

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

WIRTGEN AMERICA, INC.,
Petitioner,

v.

CATERPILLAR, INC.,
Patent Owner.

IPR2022-01394 (Patent 7,523,995 B2)
IPR2022-01395 (Patent 7,523,995 B2)
IPR2022-01397 (Patent 9,975,538 B2)¹

Record of Oral Hearing
Held: December 11, 2023

Before BARRY L. GROSSMAN, JAMES J. MAYBERRY, and
MATTHEW S. MEYERS, *Administrative Patent Judges*.

¹ This transcript is being filed in each proceeding in the caption. The parties are not authorized to use this caption in any subsequent filings. These cases have not been consolidated.

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The above-entitled matter came on for hearing on Monday, December 11, 2023, commencing at 10:14 a.m., at the U.S. Patent and Trademark Office, 600 Dulany Street, Alexandria, Virginia.

P R O C E E D I N G S

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JUDGE MAYBERRY: Good morning and welcome. I'm Judge Mayberry and with me on your screens are Judges Meyers and Grossman. Like counsel, we are located remotely and joining by audio video link. We are here for consolidated oral arguments in IPR 2022-01394 and IPR 2022-01395, each which concern U.S. Patent Number 7,523,995, which we'll refer to as the '995 patent. and IPR 2022-01397, which concerns U.S. Patent Number 9,875,538, or the '538 patent. All three of these proceedings are styled *Wirtgen America Inc. v. Caterpillar Inc.*

Before we go over some ground rules, I'd like to start with appearances by the parties. And we'll start with Petitioner's counsel.

MR. OGDEN: Thank you, Your Honor. You have Seth Ogden and Nathan North, along with William Sekyi from Patterson IP Law on behalf of Petitioner. And I'll let Mr. Phero introduce the group from Sterne Kessler.

MR. PHERO: Your Honors, Graham Phero on behalf of Petitioner Wirtgen America. Here with me are Ralph Powers, III. and John Higgins.

JUDGE MAYBERRY: All right, thank you. And for Patent Owner?

MR. ARGENTI: Good morning, Your Honor. Matt Argenti on behalf of Patent Owner Caterpillar. And also joining today are my colleagues Wes Derryberry and Tasha Thomas.

JUDGE MAYBERRY: All right, thank you. And I'm going to ask Judge Meyers and Judge Grossman to acknowledge that they can hear the parties and so we can make sure the parties can hear them as well. So, Judge Meyers?

1 JUDGE MEYERS: Yes, hello. Good morning.

2 JUDGE MAYBERRY: Judge Grossman?

3 JUDGE GROSSMAN: Yes, I can hear.

4 JUDGE MAYBERRY: All right, thank you. Now, before we get
5 started, I'd like to go over some of the mechanics of the hearing. First, thank
6 you for your patience while we had technical difficulties to start. Now, our
7 primary concern is your right to be heard and present your case on the record
8 as you see fit. If at any time during the hearing you encounter technical
9 difficulties that you feel undermines your ability to adequately represent
10 your client, please let us know immediately.

11 You should have been given contact information from our hearings
12 team. And if you lose connection or encounter some other problem, you
13 should use that information and contact them. Our hearing order includes
14 some information on the conduct of a video hearing. I want to reemphasize,
15 though, when you're not speaking, please mute your connection. And also,
16 when you first start to speak, please identify yourself. It'll help the court
17 reporter prepare an accurate transcript.

18 Now, the Judges have access to a complete trial record in the three
19 proceedings, including the parties' demonstratives. We ask that when you
20 refer to a slide, please refer to the slide number you're discussing so we can
21 follow along and so the transcript is clear. Also, if you refer to an exhibit or
22 a paper, please identify the exhibit or paper number and the proceeding and
23 the page you're referencing.

24 Specified in our order, each party will have 120 minutes of total time
25 to present their arguments in these three proceedings. However, because

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1 Petitioner will use a LEAP practitioner in the arguments, Petitioner will have
2 a total of 135 minutes.

3 As we discussed in a prehearing conference with the parties, the
4 IPR 2022-01397 proceeding will be argued first by the parties. Petitioner
5 bears the burden of proving unpatentability of the challenged claims of the
6 '538 patent and will go first. Petitioner may reserve rebuttal time. Then
7 Patent Owner will respond to Petitioner's case. Patent Owner may reserve
8 surrebuttal time. Petitioner may use its rebuttal time to reply to Patent
9 Owner's responsive arguments and Patent Owner may use its surrebuttal
10 time to reply to Petitioner's responsive arguments.

11 After that proceeding is argued, we're going to take a break. Then
12 using the remaining time that each party has, the parties will argue the
13 IPR 2022-01394 and -01395 proceedings together. Again, Petitioner will go
14 first and may reserve rebuttal time. Patent Owner will respond and also may
15 reserve rebuttal time. Petitioner will then use its rebuttal time to reply to
16 Patent Owner's responsive arguments. Then Petitioner may use its
17 surrebuttal time to reply to Patent Owner's responsive arguments. And again, at
18 this time during the hearing, the arguments will be directed only to the
19 01394 and 01395 proceedings. So, no jumping back to the 01397
20 proceeding.

21 Now, does Patent Owner's counsel have any questions before we
22 start?

23 MR. ARGENTI: No, Your Honor. Thank you.

24 JUDGE MAYBERRY: All right, thank you. And Petitioner's
25 counsel, do you have any questions?

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1 MR. OGDEN: No, Your Honor. Thank you.

2 JUDGE MAYBERRY: All right. So, Petitioner's counsel you may
3 begin your argument when ready. However, I'll just say the one challenge
4 the parties and the panel is going to have is tracking time. We don't have a
5 nice fancy clock behind us and then we have this two different segment
6 stuff. So, what I'm going to ask, Petitioner, do you have an estimate of how
7 much total time you want to argue for the 01397 case?

8 MR. OGDEN: Yes, Your Honor, we believe that it'll be about an hour
9 with 45 minutes and then reserving 15 minutes for rebuttal. And I'm going
10 to keep a clock here at my desk as well just to help know where I am.

11 JUDGE MAYBERRY: Okay, great. I will as well and hopefully
12 between the two of us we'll be able to handle the time. And I'll try to give
13 you a flag, if I can, as you're getting close to that 45-minute mark.

14 MR. OGDEN: Thank you, Your Honor.

15 JUDGE MAYBERRY: So, with that, you may start when ready.

16 MR. OGDEN: Okay. Your Honor, I'd just like to ask are you able to
17 see my screen?

18 JUDGE MAYBERRY: Yes, we are, Counsel.

19 MR. OGDEN: Okay, thank you. May it please the Board, Patent
20 Owner's argument is essentially that *Xing* is more complicated than the '538
21 patent. So, the proposed combination of *Willis* and *Xing* can't render the
22 challenged claims obvious. Patent Owner is correct that *Xing* does more
23 than the '538 patent, but Patent Owner is wrong regarding obviousness.

24 *Xing* practices all the controller limitations of the '538 patent but it
25 goes further, and it provides an improvement over the '538 patent. Now,

1 both the '538 patent and *Xing* look at many possible engine speeds and pick
2 the one that is expected to have the best fuel efficiency based on the
3 expected total engine load. And then they change the engine speed. And
4 they do this continuously in an iterative manner. The method of the '538
5 patent is not sophisticated enough to consider variations in power losses with
6 changes in engine speed. Instead, it merely assumes that those power losses
7 do not vary.

8 *Xing's* method, on the other hand, is sophisticated enough to predict
9 those changes. So, it picks the most fuel-efficient speed based on the
10 corrected total engine load. It's essentially the '538 patent plus. And *Xing*
11 tells you exactly this. In Exhibit 1001, at column 1, lines 55 through 62,
12 *Xing* tells you that in current control systems, algorithms have been
13 developed that focus solely on the engine speed control strategy. For
14 example, engine speed is typically controlled based on vehicle loads with the
15 engine running at its most efficient settings when loads are relatively low.
16 Unfortunately, such control algorithms fail to take into account the role that
17 other vehicle components play in impacting the overall efficiency of the
18 vehicle.

19 This is kind of an interesting case because typically what we see in
20 IPRs is that a patent owner is arguing a failing in the prior art because it
21 doesn't teach as much as whatever the patent invention might be. Here, the
22 argument is well, it teaches more, and that more somehow causes it not to
23 meet the claim limitations. But to do this, Patent Owner has to rely on
24 incorrect semantics-based arguments to intimate that *Xing* is
25 overcomplicated, and that's wrong.

1 Now, before we dive into why Patent Owner is wrong, I'd like to
2 provide a brief background. If we move to Petitioner's slide 2, we can see
3 that the petition included two instituted grounds. Ground 1 challenges
4 claims 1 through 13 as being obvious over *Willis* in view of *Xing*. And I
5 will be focusing most of my argument on ground 1. Ground 2 challenges
6 claims 8 and 13 as being obvious over *Willis*, *Xing*, and *Laux*. And claim 13
7 adds a limitation regarding a clutch. And my colleague, Mr. North, will be
8 dealing chiefly with the arguments regarding this clutch of claim 13.

