 can we turn the slide over to 26? We meet at claim 1.b. Claim 1.b says that
19 there's a sour NGL rich stream, and the sour NGL rich stream has to
20 comprise C3 through C8 hydrocarbons and acid gas. And the Petitioners
21 have mapped stream 12 of Soldati, as the Patent Owners have described,
22 onto the sour NGL rich stream. There is no dispute between the parties as to
23 the composition of this stream, because stream 12 just shows up in the table.
24 This stream has C3 through C8 hydrocarbons, it has acid gas, therefore it
25 satisfies this requirement.

26 And furthermore, if we look to the specific compositional

1 requirements of claim 7, which weren't disputed before, those compositional
2 requirements of claim 7 are satisfied by stream 12. There's no dispute over
3 the composition, you know, whether it has too much methane or ethane in it,
4 it does not have more methane and ethane than is required by claim 7. So it
5 is a rich sour NGL stream, even according to what the Patent Owner has put
6 forward, which we don't necessarily agree with. So even under their
7 argument, this still satisfies this requirement.

8 And if we turn to the next Slide 27, in claim 1.c, the sweet NGL
9 stream, which Petitioners have matched to stream 28, which then divides
10 into streams 10 and 31. This stream, according to claim 1.c only requires
11 that the stream comprise C3 through C8. And again, the parties don't
12 dispute, this stream absolutely comprises C3 through C8.

13 So if we go to the next slide, this is the mapping that Patent Owner
14 has proposed, where the sour NGL rich stream is off on stream 27.
15 Petitioner's major problem with this is that the Patent Owner doesn't explain
16 why stream 12 isn't a sour NGL rich stream. Maybe stream 27 is also a sour
17 NGL rich stream, there's nothing that stops it from having more than one
18 quality. It does have the acid gas in it, but stream 12 has the acid gas, it has
19 the C3 through C8. It is also a sour NGL rich stream, and thus can satisfy
20 the requirements of claims 1, 4, and 7. And it also satisfies the narrower
21 compositional requirements of claims 4 and 7, which is our response to the
22 Patent Owner's argument that there's no disregarding of methane and ethane
23 in Soldati.

24 First of all, again, I want to be very, very clear, we do not agree
25 that's a limitation of claim 1. We don't think that there's any support for that
26 idea in claim 1. It seems to have every exclusion except the exclusion of

1 methane and ethane, but even if it did, stream 12 satisfies that requirement,
2 as described in claim 7, dependent claim 7. So we just very strongly
3 disagree with this notion of what the Patent Owner has put forward.

4 JUDGE FINAMORE: Counsel, let me ask you a question on that,
5 and if I could go to, I believe it's your mapping on Slide 27, that light blue
6 spot, that is Petitioner's mapping, correct?

7 MR. PIALA: Correct, Your Honor.

8 JUDGE FINAMORE: So, if I understand all of this correctly,
9 please set me straight if I'm wrong, that light blue feed on the bottom that
10 you label the sweet NGL, I believe is taught to go into distillation column 35
11 to adsorb the ethane CO₂ azeotrope. So I guess I'm concerned that a person
12 of ordinary skill reading the art, even though it has certain compositional
13 requirements -- I agree with you that there's propane plus hydrocarbons in
14 that stream, but given the teaching that it's used to absorb an azeotrope,
15 wouldn't a person understand that to be an additive recycle stream, as
16 opposed to a product-rich NGL stream?

17 MR. PIALA: Yes, Your Honor, and I want to be clear here, it
18 actually serves three purposes. One, it's divided and it goes into exits as
19 stream 31, and that's the excess, that's a purified NGL product for sale. At
20 stream 31, you can see it divides at the bottom there, it's like an inch to the
21 left of the 30 mark. Actually, it's right where the arrow's pointing, almost.
22 Well, now it's not. Yeah, right there. Some of it goes up to break
23 azeotropes, some of it goes out as 31, and that's product for sale.