9 Now, I'd like to move to Petitioner's slide 16. So, part of the
10 combination here is *Willis* combined with *Xing*. This depicts a figure from
11 *Willis*, figure 3 that's been annotated, as well as passage from *Willis*. And
12 *Willis* is directed to a conventional milling machine where the engine is
13 directly coupled to a belt drive that turns the milling drum. And so, we can
14 kind of see in this picture, it's a little bit see-through, but there's a drum there
15 in between the two tracks, and that is what grinds the pavement down.

16 The engine sits up on the machine and it has to be connected by this
17 belt drive so that it can transfer the power down to the milling drum to grind
18 the road. In this conventional milling machine, the operator selects the
19 desired rotor speed. And we see up there at element 14 there's a drum speed
20 selector there in figure 3 of *Xing* -- or sorry, of *Willis*. And so, because the
21 engine directly drives the belts and pulley system, to increase the rotor
22 speed, *Willis*' machine must increase the engine speed. It's a direct
23 relationship.

24 Now, if we move to Petitioner's slide 19, here is the proposed
25 combination. And it proposed that *Xing*'s continuously variable

1 transmission would be coupled between *Willis'* engine and rotor. And then
2 configuring *Willis'* controller with *Xing's* algorithm sensors and control
3 devices necessary to implement *Xing's* algorithm. And as the Petitioner
4 argued, a POSITA would have understood from prior art references *Parker*
5 and *Laux*, that the variable transmission could be implemented at different
6 locations within the drive train.

7 If we move next to Petitioner's slide 20, here we see that Wirtgen's
8 expert, Dr. Stein, discussed *Laux's* arrangement as one of these options. In
9 *Laux* we can see element 16 of the engine and then the element 20 is an
10 infinitely variable transmission. And as *Laux* teaches, the output of the
11 infinitely variable transmission 20 is connected to a sheave or sprocket 22,
12 which drives a V-belt or a chain drive 24. So, this is the arrangement in the
13 petition that was being discussed. Engine feeds to transmission, which feeds
14 to the V-belt, which goes down to the cutter drum.

15 Now, if we take a look, actually, at Caterpillar slide 6, Caterpillar set
16 out the deficiencies it believes that it alleges are in the instituted grounds.
17 And with respect to ground 1 in claims 1 to 13, there are two deficiencies.
18 But the petition fails to show that *Xing* discloses adjusting an engine speed
19 based on the engine load. And that the petition fails to show *Xing* discloses
20 adjusting an engine speed based on predefined efficiency points providing
21 optimum engine speeds for different engine loads.

22 And, Your Honor, I believe I misspoke. On slide 20, I was
23 referencing the arrangement of *Parker* and I believe I might have said *Xing*.
24 So, let me just return to that, point to that. On the left here, figure 2, Exhibit
25 1013, that would be *Parker*.

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1 Now, returning back to Caterpillar slide 6, there are also three
2 deficiencies related to claim 13 that are discussed by Caterpillar on this slide
3 and those are what my colleague will be dealing with.

4 So, I'd like to step back and just take a look at an overview of the '538
5 patent. And the '538 patent is really all about fuel efficiency and it's about a
6 controller implemented method. And that's recited in the preamble of claim
7 1.

8 So, here on Petitioner's slide 9, we have claim 1 reproduced. It's a
9 controller implemented method of controlling a machine having a rotor
10 coupled to an engine through a variable transmission. And if we take a look
11 at slide 22, there is another limitation here that is disputed, part of the
12 dispute in this IPR, and it's about adjusting an engine speed. And so, the
13 engine speed must be adjusted based on two things: first, the engine load,
14 and second, one or more predefined efficiency points. And then taking that
15 further, these predefined efficiency points must be at least partially based on
16 predetermined fuel consumption rates and providing optimum engine speeds
17 for different engine loads.

18 Now, what is an optimum engine speed for a different engine load?
19 Well, the '538 patent tells you. At column 5, lines 12 to 15, it explains that
20 the optimum engine speed is the engine speed expected to provide the
21 optimum fuel efficiency for a given engine load. So, again, the focus of
22 these claims is on fuel efficiency.

23 If we take a look at Caterpillar slide 3, we can see this is confirmed in
24 this overview of the '538 patent that depicts figure 4 from the '538 patent and
25 accompanying text. And here the text is describing using efficiency points

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1 as a reference so that the controller can control the engine to output an
2 engine speed that is not only appropriate for the determined engine load, but
3 also fuel efficient.

4 Now, what is figure 4 showing you? Well, it's a bunch of engine
5 speed, candidate engine speed and candidate engine load pairs. And what
6 we see is engine speed is plotted on the Y axis and it's decreasing from top
7 to bottom. And engine load is plotted on the X axis and it's increasing from
8 left to right. And so, at the intersection of an engine speed and an engine
9 load, which would be a candidate pair of engine speeds and engine loads,
10 there are these boxes and they are shaded. And the shading of the boxes
11 indicates that the hashing or however you want to describe it, indicates the
12 level of fuel efficiency.

13 So, what you can see in -- this is Patent Owner's annotated version of
14 figure 4 -- in the '538 patent's method, the engine load is determined and
15 then it's essentially used to look up the corresponding optimum engine
16 speeds with respect to fuel efficiency. Now, as Patent Owner has annotated
17 this, you'll see that for this determined engine load, when it looks it up, it
18 identifies three potential optimum engine speeds. And that's because the
19 '538 patent doesn't account for power losses. It can't tell you which speed is
20 actually the most optimum speed. It only knows that one of these three
21 candidates would be the optimum. And this is consistent with the claim
22 language, which recites providing optimum engine speeds, plural, for
23 different engine loads. And we can actually see that on the next slide,
24 Caterpillar slide 4, the last kind of highlighted item that they put there in
25 green.

1 Okay. So, to understand this a little bit more, I'd like to move to *Xing*
2 and talk about *Xing* for a little bit. So, this is Petitioner's slide 24 and it
3 depicts figure 3 of *Xing* with some annotations. This is *Xing's* -- a schematic
4 of *Xing's* drive train. And I would like to walk left to right through this
5 figure because it's important to understand with respect to this based on
6 adjusting the engine speed based on the engine load dispute.

7 So, on the left we have in red, boxed in red, element 22, which is the
8 engine. And that engine is going to produce a load when it's operating. And
9 that is what *Xing* describes as P engine. And that load is measured from
10 sensors such as sensor 122, which is an engine torque load sensor. So, it's
11 measured directly and allows the controller to determine the engine load
12 that's being produced.

13 Now, if we move to slide 25, what we see is in blue here, element 24
14 is the transmission and then that transmission has a power take off, or a PTO
15 110, that can provide power to other elements within the system of *Xing's*
16 machine. And this transmission is inefficient and so, it's going to have
17 power losses, as well as these parasitic loads from the power takeoff. And
18 that's what *Xing* identifies as P loss.

19 If we move one more step to the right, Petitioner's slide 26,
20 highlighted in yellow you'll see that the transmission and outputs and in
21 *Xing's* embodiment, because this is a -- because of the type of machine it is,
22 it's outputting to an axle and a differential. That's 102 and 104. And so, the
23 axle and the differential there are to propel *Xing's* machine. And so, the load
24 here at the axle and differential, that is what *Xing* calls the power load
25 requirement. That is the amount of load that is being used for useful work.

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1 And so, if we take P engine, which is the total engine load that is being
2 produced, and we subtract the power losses due to the transmission and
3 parasitic loads, the remainder is the useful work that's actually occurring
4 there -- here at this axle and this differential.

5 Now, in the proposed combination, rather than an axle and a
6 differential, this is going to feed into that V-belt that would then power the
7 milling drum. Because in milling machines, the engine is chiefly used to do
8 the work of the milling drum.

9 And there's one other thing to note. There are two embodiments
10 taught for arriving at what this power load requirement is, this useful work.
11 In one embodiment, and that's the one that's part of the proposed
12 combination, *Xing* teaches that you measure P engine and then you subtract
13 the associated power losses to arrive at P load.

14 There's another embodiment where you can use a sensor that would be
15 at the differential that will measure the load that's occurring there. And that
16 would be a direct method of measuring the load power requirement. That is
17 not what the petition indicated was part of the proposed combination.

18 So, if we move to slide 27. This is the equation that *Xing* tells us for
19 relating this known relationship that occurs in these types of machines that P
20 engine is equal to P load plus P loss. And if we take a look at Petitioner's
21 slide 10, the '538 patent teaches the same thing. It just doesn't account for
22 these power losses. So, you can see here at column 4, lines 9 to 14, the '538
23 patent explains that the engine load may include loads due to the rotor, the
24 hydrostatic arrangement, and other parasitic loads.

25 JUDGE MEYERS: Counsel, if I could interrupt for a moment?

1 MR. OGDEN: Yes, sir.

2 JUDGE MEYERS: So, looking at the equation 1 of *Xing*, what
3 constitutes -- what factor constitutes the engine load in the recited claims?

4 MR. OGDEN: The engine load is P engine. And that's going to be --

5 JUDGE MEYERS: The P load.

6 MR. OGDEN: -- determined by measuring directly at the engine
7 using the sensors.

8 JUDGE MEYERS: Okay. So, the engine load found in claims 1 and
9 6 you would say that it's P engine in *Xing*.

10 MR. OGDEN: That's correct. So, *Xing* is going to determine the
11 engine load, and if we look at Petitioner's slide 9, we see there's determining
12 an engine load of the engine and that is when that sensor data is used to
13 determine the engine load.

14 JUDGE MEYERS: Okay. Thank you.

15 MR. OGDEN: Okay. And so, that's a good transition into how is it
16 that *Xing* is using the current load power requirement and the engine load to
17 do what it does to adjust the engine speed? So, we take a look at
18 Caterpillar's slide 3 again. I just want to remind you what's going on in the
19 '538 patent. And I know we just talked about it, but what we're doing here is
20 taking candidate engine speeds and candidate engine loads. And this is just
21 really data that would be stored in the controller and, for example, a lookup
22 table. And then determining an engine load and plotting it and saying, okay,
23 what are the potential optimum engine speeds with regard to fuel efficiency
24 for that load.

1 And again, it doesn't tell you which engine speed is the one that you
2 actually will get the best fuel efficiency with. So, if we go to Petitioner's
3 slide 28, I'd like to discuss *Xing*. And I want to start with figure 5. I think it
4 illustrates the points the petition was making the best.

5 And so, we have to step back for a minute just because *Xing* has
6 several advances over the '538 patent depending on the embodiments that
7 you're reviewing. And figure 5, this column 2 here that's circled in gold,
8 what it's talking about there is a forecasted load power requirement. That is
9 not an embodiment that is part of the proposed combination. That is a
10 different embodiment that uses a feed forward mechanism to predict where
11 the engine loads might go. And so, it might know from a 3D map that
12 *Xing's* machine is going to travel up a hill. It might know that that'll increase
13 the load power requirement and it may do that. And again, that's not part of
14 the proposed combination.

15 *Xing* explains, in an alternative, that the forecasted load power
16 requirement can be replaced by utilizing the current load power requirement
17 as the basis for determining the candidate engine speeds. And so, that is
18 what we're relying on is that determined load power requirement that all
19 starts with determining engine load.

20 JUDGE MEYERS: But both of those are P loads.

21 MR. OGDEN: Yes.

22 JUDGE MEYERS: Right?

23 MR. OGDEN: Yes, but I want to make a point we're not relying on
24 this --

25 JUDGE MEYERS: Sure.

1 MR. OGDEN: -- forecasted future load requirement. It's the
2 determined engine load, the current load power requirement.

3 JUDGE MEYERS: But there's still P load would be the factor in
4 equation 1.

5 MR. OGDEN: Your Honor, not in equation -- well, okay. So, P load
6 would be the factor that is derived from equation 1 that's populated into
7 column 2 of *Xing's* figure 5. And so --

8 JUDGE MEYERS: Right.

9 MR. OGDEN: -- maybe another way to --

10 JUDGE MEYERS: So, it would be if we've got the candidate engine
11 power would be P engine, P loss is P loss, and then the forecasted load
12 power requirement is the P load regardless of its current load power
13 requirement or forecasted.

14 MR. OGDEN: Correct.

15 JUDGE MEYERS: It's P load. Okay.

16 MR. OGDEN: Correct, Your Honor. I've just put up slide 30. If you
17 see here, we kind of have it labeled where you take --

18 JUDGE MEYERS: Yes.

19 MR. OGDEN: -- P engine, subtract P loss, and populate column 2
20 with that data. And so, we kind of hit on this. I'll just return to it before I
21 come back to slide 30. In Caterpillar's slide 6, here the dispute is about
22 whether the adjustment of the engine speed is based on the engine load
23 where it would be that determined engine load. And the Petitioner argues
24 that it indeed is because the starting point is the P engine, that you have to

1 determine P engine, and then subtract the power loss in order to populate, for
2 example, in figure 5, column 2. So, that is the starting point.

3 And the difference in the arguments are that, for example, Caterpillar
4 at its slide 10, what they want to do is focus on figure 4 of *Xing*. And figure
5 4, block 202, starts at determined load power requirement for the work
6 vehicle. And so, they say no, no, no, no, that's the starting point. But that is
7 not true. In the proposed combination, you can't get that load power
8 requirement until you determine the engine load. You have to have that
9 engine load first. For example, if the engine load were zero, there would be
10 a zero-load power requirement and then if the engine load increases, so will
11 the load power requirement.

12 All right. If we return to slide 30, as I discussed, we have this
13 measured candidate and Caterpillar talks about this candidate aspect a little
14 bit. I'm not sure. I think it's a little misleading. These candidate engine
15 speeds are no different than the possible target engine speeds evaluated by
16 the '538 patent that we just saw in figure 4 of the '538 patent. Both systems
17 are evaluating fuel efficiency at a multitude of possible engine speeds and
18 then they pick the most fuel-efficient speed.

19 Now, something that's important to understand here is that in column
20 2, the load power requirement that is populated here is always the same. All
21 right? And the reason that it's always the same is because this is going to
22 demonstrate how *Xing* is correcting for the power losses so that it's then
23 choosing a candidate engine speed based on a corrected engine load. And
24 so, you'll see here that here it's 150 kilowatts. So, we've determined the
25 engine loads, subtracted the P loss, and the number is 150 kilowatts.

1 Then we're looking at, in the first column, three candidate engine
2 speeds: 1,500, 1,600, and 1,700 RPM. And so, at those candidate engine
3 speeds, then the associated system power losses are listed in the third
4 column. And you'll see they are different because *Xing* is accounting for the
5 fact that they differ at different engine speeds. So, you add column 2 and
6 column 3 to arrive at the candidate engine power. And so, this is a corrected
7 engine load. And so, this is just like the engine loads that we see in figure 4
8 of the '538 patent, except they're corrected for these power losses.

9 Now, there's a relationship that all engineers know between if you
10 multiply speed and torque, then you arrive at engine load. And so, the
11 remainder of these columns are just explaining how *Xing* gets to the fuel
12 efficiency points. And so, the '538 patent just kinds of says you're going to
13 have this fuel efficiency data. *Xing* tells you one way that you can derive it
14 and it's specific to these BSFC efficiency points.

15 So, he simply takes the candidate engine power and the engine speeds
16 and calculates the candidate torque from that. And then as Caterpillar
17 actually showed in its annotations, and those are shown on Petitioner's slide
18 31, it then plots those pairs of candidate engine torque and engine speed to
19 arrive at a BSFC efficiency. And that's based on fuel consumption and the
20 one that's closest to the bullseye there is going to be the most efficient.

21 So, what has happened here is starting with the determined engine
22 load, then the load power requirement is calculated from that, populated into
23 column 2, and then for each candidate engine speed, you determine a
24 corrected candidate engine power, and then choose the one that's the most
25 fuel efficient. So, if we go to slide 33, it just kind of uncovers what we saw

1 there. And what we see is it's actually going to be 1,600 RPMs that is going
2 to be the most fuel-efficient. You might have expected it to be 1,500 at the
3 lower speed, but due to the power loss accounting, *Xing* determines that it's
4 1,600. So, now it's going to adjust the engine speed to 1,600.

5 JUDGE MEYERS: Counselor, where does *Xing* state that it's doing
6 this based on the candidate engine power? Yeah, my review of *Xing* always
7 referred to that it was adjusting based on the load power requirements. Can
8 you point to me where in *Xing* this is stated?

9 MR. OGDEN: Let's see. So, I believe right here we have listed at
10 Exhibit 1001, column 5, lines 7 to 12, but I think, Your Honor, I mean,
11 really figure 5 is the easiest way to understand it. Because you can just look
12 at the numbers and you can see that what it's telling you -- and so, this is
13 getting into the second aspect whether you have optimum engine speeds for
14 different engine loads, the other dispute. And so, these candidate engine
15 loads in column 4, these are the different optimum speeds for the different
16 candidate engine loads. And so, that's how that claim is met.

17 And so, I mean, *Xing* explains it's just if you follow the numbers here
18 in column 5, what you can see is we start with the determined engine load,
19 we subtract the power loss, that gives us this load power requirement. And
20 then you can see for each speed, they're looking at the power loss and they
21 add it together. So, if we, for 1,500 RPM, we add 150 kilowatts, and the 15-
22 kilowatt associated system power loss, that gives us 165. That is the
23 candidate engine load. And then that has an associated BSFC efficiency that
24 it's going to look up and then based on whichever is the lowest BSFC
25 efficiency, it will choose that to adjust the engine speed.