24 So one, you know, on that level, even if we consider that to be
25 correct, it's still for sale. And that's where all the heavy stuff goes. So as
26 heavy stuff enters the system, obviously you can't just keep feeding more

1 into the system without removing some, that's where it's exiting the system
2 and being sold, which is the whole point of this operation, is to purify that
3 stuff out for sale. But in addition, nothing in claim 1 says that the purified --
4 I'm sorry, the sweet NGL rich stream can't be used for other purposes. So
5 yeah, it's used to break up an azeotrope, nothing in claim 1 says, oh, but you
6 can't use it to break up azeotropes, you can't use it for this purpose, you can't
7 use it for that purpose. Once it exits at the bottom of the column, there's no
8 restrictions on what can happen to that stream subsequently.

9 And, you know, certainly if somebody's accused of infringement
10 on this patent it would be very challenging to argue, oh, this stream which
11 matches every single requirement of claim 1 doesn't infringe, because I've
12 used it for some other purpose. I don't think that would necessarily be
13 effective. They could have restricted it, they could have said it has to be
14 sold or exits the system, and those restrictions can't be found in claim 1, or
15 any of the challenged claims, to be clear. I think that answers your question,
16 Your Honor?

17 JUDGE FINAMORE: It does, thank you.

18 MR. PIALA: Were there any other questions on this issue? Okay.
19 And one thing I do want to note is this idea that these negative limitations
20 were put in here to disclaim over Ryan/Holmes. We've mentioned this in the
21 briefing and certainly support you looking through the file history,
22 Ryan/Holmes isn't mentioned. What's mentioned is a reference called
23 Goddin. Goddin proposed two alternate embodiments, one that used
24 cryogenics to remove ethane and methane, and one that used carbon dioxide
25 recovery solvents in order to pull out the carbon dioxide. And this is sort of
26 a -- this argument that, oh, Ryan/Holmes has to be done this way is sort of a

1 rewriting history in reference to other art that was excluded during
2 prosecution, this Goddin reference, and its two alternate embodiments.

3 JUDGE BARRETT: Well, regardless of how we got here, and
4 maybe you've addressed this, but how do you react to Patent Owner's
5 argument that by putting the negative limitations, the cryogenic conditions,
6 the recovery solvents, those are the Ryan/Holmes process. And if I
7 understand Patent Owner's argument correctly, Petitioner's hung its hat on
8 that process.

9 MR. PIALA: We haven't really hung our hat on that process due
10 to Aycaguer. And this is another thing we want to make clear, Aycaguer
11 says that it is possible to use a Ryan/Holmes type process as the gas
12 processing plant in the box, it doesn't say it has to be what's used. And there
13 are theoretically other embodiments that can be used to do this process, so
14 we have not hung our hat on Ryan/Holmes exclusively. That's more of a
15 Soldati and combination type argument.

16 However, even then, Ryan/Holmes, as we've seen in Soldati, as
17 we've seen in the other references, one, certainly doesn't have to be
18 performed cryogenically. I mean, that's been shown pretty clearly, and the
19 Patent Owner hasn't argued that CO₂ is even recovered. So we don't
20 understand how there could be a meaningful CO₂ recovery solvent. And I
21 don't know if they're necessarily conceding that, but we haven't heard
22 anything on that point.

23 So we would say that if the Patent Owner intended to exclude
24 Ryan/Holmes from the claims, it's not in the claim language and you know,
25 they could have requested this Board allow them to amend the claims or
26 something like that. And that's what they should have done. Their intentions

1 are not reflected by the actual claims at issue here, and the continuation of
2 something else, they could claim that if they believe that's what they
3 invented.

4 And, yeah, in conclusion on the technical merits, yeah, claims 4
5 and 7, the Patent Owner itself has brought them up as this idea of discarding
6 methane and ethane, but Soldati satisfies those compositional requirements.
7 So even to the extent that the Board credits that, that doesn't save the day for
8 the Patent Owner. And I know my colleague wanted to discuss some of the
9 secondary considerations that came up.