1 JUDGE MEYERS: Okay. And where does *Xing* say this in the
2 disclosure?

3 MR. OGDEN: I'll need to look for that for you on the break. But I
4 will.

5 JUDGE MEYERS: Okay.

6 MR. OGDEN: I'll tell you when I'm back on rebuttal where that is.

7 JUDGE MEYERS: Okay. Thank you.

8 MR. OGDEN: Thanks.

9 JUDGE MEYERS: Thank you.

10 MR. OGDEN: Then there is one more argument that Caterpillar
11 makes that I think is addressed by what I just discussed. But they talk about
12 how the engine speed torque pairs are insufficient, and that's wrong. This is
13 Caterpillar slide 19. And then if we go back and -- sorry -- if we go back
14 and look at Caterpillar slide 17, you can see, as we discussed, those
15 candidate speed torque pairs are merely data that tells you what the fuel
16 efficiency is. That's not what it's based on. As we talked about in slide 30,
17 for example, it's the candidate engine power. That candidate engine power
18 is later converted just to obtain BSFC efficiency. So, the Board shouldn't
19 get caught up in this description of candidate engine torque in this column
20 because all that is is how it finds the BSFC fuel efficiency.

21 So, I'd like to move to Petitioner's slide 36. And so, as Petitioner has
22 discussed, we believe that Caterpillar is taking an overly narrow reading of
23 the scope of these claims. So, it could be described as a claim construction
24 dispute or a claim scope dispute.

1 Now, specifically, we take a look at Caterpillar slide 10. We talked
2 about what they believe that -- or their argument is that the adjustments
3 made in *Xing* are not based on P engine because that's not the starting point.
4 But that's incorrect for the proposed combination.

5 They seem to be arguing, as we discussed in our Patent Owner's
6 Reply, this is Petitioner's slide 38, that *Xing* must explicitly recite the
7 claimed engine load in the calculation that returns the optimum engine
8 speeds. But if we take a look at slide 43, nothing in the intrinsic evidence
9 limits the scope of "based on" this -- in this manner. "Based on" merely
10 means that an input effects the output. If so, that output is based on the
11 input. And here if the engine goes up, P load goes up. And that's the way
12 that this operates.

13 As the Petitioner explains, and this is slide 37 in their Reply, that the
14 explicit parameter P load is used to refine the engine load to provide a more
15 meaningful input to the calculation and more data-rich load parameter for
16 the system, P load must still use the determined engine load as a starting
17 point. And how do we know they start --

18 JUDGE MEYERS: Counsel --

19 MR. OGDEN: -- at the same -- yes, Your Honor.

20 JUDGE MEYERS: And where -- we can go back to slide 37.

21 MR. OGDEN: Yes, Your Honor.

22 JUDGE MEYERS: If you could just get it up. And where does your
23 expert say that and where is this done in *Xing*?

24 MR. OGDEN: I mean, it's all in the description of that figure 5 that
25 we looked at because this is where it's refining the engine load that it's

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1 determined to provide more meaningful input. I mean, the only real
2 difference in what's happening in the '538 and what's happening in *Xing* is
3 that the '538 just assumes that total engine -- it assumes that the power losses
4 are the same across all those engine speeds. And that's the only difference.
5 And *Xing* is accounting for the fact those power losses change when he is
6 making his corrected engine loads.

7 JUDGE MEYERS: Could you point to me where -- back to 37.

8 MR. OGDEN: Yes. Yes, Your Honor.

9 JUDGE MEYERS: Yeah. Where this is supported that it's a more
10 data-rich parameter for the system P load to still be used to determine the
11 engine load, the engine as the starting point?

12 MR. OGDEN: Your Honor, I'll need to give you a citation, but this
13 all goes along with our arguments regarding figure 5. So, the petition at 48
14 and 49 is cited down kind of in the bottom lefthand corner of slide 30.

15 JUDGE MEYERS: Okay. All right.

16 MR. OGDEN: And I'll find you an expert citation as well --

17 JUDGE MEYERS: Thank you.

18 MR. OGDEN: -- when that's discussed.

19 JUDGE MEYERS: Sorry for the interruption.

20 MR. OGDEN: No, of course. So, the one last point on this based on
21 the engine load is another way that we can see that the starting point is the
22 same for both is that both use the same -- both the '538 patent and *Xing* use
23 the same sensors to determine the engine load. So, this little excerpt, and it's
24 column 5, lines 3 to 22, it's in the bottom righthand corner. It's probably
25 difficult to read. I think I have it a little larger on slide 44. What it's telling

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1 you there is that it uses the sensor 134 located at the engine in order to
2 determine the engine load. This is the '538 patent.

3 So, if we look at slide 11, we can see this is talking about on the left
4 side of figure 2, there's a sensor 134 there at the engine. That is the sensor
5 that they're discussing for determining the engine load. And as we saw in
6 slide 24, there's an engine load sensor that's being used that's associated with
7 the engine in *Xing*. And so, what we see is that it's in the same locations and
8 so they're starting at the same starting point.

9 Now, there's another argument that Caterpillar is making that the
10 adjusting limitations require some specific sequence of underlying steps.
11 And Patent Owner argues that the predetermined efficiency points
12 corresponding to the determined engine load must be retrieved before
13 identifying an optimal engine speed. If we go to Petitioner's slide 51, what
14 you can see is that Patent Owner appears to be reading in this preferred
15 embodiment of figure 5 that is a flowchart and has ordered steps to it. But
16 there is no reason to limit the plain language of the claim limitation to this
17 preferred embodiment. It just says you've got to adjust based on two things:
18 the engine load, and the predefined efficiency points. It doesn't describe the
19 order of how you make determinations based on those aspects.

20 This is Petitioner's slide 54. *Xing* clearly meets the plain language of
21 this limitation, and this is a quote from *Xing* here. It explains, "The
22 controller may select the candidate engine speed torque pair that maximizes
23 fuel efficiency." And remember, engine speed and torque are engine load.
24 As the target engine speed and target engine torque for producing the engine
25 power necessary to achieve, and this should be the load power requirement.

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1 And that's at *Xing*, column 12, lines 58 to 63. And my colleague is telling
2 me also that if we take a look at *Xing*, column 9, lines 18 to 56, that's another
3 place where it's discussing this relationship of the P engine P load and how
4 that's corrected to determine the optimal fuel efficiency.

5 JUDGE MEYERS: All right. That was column 9, where?

6 MR. OGDEN: Column 9, lines 18 to 56.

7 JUDGE MEYERS: All right, thank you.

8 MR. OGDEN: Okay. And then returning here to slide 54. This is
9 *Xing* explaining that it bases the adjustment speed on these predefined
10 efficiency points and that these are at least partially based on providing
11 optimum engine speeds for different engine loads.

12 And so, one of Patent Owner's disputes here is that the optimum
13 engine speed returned by *Xing's* algorithm is not the most optimum engine
14 speed for the determined engine load. And according to the Patent Owner
15 because *Xing's* algorithm returns an optimum engine speed for a particular
16 load power requirement, *Xing* doesn't meet the disputed limitation. But
17 again, the plain language is not so limited as they would provide. The
18 claims only require that you adjust based on these two things. And as we
19 saw, that is what *Xing* does.

20 So, I want to give one more reference and then I'll review those so I
21 can discuss them a little bit more on rebuttal and then hand this over to my
22 colleague, Mr. North. But also, *Xing* at column 11, line 55, to column 12,
23 line 63, explains figures 5 and 11 and the BSFC fuel ratios.

24 So, unless there are further questions for me, I'll turn this over to
25 Mr. North.

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1 JUDGE MEYERS: Sorry, Mr. Ogden. One more time, column 11,
2 what? What was that?

3 MR. OGDEN: Yes, column 11, line 55, to column 12, line 63.

4 JUDGE MAYBERRY: Counsel, this is Judge Mayberry. While
5 we're transitioning, you have 11 minutes of your first 45 left.

6 MR. OGDEN: Okay, thank you, Your Honor.

7 Nathan, you're welcome to start. I will mute if I can figure out how to
8 do that.

9 MR. NORTH: Thank you, and good morning. May it please the
10 Board, my name is Nathan North on behalf of Wirtgen America. As
11 Dr. Ogden mentioned, I'm going to focus on claim 13.

12 To reorient us as we get started, though, I want to look at the hardware
13 aspect of the proposed combinations. And so, if we can go to slide 77. This
14 is *Xing* figure 3. That's going to help us to illustrate what exactly is going
15 on. The proposed combination at ground 1 was to combine *Willis* with *Xing*.
16 Essentially, we're going to take the engine of *Willis* and you're going to place
17 the transmission of *Xing* next to the engine or before the belt-and-pulley
18 system. And that belt-and-pulley system of *Willis* is going to connect to the
19 milling drum and drive that milling drum.

20 This figure 3, as I mentioned, drives a good illustration of what it's
21 going to look like. We have engine 22 from *Xing* here feeding into
22 transmission 24, which then feeds into differential 1 and 2, which is the
23 driven element. With the proposed combination instead what's going to
24 happen, like I said, the engine's going go into that same spot. It's going to
25 feed into the transmission and then it's going to feed into a driven element,

1 which in the proposed combination is going to be that belt-and-pulley
2 system.

3 If we continue on to figure 78 -- or slide 78, I'm sorry. When we get
4 to ground 2, the only difference that's going to happen is that the proposed
5 combination now implements *Laux's* clutch 15 at the location where we see
6 the green arrow there.

7 So, now that we've looked at what exactly the hardware
8 configurations are, I want to take a second to look through how this got built
9 in the petition. If we go to Petitioner's slide 19, we'll see the portion of the
10 petition that discussed you are going to place -- for the proposed
11 combination, places *Xing's* CVT between *Willis'* engine and rotor. The
12 petition later on also discussed that a POSITA would have understood based
13 on *Parker* and *Laux* that different elements of the power train could be
14 placed in different locations such as this variable transmission.

15 And, indeed, if we keep going to slide 20, we will see the teachings of
16 *Parker* at slide 20. There we go. The teachings of *Parker* that talk about the
17 infinitely variable transmission being connected to that chain drive V-belt
18 sprocket sheave configuration that is there on figure 2 from *Parker* on the
19 left. And again, that's the same as what we're talking about doing with the
20 proposed combination. If we go again to slide 77, we will see again that
21 structure going engine feeding into the transmission, which then feeds into
22 the driven element, which in the proposed combination, is belt-and-pulley,
23 the belt-and-pulley drive.

24 So, to dive into the three different configurations for using the clutch,
25 we're going to look at slide 71. And we're going to talk about ground 2 to

1 start. So, slide 71 shows us what the petition stated with regard to *Laux*.
2 They're talking about placing *Laux's* clutch 15 between the engine and the
3 rotor. And when we look up at *Laux* figure 3 as shown above that, we see
4 that the clutch 15 is the last element of the drivetrain before you hit the belt
5 drive. So, we have the engine, we have a couple of other drivetrain
6 elements, and then the last thing before that belt drive is that clutch 15.

7 And so, the proposed combination takes these teachings and, as we
8 see on slide 78, that's exactly what's being done. Where that green arrow,
9 that's where *Laux's* clutch 15 is going to get placed. It's the last element
10 before that driven element, before that belt-and-pulley system. And this
11 satisfies the claims because when it's impacting the engine feeds into that
12 transmission, as we discussed earlier, that transmission has both the
13 mechanical and the hydraulic power systems there. That feeds into the
14 clutch, which can engage or disengage the driven element. And so, that will
15 in turn engage and disengage the rotor from the engine.

16 And if we keep going to slide 79, because there's more of a
17 breakdown of what's going on within that transmission. We see the
18 annotated figure on the left of figure 2, that red box is what all is contained
19 within that element 24. And then if we go to the excerpt on the right, you
20 can see illustrated the hydraulic and the mechanical paths, which combine
21 into that purple path. And then when you go back over to the bigger picture
22 on the left, you can see that that combined path feeds into the load of *Xing's*
23 transmission. And again, what we're talking about with the proposed
24 combination, you're going to take *Laux's* clutch 15 and you're going to attach

1 it after that transmission to disengage both the mechanical and the hydraulic
2 paths.

3 Now, another aspect of the dispute does come up from the motivation
4 to combine. If we go to slide 76, we'll see that the petition argues that for
5 safety reasons, these conventional clutches are used to disengage loads and
6 power sources. Specifically, within the milling machine context we're
7 talking about disengaging the machine from the milling drum.

8 Caterpillar responded back that by using a controller, this would, in
9 fact, not improve safety. To do this, Caterpillar relied on Dr. Kemal's
10 testimony that just stated, hey, controllers can fail and we can have random
11 disengagement or engagement of the clutch. That's not more safe. The
12 problem, however, is if we go to slide 62, we can see that *Xing* specifically
13 states that the transmission for similar purposes is still going to be connected
14 to that controller.

15 And moreover, when we consider the real-world implications,
16 Dr. Kemal is essentially speculating that there are these potential times when
17 a controller could or could not cause the clutch to engage. But this flies in
18 the face of what we do in the real world. We implement controllers all the
19 time for various safety procedures to improve safety. And in fact, within
20 milling machines themselves, these clutches have -- or these controllers have
21 been extensively integrated. And Dr. Kemal does not point to any real-
22 world scenario or any evidence where such failures have in fact occurred
23 and created less safe operating conditions.

24 So, moving on to the configurations for the clutches that are discussed
25 within ground 1, we're going to start with the discussion of the directional

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1 clutches. So, we're going to stay here at slide 62. Again, it states that *Xing's*
2 transmission, including those clutches, can selectively couple the load. And
3 that is through a combination of clutch 52, clutch 54, and then a swashplate
4 located within the pump 36. And again, the controller operates to do this
5 coupling and decoupling. And that's all the claims require. The claims
6 simply state that the controller must disengage the engine and the rotor
7 through a clutch. It doesn't say how many clutches. It doesn't say more
8 mechanisms can't be used. It just says a clutch, and that's all that's required.
9 And that's all that *Xing* does.

10 Even then, there's a third configuration relying on the power takeoff.
11 If we go to slide 66. That power takeoff relies on a conventional clutch and
12 that's going to be PTO clutch 114. Again, a conventional clutch is going to
13 disengage in input from output. Within this proposed combination we are
14 talking about disengaging the engine from that rotor. And Caterpillar failed
15 to identify any specific flaw in *Xing's* teaching about this clutch to suggest
16 that it wouldn't operate like any other conventional clutch system.

17 That's all I had. If there are no other questions, I believe we'll save the
18 rest for a time for rebuttal.

19 JUDGE MEYERS: No questions here.

20 MR. OGDEN: Your Honor, let me provide a citation and then we'll
21 hand it over to the other side. So, the last citation I provided with respect to
22 figures 5 and 11, is going to be the best one column 11, line 55, to column
23 12, line 63. And then also Wirtgen's expert, Dr. Stein, in Exhibit 1003,
24 discusses this at paragraphs 58, 59, 78, 80, and 81.

25 And with that, we'll reserve the rest of our time.

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1 JUDGE MAYBERRY: All right. Thank you, Counsel. I have you
2 used at about 44 of your 45 minutes. So, you're leaving 16 minutes for
3 rebuttal.

4 So, with that, we'll switch over to Patent Owner's counsel. And,
5 Counsel, before you start, I am going to ask you the same questions. That is
6 do you have an estimate of the total time you want to argue this proceeding
7 and then the division on the primary -- your primary response and then your
8 surreply?

9 MR. ARGENTI: Yes, thank you, Your Honor. Again, Matt Argenti,
10 on behalf of Patent Owner Caterpillar. And I estimate that I will also take
11 about an hour for this case on the '538 patent. And of that I'd like to reserve
12 five minutes for surrebuttal.

13 JUDGE MAYBERRY: All right, thank you, Counsel. You may
14 begin when you're ready.

15 MR. ARGENTI: Thank you, Your Honor. So, rather than put the
16 slides on our screen, since I understand that everybody has access to the
17 copies of our demonstrative exhibits that we filed, I'm just going to refer to
18 them during my presentation. Those were the demonstrative exhibits that
19 were filed in the 1397 IPR as Paper 24. That's what I'm going to be referring
20 to.

21 So, in that slide set, turning to slide 2, I have a couple slides at the
22 beginning here that address the description of our invention and the
23 specification. But given that, you know, Petitioner has argued in the papers
24 that we're trying to read limitations in from the specification, I think what
25 I'm going to do is jump ahead right to the discussion of the claims.

1 So, if we turn to slide 4, that's where we see representative claim 1.
2 And the parties' dispute centers on the middle limitation that we see there
3 regarding adjusting an engine speed, as we heard from Petitioner. The
4 adjustment is based on two things that we see here in the claim. First, is
5 we've highlighted in red it's based on the engine load. That's determined
6 right before that in the claim. We don't find that in the prior art.

7 And second, the adjustment is also based on predefined efficiency
8 points, but they are not just any predefined efficiency points. They have two
9 characteristics. First, they're partially based on fuel consumption rates and
10 second, they are providing optimum engine speeds for different engine
11 loads. And it's that second characteristic that's missing in *Xing*.

12 Turning to slide 5. In terms of those claim 1 speed adjustment
13 deficiencies that I just mentioned, that turns on the *Xing* reference, as we
14 saw in Petitioner's presentation. And that also applies to independent claim
15 6, as well as independent claim 1.

16 And then we also pointed out in our papers that their arguments
17 regarding claim 13 fails. That involves the clutch that disengages the engine
18 from the rotor. And that issue implicates the teachings of both *Xing* and
19 *Laux*.

20 Now, turning slide 6, we've summarized the deficiencies in their case.
21 And I'll just jump right into them. We can turn to slide 7. And we can look
22 at the first deficiency, which is that *Xing* speaks of the -- sorry -- the speed
23 adjustments in *Xing* are not based on its engine load. So, as an initial matter,
24 the petition doesn't identify what aspect of *Xing* it maps to the engine load.
25 They cited to *Xing's* equation 1, which says that you can determine the load

1 power requirement from the formula engine power equals power loss plus
2 load power requirement. But the petition never actually said which of those
3 three parameters Petitioner thought mapped to the load in our claims. And
4 that's a problem that we pointed out in our preliminary response.