10 JUDGE FINAMORE: Before we switch, because this falls in your
11 charge, question on the cryogenic claim construction. Or actually not the
12 construction, but rather the teaching of the references. You heard Patent
13 Owner say that they seemed to acknowledge that there are non-cryogenic
14 temperatures, but in that instance then the process would require certain
15 solvents. So I guess what is Petitioner's response to the fact that even if
16 there's non-cryogenic temperatures, how does the process still meet the
17 negative limitation, which also recites the membranes and the
18 (CROSSTALK).

19 MR. PIALA: Yes, Your Honor. One example of that is the
20 Soldati reference itself, the Soldati reference is a four column Ryan/Holmes
21 type process. Again, they're alleging that this recirculation loop and the
22 NGLs themselves are carbon dioxide recovery solvents, and they're not, for
23 all the reasons that the Petitioner has mentioned before. You know, even if
24 this were a -- the first element of claims, it excludes all the embodiments of
25 the Specification, and in fact no carbon dioxide was recovered. So the four
26 column Ryan/Holmes in Soldati, and if we go to -- oh, goodness. Probably

1 claim, Slide 17-ish? Up a little bit. Yeah, down two.

2 So we look at the Exhibit 1007 which is Ryan, the four column,
3 even as disclosed as Ryan, is minus 10 to plus 40 F. And I think it would be
4 challenging to argue the plus 40 F is cryogenic. So I guess that would be our
5 answer on that, because the four column process, and even a three column
6 process is substantially non-cryogenic and can be run that way. So that
7 would be our answer on that, Your Honor.

8 JUDGE FINAMORE: And just to make sure I -- and we know
9 that it doesn't use the CO2 recovery solvents because --

10 MR. PIALA: Because that is the sort of alleged additive, which is
11 itself NGLs, C3 through C8. C3 through C8 are carbon dioxide recovery
12 solvents. The claim sort of falls apart from the get go, because they're
13 required to be in the stream. So, you know, you would be excluding from
14 the stream the things that claim 1 requires to be in the stream. And also,
15 because no carbon dioxide is recovered in any of these components. I mean,
16 the carbon dioxide was up and out, and as the Patent Owner's own expert
17 could read, that's not recovery. Recovery has to be removing from the
18 stream. It's not allowing it to go up and out of the column undisturbed.

19 JUDGE BARRETT: Take me through what Goddin was
20 disclosing in (INDISCERNIBLE).

21 MR. PIALA: Sure, yeah. What Goddin is disclosing is a method
22 of purification of these streams, again, the same sort of art. And it presented
23 two different embodiments, one that used a cryogenic system in order to
24 remove methane and ethane, and then it also used an alternate embodiment
25 where the separation was performed cryogenically.

26 And then in response to that, if we go up to -- I'm sorry, Goddin is

1 down. Yes, here we go. And if we look to the prosecution history, and I
2 believe that we briefly detailed this before, that the Patent Owners
3 themselves equated CO2 solution absorption, which is the method used in
4 Goddin with carbon dioxide recovery solvents. This is the actual attempt to
5 traverse Goddin. And so they've equated the two, that's the embodiment in
6 Goddin. That's what they were really trying to do, it didn't have to do
7 (CROSSTALK) --

8 MR. WOLFE: (INDISCERNIBLE).

9 MR. PIALA: Yes, yes, and to be very clear, the CO2 solution
10 absorption system in Goddin was not NGL, it's a completely different
11 system than what is disclosed in Soldati. It used what is known as an amine
12 type solvent. The amine has a high affinity for carbon dioxide, so you mix
13 the amines in the stream, it pulls the carbon dioxide out and allows for the
14 recovery. And Soldati isn't even alleged to have any CO2 recovery solvents,
15 other than C3 through C8, which is itself the stuff that has to be in the
16 stream. So again, we see that argument as sort of self-defeating.

17 JUDGE FINAMORE: So just to make sure, that's what I was
18 getting to, is that Soldati does use any of those like amine type solvents, but
19 we know that it doesn't because it doesn't simply recover CO2. That's
20 Petitioner's position?