5 Turning to slide 8. The Institution decision focused on the load power
6 requirement interpreting Petitioner's vague argument as relying on that
7 aspect of *Xing* when mapping to the claimed engine load. Now, if we turn to
8 slide 9, during trial stage, things have become more clear. Petitioner's expert
9 freely admitted that the load power requirement in *Xing* is not the claimed
10 engine load. Instead, both Petitioner and their expert have now definitely
11 taken the position, and we heard it today, that they rely on *Xing's* engine
12 power as corresponding to the engine load recited in our claims. That's the P
13 engine parameter in *Xing's* equation 1, not the P load parameter. But as I
14 will explain, in finally taking a position on where you find the engine load in
15 *Xing*, Petitioner has created a serious problem for themselves.

16 Turning to slide 10. Petitioner's problem is that *Xing* doesn't adjust
17 speed based on its engine power parameters. *Xing* is explicit, as we see here,
18 that it makes its speed adjustments based on the load power requirement.
19 That's a quote from *Xing* that we see in the bottom excerpt. *Xing* goes on in
20 that paragraph to say that if efficiency determinations and corresponding
21 speed adjustments are "utilized to achieve the vehicle's load requirement."
22 And when *Xing* depicts its method, as you see here in figure 4, the very first
23 step is determine load power requirement, which it then shows is the basis of
24 its speed adjustments. At no point does *Xing* ever say that it adjusts engine

1 speed based on engine power or engine load. To the contrary, it is explicit,
2 as we see here, that this is all based on the load power requirement.

3 Now, turning to slide 11. Beyond *Xing's* explicit statement that its
4 speed adjustments are based on the load power requirement, it's also clear
5 from *Xing* that its speed adjustments are not based on the engine load. How
6 do we know that? Well, first *Xing* provides a way to determine the load
7 power requirement that doesn't involve engine load. It can just measure the
8 load power requirement at the output. We see that at the top right.

9 In that approach you never even know what the engine load is. But
10 *Xing's* speed adjustment still works the same. As we just saw, the first step
11 of figure 4 is to determine the load power requirement. It doesn't matter
12 how you do that. You just need to figure out the load power requirement to
13 start the process. And then the process itself also demonstrates --

14 JUDGE MAYBERRY: Excuse me, Counsel.

15 MR. ARGENTI: Yes.

16 JUDGE MAYBERRY: This is Judge Mayberry. If I can ask a
17 question about this. You directed us to *Xing* at 957 and 959 where you said
18 load power requirement can be measured directly. So, that would be a
19 situation where the value P load is measured. And that goes into the
20 calculation for getting the efficiency. If that's an alternative method, what is
21 the other method that's in *Xing*? Isn't it based on P engine?

22 MR. ARGENTI: The other method is --

23 JUDGE MAYBERRY: It should be --

24 MR. ARGENTI: -- using equation 1, right? And --

25 JUDGE MAYBERRY: So --

1 MR. ARGENTI: -- equation 1 is engine power, which they're arguing
2 is the engine load, and we're assuming that to be true. So, engine load
3 equals power loss plus load power requirement. So, there is that first
4 embodiment that uses the engine load to derive the load power requirement.
5 We're not saying that that's not true and we certainly aren't saying that the
6 panel should ignore it. Right? What we're saying is that the second
7 embodiment that doesn't involve engine load just merely highlights that the
8 engine load isn't the basis of everything here.

9 JUDGE MAYBERRY: All right. Thank you, Counsel.

10 MR. ARGENTI: So, and then beyond the way that you determine the
11 load power requirement, the way that you use the load power requirement,
12 the process of determining the speed adjustment, also illustrates that the
13 speed adjustment isn't based on engine load. And that's because the engine
14 load itself is also adjusted. *Xing* determines candidate engine speeds and
15 torques to utilize, each with its own corresponding loss. And that means that
16 the engine load changes as the speed changes. Meanwhile, the load power
17 requirement stays the same because that is the thing that *Xing* is trying to
18 satisfy. As we saw in the previous slide, that is the thing that *Xing* is
19 concerned with achieving. This is all about achieving the load power
20 requirement.

21 Both of those points, the way that the load power requirement's
22 determined, as well as the way that it's used, illustrate that the engine load is
23 really irrelevant to the ultimate speed adjustment. Basically, what's going on
24 is *Xing* adjusts engine load based on the load power requirement. It's not
25 adjusting speed based on the engine load as claimed in our patent.

1 Now, here I want to address something that we heard Mr. Ogden say a
2 couple of times. I believe he said that equation 1 shows you that if the
3 engine load increases, so will the load power requirement, and that's not
4 true. And it really goes to the root of Petitioner's misunderstanding of what's
5 going on in *Xing*. Because what's going on in *Xing* is that the load power
6 requirement is what you are trying to achieve. And the whole point of *Xing*
7 is that the engine load and the loss are going to vary relative to each other.
8 As you increase the speed, the torque changes. Speed and torque is the
9 engine load. And then as the speed and torque change, so will the power
10 loss.

11 But what *Xing* does is treat the load power requirement as a constant.
12 So, it is absolutely not true that you can say well, look at equation 1, if the
13 engine load goes up so will the load power requirement. And to illustrate
14 that I want to jump ahead to our slide 14, and that's where we have *Xing's*
15 figure 5. If you look at figure 5, what you see here is the load power
16 requirement column, and I agree that it doesn't matter whether we're talking
17 about it in terms of the current load or the forecasted load. The point
18 remains the same. If you look at the load power requirement column, it's
19 150 kilowatts in each line. And yet, if you look at the engine power, the
20 engine power varies. So, you have a constant load power requirement as the
21 engine power varies. And the engine power varies because engine speed,
22 engine torque, and engine loss are all going to vary relative to each other.
23 That's what's going on *Xing*. It treats the load power requirement as a
24 constant for its efficiency determinations.

1 So, Petitioner's fundamental assumption that load power requirement
2 is so closely based to the engine power that if the engine load goes up so will
3 the load power requirement, it's a false assumption.

4 Now, turning back to slide 12. When we pointed out what's actually
5 going on in *Xing*, which they didn't appreciate in the petition, and that the
6 speed adjustment is based on the load power requirement rather than the
7 engine load, Petitioner responded with a new equation that you won't find
8 anywhere in the prior art reference. In their view because the speed
9 adjustment is based on the load power requirement, it must also be based on
10 the engine load. But that ignores everything that I just explained about why
11 the engine load is ultimately irrelevant. And it condenses multiple steps of
12 *Xing's* process into an oversimplified equation that's not an accurate
13 reflection of *Xing's* method.

14 Petitioner is saying that if you can mathematically express a
15 relationship between two parameters, then one of them is necessarily based
16 on the other. But simply because there is a relationship between P load and
17 P engine, doesn't mean that the speed adjustment is based on both of them
18 any more than the speed adjustment is based on axle temperature or some
19 other factor that plays into the loss value.

20 Petitioner would say looking at axle temperature is too far removed.
21 They admit that there's a limit on how far removed something can be in
22 order to be based on something else. But they haven't given any explanation
23 where that line should be drawn or why the engine load falls on one side of
24 that line versus the other. You see that at the bottom of this slide here.

1 Now, turning to slide 13. Actually, I already addressed the content of
2 slide 13. This really just goes to the point that I think Petitioner is
3 mischaracterizing our argument by saying we want to focus on embodiment
4 2 and ignore the equation in embodiment 1. And I explained that's not the
5 case at all. We're seeing that embodiment 2 where they're measuring the
6 load power requirement directly is further illustration on why even when
7 you're relying on equation 1, that doesn't mean that the speed adjustment is
8 based on the engine load.

9 So, turning to slide 14 and the second missing limitation, which is
10 adjusting engine speeds based on predefined efficiency points that provide
11 optimum speeds for different engine loads. This is another limitation where
12 the petition doesn't clearly explain where they think this is found in the prior
13 art. But as trial stage has progressed, Petitioner has taken now a definitive
14 position that they think the predefined efficiency points are found in *Xing's*
15 figure 5 where it lists candidate speed torque pairings, each with a
16 corresponding efficiency that can be obtained from a graph like *Xing's* figure
17 11. But the claim doesn't just require predefined efficiency points. The
18 predefined efficiency points have to provide optimum engine speeds for
19 different engine loads, and that's what they don't have.

20 If we look at slide 15 now, we asked Petitioner's expert to explain how
21 he thinks *Xing* discloses predefined efficiency points that provide optimum
22 engine speeds for different engine loads. His response, as you see here, was
23 that he doesn't really understand what the claim means. So, he looked at the
24 figures of the '538 patent. He found figure 4, which he calls a torque-speed
25 map, and then he found a similar figure in *Xing*. And that was the extent of

1 his analysis for this claim limitation. He's very upfront about that during his
2 testimony on this slide.

3 But just because the '538 patent in *Xing* have similar tables showing
4 the relationship between speed, torque, and efficiency, doesn't mean that
5 they are being used in the same way. And it's certainly isn't a sufficient way
6 of explaining how *Xing* discloses adjusting speed based on efficiency points
7 proving optimum engine speeds for different loads.

8 Now, I'm going to turn to slide 16. While Petitioner's challenge
9 should be rejected as simply deficient in view of their expert's testimony on
10 the previous slide, we also know that *Xing*, in fact, does not satisfy the
11 claim. It can't because the speeds in *Xing* are not optimum engine speeds for
12 different loads. Rather, the speeds are the starting point and then *Xing* just
13 determines the corresponding torque that will satisfy the load power
14 requirement at that speed while factoring in loss associated with that engine
15 speed. So, in *Xing* you start with a candidate engine speed and then figure
16 out the torque and, therefore, load that go along with to satisfy the load
17 power requirement. There's nothing optimum about that particular speed for
18 that particular load.

19 Now, I'm going to jump to slide 18. And when we pointed out in our
20 papers why *Xing* doesn't satisfy this requirement, Petitioner responded by
21 accusing us of adding requirements to the claim. We heard that again today.
22 But Petitioner is ignoring the plain language of the claim. They argue that
23 the claims don't specify what the engine speed should be optimized for, or at
24 least they did before today. I think today we heard them admit that it's an
25 efficiency optimization. The claim is explicit. It requires efficiency points

1 that provide optimum engine speeds for different engine loads. You are
2 optimizing speed for a load in the interest of efficiency. Petitioner's implied
3 argument that the claim doesn't say what type of optimization is required is
4 disingenuous and reads the limitation out of the claim.

5 Petitioner also argues that our position rests on a requirement for
6 selecting the most optimum engine speed. But as we explained in our
7 surreply, this isn't about speed is selected. The question is whether any of
8 the candidate engine speeds in *Xing's* figure 5 provide an optimum speed for
9 its corresponding load. They don't.

10 Now, turning to slide 19. Here we see the closest that Petitioner has
11 come to laying out their theory with any clarity. They argued in their reply
12 that *Xing* satisfies the claim because it selects a speed/torque pair that
13 maximizes fuel efficiency. But that's not enough to satisfy the claims. The
14 claims don't merely require adjusting engine speed based on predefined dual
15 efficiency points to maximize fuel efficiency. It's not enough to maximize
16 fuel efficiency. You need to show predefined efficiency points that provide
17 optimum engine speeds for different engine loads and *Xing* doesn't have that.
18 At best, it has an optimal engine speed for a particular load power
19 requirement. But the parties agree that the load power requirement isn't the
20 engine load.

21 Now, turning to slide 20 and claim 13 and the clutch issue. Petitioner
22 has also failed to show the prior art renders obvious claim 13, which requires
23 disengaging the rotor from the engine through control of the clutch.
24 Petitioner has multiple theories for this claim relying on directional clutches

1 in *Xing*, the power takeoff clutch in *Xing*, and the clutch in *Laux*. All three
2 fail.

3 Turning to slide 21. First, as to the directional clutches in *Xing*, our
4 expert, Dr. Kemal, explained that even if you use the directional clutches in
5 *Xing* to disengage the mechanical branch of the CVT, the hydrostatic branch
6 is still engaged. That provides power from the engine to the rotor. So, the
7 directional clutches are incapable of disengaging the engine from the rotor.

8 Now, looking at slide 22. In response, Petitioner tries to rewrite the
9 claim. They argue it only requires disengaging whatever power is flowing
10 through the clutch, but that's not what the claim says. It requires that the
11 clutch disengage the rotor from the engine, which *Xing's* directional clutches
12 don't do. They only disengage the mechanical path.

13 Now, we'll look at slide 23. When we pointed out that the engine and
14 the rotor would still be engaged through the hydrostatic path in *Xing*, despite
15 the directional clutches, Petitioner came back and said the power flowing
16 through the hydrostatic path could be shut off. The problem for them is that
17 they asked our expert about this and he said that's not correct. There will
18 always be at least some power flowing through the hydrostatic unit. They
19 just didn't like his answer. But it doesn't change the fact that the evidence is
20 one-sided on this issue. They can't overcome that with conclusory attorney
21 argument. And they've also argued that a parking brake holding the rotor in
22 place would somehow satisfy the claim. But parking brake is not a clutch,
23 nor does it disengage the rotor from the engine. Instead, it merely provides a
24 counter load that can be overcome.

1 Now, we'll turn to slide 24. Petitioner also relies on the clutch from
2 *Xing's* power takeoff, or PTO. But *Xing* never says that the PTO clutch
3 disengages the engine from the output. Nor does it provide any description
4 of how the PTO, including its clutch, operates or how it transfers power. So,
5 to fill in these gaps, Petitioner's expert said *Laux* teaches connecting a
6 transmission in the same manner. But as we'll see, *Laux* doesn't satisfy the
7 claim either. And moreover, *Xing's* PTO contributes to its loss component,
8 not its load power requirement. So, relying on that, on the PTO for the
9 clutch element, raises all sorts of unanswered questions about how this fits
10 with their reliance on *Xing's* efficiency mapping.

11 Now, here I quickly want to turn to Petitioner's slide 62, which they
12 address -- this has a quote from *Xing* above, it's *Xing* figure 2. And what
13 they've highlighted here is the language in *Xing* that says that the planetary
14 unit can be selectively coupled to the load L and selectively coupled to the
15 load engine. And we heard Mr. North today say that that is disclosure that it
16 can be disengaged, that the clutch can be used to disengage the engine from
17 the rotor. But you don't see that in that quote. It talks about selective
18 coupling. It says nothing about disengaging. And that's entirely consistent
19 with our expert's testimony that you can disengage the mechanical path, but
20 the hydrostatic path remains engaged.

21 So, what it's saying here is you can selectively couple. There are
22 different degrees of coupling that *Xing* teaches in its figure 2, that directional
23 clutches can be used to disengage the mechanical path. So, you can have
24 engagement through the mechanical path, engagement through the

1 hydrostatic path, or engagement through both paths. But it says nothing
2 about disengagement.

3 Now, I'll turn back to our slides and slide 24 -- sorry, 25. Petitioner
4 also relies on *Laux* for its clutch, but that has the same problems as *Xing's*
5 directional clutches. As we see here, Petitioner relies on *Laux's* clutch 15,
6 but that only disengages the mechanical path traveling from the belt drive to
7 the CVT. It doesn't disconnect the hydrostatic path flowing from hydraulic
8 pumps 19 to hydraulic drive 20 and end at the CVT. So, *Laux's* clutch also
9 cannot disengage the engine from the rotor.

10 Now, turning to slide 26. Petitioner concedes this shortcoming of
11 *Laux* because in their reply, they proposed moving *Laux's* clutch for the first
12 time. That's an improper new argument since it wasn't presented in the
13 petition. As we see here in the petition, they clearly relied on *Laux's* clutch
14 disengaging engine 4 from belt drive 16, drive transmission 17, and rotor 7.
15 There was no suggestion to move the clutch to a new location such as
16 between the transmission and an output. And they don't have support for
17 that in the prior art. Neither *Xing* nor *Laux* discloses locating a clutch after a
18 transmission. In *Xing*, the clutch is in the transmission, whether it's the PTO
19 or the directional clutches. And in *Laux*, the clutch is before the
20 transmission. So, their new reply modification to put the clutch after the
21 transmission has no support.

22 Now, turning to slide 27. Petitioner has also failed to show a
23 motivation to combine *Laux* with *Willis* and *Xing*. They argue that *Laux's*
24 clutch would be used to provide a safety benefit, but that fails for the same
25 reason that their claim mapping fails. *Laux's* clutch doesn't actually

1 disengage the engine from the rotor. So, it certainly would not have been
2 viewed as a safety feature for that purpose.

3 For similar reasons, it wouldn't have made sense to combine *Xing's*
4 controller with *Laux's* clutch. Even if *Laux's* clutch were used for safety
5 purposes, as Petitioner alleges, our expert, Dr. Kemal, explained that using a
6 controller to control such a clutch would introduce the possibility of
7 electrical failure causing the clutch to reengage the drum, leading to injury.

8 Petitioner had no response on this point in their papers. They tried to
9 come up with a response today but that was pointing to the language in *Xing*
10 about selectively coupling, which as I explained, they're misinterpreting it.
11 It says nothing about a disengagement.

12 Thank you.

13 JUDGE MAYBERRY: Thank you. Do we have any questions? I'm
14 sorry, I think I was maybe talking too soon. I guess not.

15 All right, Counsel, you have used almost 26 minutes of your hour.
16 So, you know, after we enter your rebuttal time then we'll tally up and see
17 what you have for the next set of arguments.

18 So, with that, let's turn back to Petitioner. And, Petitioner, you have
19 16 minutes of the hour that you would have originally slated. Of course, you
20 can use more or less of that, however you want to. So, Petitioner, you can
21 begin when ready for your rebuttal.

22 MR. OGDEN: Thank you, Your Honor. I'll try to stick with the 15
23 minutes so I don't upset my colleagues. I want to address two issues very
24 quickly and then pass it to Mr. North to address a couple issues.