21 MR. PIALA: It does recover CO2 downstream, it does so through
22 low temperatures, though. And that is -- can you bring up Soldati? It's the
23 second column in a row, but it's -- I think it's the third column in the system.
24 I'll show you in the figure. Just the figure for Soldati, Figure 4 I think.

25 JUDGE BARRETT: I believe that's your demonstrative 27?

26 MR. PIALA: Yeah, I think that's right, Your Honor. Yeah, there

1 we go. That would be in column 39, the carbon dioxide goes down and out
2 the column through stream 44, which leads to stream 47. But that's after the
3 purified carbon dioxide recovery system, and that's how the methane is
4 separated from the CO₂, or one of the mechanisms. The de-methanizer
5 column, which is column 35, does it more thoroughly, but sort of the first cut
6 is done in column 39, and that is done without any additives.

7 And in fact, it's in the briefing, in the briefing we discussed that the
8 Patent Owner's expert agreed that this column does not use a CO₂ recovery
9 solvent in the Ryan/Holmes process. That's not how the CO₂ is recovered,
10 it's done through temperature. And even that, as we've looked through all
11 the streams of Soldati, is done non-cryogenically. So it's outside the system,
12 and it's still non-cryogenic.

13 JUDGE FINAMORE: Thank you.

14 MR. PIALA: Thank you, Your Honor. And I want to -- unless the
15 Board, of course, has any other questions, I wanted to turn it over to -- thank
16 you, Your Honors.

17 MR. WOLFE: Hello, Your Honors, just very briefly, because
18 there was some touching on commercial success and arguments to that, and I
19 think first and foremost, like I said in opening, Patent Owner themselves is
20 tying commercial success to disregard of methane and ethane and that's not
21 claimed. So if it's to an unclaimed feature, then you don't have to get into
22 whether or not it was commercially successful or not. But if we can go
23 down I think to the next slide, maybe 64? The next one, please. Yeah, 65.

24 Okay, so this is where in the Patent Owner's Response they
25 provided, in Exhibit 2072, some of the financial numbers, but they don't
26 really explain how those tied to the claims, just that there was some money

1 that was made, and they tie it to this pitch presentation that's given at
2 industry conferences, which can be seen here in Slide 66 of Exhibit 2049,
3 where they're proposing to JV or partner with other folks. But they don't
4 actually explain the revenues and sales numbers and why that's considered to
5 be commercially successful based on comparison with other prior art.

6 If we look at Slide 65, for example, these are -- sorry, 66. These
7 are sort of two of the slides that are in that deck, and they don't explain these
8 numbers or what they're meaning at all. They just sort of put them up there
9 and say, these are the comparisons with the prior art, but on the left-hand
10 side you can see Ryan/Holmes is actually doing better in the EBITDA, but
11 nobody tells you what that means. So I think that commercial success has
12 no nexus, and also it fails on the merits. And unless Your Honors have any
13 questions about any particular secondary considerations, I'm happy to talk
14 about those, but otherwise we'll rest on our briefs.

15 JUDGE WOODS: I have no questions. Judge Barrett, any
16 questions?

17 JUDGE BARRETT: No questions.

18 JUDGE WOODS: Judge Finamore?

19 JUDGE FINAMORE: No, thank you.

20 JUDGE WOODS: Thank you, Mr. Wolfe and thank you, Mr.
21 Piala. Mr. Rogers, you have I believe about eight minutes left for rebuttal.

22 MR. ROGERS: Let me get my HDMI hooked up first. I'm ready.

23 JUDGE WOODS: Whenever you're ready.

24 MR. ROGERS: So I want to start this surrebuttal to address the
25 commercial success. What I heard was that we provided numbers that some
26 money was made, that it's just not really tied to the claims. Well, we went

1 into incredible detail creating charts for each of the five CO2Flex plants,
2 showing coextensiveness, showing that there's so many few exceptions that
3 are only in the dependent claims where the claims don't match up to the
4 processes where the money was made.

5 And so if you look along the line for the coextensiveness
6 requirement, it's a spectrum. And it goes from perfect one-to-one
7 correspondence between the claims and the process, it was commercially
8 successful, and then the commercially successful process that's just
9 completely divorced from the claims. We are at the extreme on that
10 spectrum, to where there's just so very many few exceptions between the
11 mapping of the claims to the commercially successful processes.

12 And then we've shown that the reason for the commercial success
13 is not because of unclaimed features. And so the commercial success --
14 number one, we're entitled to the rebuttable presumption, but even if we're
15 not, we've got evidence in the record for the Weyburn facility, for the
16 decision maker showing the reasons why they chose to implement the
17 process. And it was for the features that we talked about that are recited in
18 the claims.

19 You may not believe they're in claim 1, but they're certainly in
20 claims 4 and 7. You can't say the disregard for methane and ethane is not
21 found in claims 4 and 7 because they have those very specific requirements
22 of very low levels of methane and ethane in those streams. So we have
23 provided a nexus, there's incredible commercial success. We respectfully
24 request that you give us credit for it and weigh that as a strong secondary
25 consideration.

26 JUDGE BARRETT: On that point, commercial success, and you

1 started off talking about dollar figures and you don't need to pull it up, I'm
2 looking at your Slide 25, a lot of dollar figures here, a million dollars. And
3 forgive me for not knowing this. Have you presented us with a benchmark
4 so I can tell the relative weight to give those? You've got a revenue of \$330
5 million, I don't know what that means.

6 MR. ROGERS: Okay, and I'll get to that right now, we've got it up
7 on the screen. Perfect segue. So for the gross revenues, I know that there's
8 some cases out there that say we're not going to give you a strong credit for
9 your gross revenues, even if they're in these hundreds of millions, if you
10 don't put it in the context, like market share, something like that.

11 Well, this industry doesn't, it just doesn't work that way. We don't
12 know what market share is. Our experience has been -- and it's shown in the
13 Exxon Means proposals, that when we go into somewhere and -- I say we,
14 Pilot. When Pilot goes in to present proposals for implementation of the
15 CO2Flex plant, when they get rejections, those customers, potential
16 customers, they don't go to a competitor, so there's no other market share
17 there. They just don't implement the process, and that's what Exxon Means
18 has done. They rejected the proposals, and to this day, they're not
19 processing NGL recovery at that plant. They're just injecting everything
20 back into the stream.

21 So, you know, we just don't have -- the industry doesn't work the
22 way to where you could use market share data. Now, what we can do, and
23 what we have done is provide context for the operating profits, and the
24 profitability, which are incredible numbers as well. And so if you take a
25 look on the screen at Slide 10, what this is, this is a PowerPoint presentation
26 that Eric Prim used to introduce the CO2Flex process to the industry. And

1 this not only goes to the put the operating profits into context, because it
2 shows that the CO2Flex process is by far the most economical way of all the
3 different -- for gas processing, for NGL recovery, than all the other
4 alternatives.

5 And the comment I heard about Ryan/Holmes, well, it looks like
6 they've got better -- and that's true, and that's why actually this presentation
7 actually goes to non-obviousness as well, because it shows you that, it's kind
8 of counter-intuitive. And maybe the reason why, for two decades this
9 solution was not found, and that's because, you know, this presentation
10 shows that you would think, if you've got a process that has higher
11 recoveries, like Ryan/Holmes with methane and ethane that you could sell,
12 and they're pretty valuable, that that'd be the way to go. That that'd be your
13 most profitable, because you're brining in the most revenue.

14 But the problem is, Ryan/Holmes has such capital-intensive, it's so
15 much more expensive to build, that you end up -- a second of actually
16 negative rate of return. That probably tells you why there's been no
17 Ryan/Holmes plants built since the onset of the CO2Flex process.

18 So in this presentation, what Eric Prim did at Slide 10, he first
19 described the Ryan/Holmes, he's starting with all the different alternatives in
20 the industry, and this puts the operating profits into perspective for the
21 industry and shows you that CO2Flex is the most profitable. So starts out
22 with, Prim describes Ryan/Holmes as the most expensive, CO2Flex is way
23 less expensive, and MRU is the least expensive. Then he's got estimated
24 capital costs, and this is the big important one, because look at
25 Ryan/Holmes. You're talking about \$60 million to build a Ryan/Holmes
26 plant, and MRU is just as expensive, but for fractionation, which is the

1 CO2Flex process, only 10 million.

2 And this is the slide where he shows just how complicated the
3 Ryan/Holmes process is, up to four columns, that's why it's so expensive to
4 build and operate. And then you've got recovery comparisons, once again.
5 So, looks like Ryan/Holmes has got better recoveries. You've got lots of
6 recovery, almost 100 percent recovery of methane and ethane, where
7 fractionation, the CO2Flex has none, that's the disregard. So Prim describes
8 the differences in recovery, including Ryan/Holmes' focus on recovering
9 very high levels of methane, 90 percent, and ethane, almost 100 percent,
10 while CO2Flex disregards recovery of methane and ethane, limiting its
11 recovery to C3 and C8 NGLs.

12 And then you go to the value of the products. Once again,
13 Ryan/Holmes, it's got a lot more valuable products, because you've got that
14 methane and ethane. So Ryan/Holmes recovering dollars per day products
15 substantially higher than CO2Flex due to the near complete recovery of
16 methane and ethane. Well, CO2Flex disregards it to allow for a more
17 economical recovery of products, as will be shown in the upcoming
18 economic comparison. Prim then provides the reason why CO2Flex
19 disregards the recovery of methane and ethane, to provide a more
20 economical, more profitable alternative.

21 Prim explains that while the methane products Ryan/Holmes
22 recovers can be worth \$600,000 per year, almost all the value is consumed to
23 extract it, leaving no pay-out. And so although the ethane Ryan/Holmes
24 recovers is worth more, it's hard to market. Unless you've got access to an
25 NGL pipeline, you can't keep it. So just because you can, doesn't mean you
26 should.

1 So estimated EBITDA, once again, Ryan/Holmes is higher. Prim
2 shows the annual EBITDA for each alternative, with Ryan/Holmes being the
3 highest, so it looks like Ryan/Holmes is beating out everybody. Well, then
4 comes the capital cost. So the resulting economic comparison, it illustrates
5 why CO2Flex is the most economical approach by disregarding the recovery
6 of methane and ethane, blowing away Ryan/Holmes in its focus on near-
7 complete recovery of methane and ethane.

8 The key is in the resulting economics. Ryan/Holmes is in the
9 negative for both -- 10 and greater return, while CO2Flex beats all of the
10 alternatives by far. So this shows that CO2Flex is the most economical way
11 to do this process and most profitable, and that's why you see, this puts it in
12 the context of all the other players in the industry, and why those operating
13 profits that you see, those incredible numbers, are tied to the claims.

14 JUDGE WOODS: Mr. Rogers, thank you very much, I believe we
15 are past our rebuttal time. And so with that, I have no further questions.
16 Judge Barrett, do you have any questions for Mr. Rogers?

17 JUDGE BARRETT: Nothing further, thank you.

18 JUDGE WOODS: Judge Finamore?

19 JUDGE FINAMORE: Nothing further, thank you.

20 MR. ROGERS: Thank you for your time.

21 JUDGE WOODS: Thank you, Mr. Rogers. And Mr. Piala, Mr.
22 Wolfe, Mr. Rogers, thank you for your time today, and thank you all for
23 being so well-prepared to discuss the issues raised in the briefs. You all
24 handled several very challenging technical and legal questions with great
25 mastery of the record and an understanding of the law. So thank you. All
26 right, the case is submitted and we are now adjourned.

1 (Whereupon, the above-entitled matter went off the record at 2:50
2 p.m.)

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