1 So, the petition does tell you exactly what engine load is being
2 determined. It's in the petition at 45. It tells you that you are going to use
3 that specific sensor that we saw in the drawing. I believe it's sensor 122, the
4 schematic of *Xing's* drivetrain to determine the engine load.

5 And just stepping back, the reality here is the way that engines and the
6 loads work, you have to have an engine load in order to do the useful work
7 that is the P load requirement. And so, I will say it is not an exact direct
8 relationship that as engine load increases, the power load requirement
9 increases. It is a general relationship and I didn't mean to misspeak and
10 imply that it was.

11 But it is always in the proposed combination, the starting point is we
12 determine the engine load, and that is what we look at. And so, this kind of
13 goes to the argument that was made, and this is the second point, about
14 providing optimum engine speeds for different engine loads. And if we look
15 at column 12, lines 26 to 28, of *Xing*, it explains that additionally at 210, fuel
16 efficiency data may be analyzed to determine a target engine speed for the
17 work vehicle 10 based on the candidate engine powers.

18 And as we talked about, it's those candidate engine powers in column
19 4 that are the different engine loads. The second part of the claim does not
20 require using the determined engine load. And that wouldn't make sense
21 because it's talking about engine loads, plural, for different engine speeds,
22 plural. It's talking about the candidates. That's what's being referenced
23 there.

24 And I want to make one more point before I hand it off to my
25 colleague. When we look in figure 5, you have to remember that is a

1 snapshot in time. And so, it does differ from the figure 4 of the '538 patent
2 in that figure 4 of the '538 patent is showing you all of the candidate loads at
3 the same time that would be in the data. Whereas, figure 5 is showing you a
4 snapshot. So, as soon as the determined engine load changes, it's going to
5 reiteratively change what will populate column 2 as the load power
6 requirement and then it's going to do all this calculating again.

7 And so, it may take a little time for it to zero in, I mean, controllers
8 are fast, on that optimal engine speed. And so, when you look at that point,
9 what it is, it is a engine speed and it is an engine load, and then there's a fuel
10 efficiency for that. And it gives you different ones for different engine
11 loads. So, that portion of the claim is met.

12 Unless there are any other -- oh, and one more thing I'd like to add.
13 Counsel's incorrect about Dr. Stein's testimony. He did not say that he
14 didn't understand the claim language. What he said is that the claim itself
15 doesn't define the efficiency points with much specificity. But from looking
16 at the full context of the patent, he was able to understand what those
17 efficiency points were. So, that would be our rebuttal to that
18 mischaracterization of Dr. Stein's testimony.

19 Unless there are further questions, I'll let Mr. North discuss the clutch.

20 JUDGE MEYERS: Dr. Ogden, I have a question for you.

21 MR. OGDEN: Yes.

22 JUDGE MEYERS: On page 47 of the petition, the first line of that
23 page, it says, "As explained below for limitation 1C, controller 116 used the
24 current load power requirement to determine the targe engine speed that
25 provided optimal fuel efficiency." If you need a minute to look at that.

1 MR. OGDEN: Yeah, sorry, that is which sentence? I'm there now.

2 JUDGE MEYERS: The first sentence on page 47 of the petition.

3 MR. OGDEN: Yes. I see that. And but it explains, if you read the
4 whole context of that entire passage, it explains that *Willis'* controller already
5 receives signals -- this is on page 45 -- from sensors indicating the rotational
6 speed of the engine shaft and the drum speed. "To the extent additional
7 sensors were required to determine engine load, such as *Xing's* torque sensor
8 122, a POSITA would have been motivated to incorporate such sensors to
9 take advantage of *Xing's* algorithm."

10 And so, that's where we're saying that you are going to determine the
11 engine load. And then based on those signals -- this is reading further into
12 page 46 -- "the controller in *Xing* evaluated power losses from the
13 transmission and other power consuming components at different candidate
14 operating speeds, measured engine load to determine the work output
15 demand of the machine, and independently set engine speeds and
16 transmission ratios to minimize fuel consumption while achieving desired
17 performance." So, that is exactly what I just explained to you earlier in my
18 opening. It starts with the engine load and then it uses that to correct. And
19 so, that is why it's based on the engine load.

20 And that's all I have, Your Honor.

21 JUDGE MEYERS: Doesn't the last sentence, though, addressing this
22 element, say, though, that it's the current load power requirement that's used
23 to determine the target engine speed?

24 MR. OGDEN: That's exactly what that reads after it describes
25 equation 1 where it says you're going to start with P engine. You're going to

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1 use this equation and after you've determined P engine, you're going to
2 determine -- it says, "Then the controller 116 use this data to determine the
3 current load power requirement based on the relationship of equation 1."
4 And so, if that engine load affects the output that is the load power
5 requirement, and it does, it's dependent on that, then it is based on that
6 determined engine load.

7 And we shouldn't get confused with this alternative embodiment. And
8 so, what I heard earlier was, oh, because there's another way to do it, it must
9 not be based on the engine load. But that is not correct. There is another
10 way to do it. That's not the way that we described right here as you look
11 through, we described starting with determining the engine load.

12 JUDGE MEYERS: All right.

13 MR. OGDEN: Nathan, you have 10 minutes, maybe a little less.

14 MR. NORTH: All right, thanks. I'd like to start on slide 62. And
15 we're going to talk first about the configuration involving the directional
16 clutches.

17 Caterpillar has stated that all this says is that the load is going to be
18 selectively coupled to the load and that doesn't meet the disengaged. Well,
19 to start off with, the portion talking before this excerpt that we have in *Xing*
20 is discussing operating the clutches themselves. So, it is the clutches that are
21 being used to accomplish this selectively coupling functionality. It's unclear
22 what exactly selectively coupling or decoupling is as if somehow that
23 doesn't meet engaging or disengaging. It's unclear what the difference is
24 there. What *Xing* is saying is we can connect the load and the engines or we
25 can disconnect them. And that's really all that you need for claim 13.

1 It's also worth talking about, at slide 64, Caterpillar points out that
2 Dr. Kemal had some testimony regarding the swashplate may not reach a
3 perfect zero and there may be some flow that goes through. First of all,
4 that's not contemplated within *Xing* itself. So, the evidence itself says that it
5 can go to zero. And even to the extent Dr. Kemal could be theoretically
6 correct, it's only speculation that he's put forward and beyond that it makes
7 no sense in the real world. Dr. Kemal doesn't say that the amount of flow
8 that might escape through the swashplate is zero, is going to be significant
9 enough to cause any actual power to go through to the load. It could just be
10 a minimal trickle.

11 And this makes sense in the real world if we keep going to slide 65,
12 where we have parking brake 70. If any aspect of the power from the engine
13 were still connected to the load on the output of that transmission, parking
14 brake 70 when it engages and clamps down on that rotor, it would cause the
15 engine to stall. Generally, power going through is going to be fighting
16 against that parking brake and either the parking brake or the engine's going
17 to win. That defies any logic for how they would have designed the system
18 to have a parking brake present.

19 If we continue on to the PTO, we can go to slide 69. Caterpillar states
20 that there's a reliance on *Laux* at the statement where Dr. Stein says *Laux*
21 can just connect a transmission this manner. All that Dr. Stein is saying at
22 this point is that *Laux* is talking about connecting a transmission between the
23 engine and the rotor. That's all it said. And if we keep on going to slide 70,
24 we can see that that is, in fact, all that this portion of *Laux* is stating.

1 And this feeds well into ground 2. The proposed combination only
2 talks about implementing clutch 15. Caterpillar, on the other hand, wants to
3 or has seemed to suggest that ground 2 includes not just clutch 15 but a
4 teaching about the hydrostatic power being applied beyond clutch 15.
5 Again, ground 2 simply implements the clutch in the location between the
6 engine and the rotor. And we can go to slide 71 to look at this further. And
7 you can see in the petition below that's all it says, between the engine and
8 the rotor.

9 Now, if we go on slide 78, we can see that there's only a couple places
10 between engine and the rotor that this can go. This could either go where
11 that green arrow is on the right or it could go sort of where that red arrow is.
12 It's certainly the contention from the petition that clutch 15 would be located
13 where the green arrow is, again, as I stated before, because when you look at
14 *Laux* it's talking about placing *Laux* as the last element before that driven
15 element, before that belt drive.

16 However, even if it could be placed at the red arrow, it's still going to
17 satisfy the claims. If we go down to slide 79, we can see why. Again, the
18 hydraulic power, as well as mechanical power, is all self-contained within
19 the transmission 24 itself. So, regardless of whether that clutch is before the
20 transmission or after the transmission, it's still going to disengage the engine
21 and the rotor from both the mechanical and the hydrostatic branches. Those
22 combinations do not use that auxiliary pump -- the auxiliary drive, I'm sorry,
23 that's connected to the pumps in *Laux*. All it's taking is that conventional
24 clutch placed between the engine and the rotor.

1 And if there are no further questions, I don't know if Dr. Ogden has
2 any further comments to make.

3 MR. OGDEN: I'd just like to follow up on what Mr. North just said.
4 And so, if we're taking a look at Petitioner's slide 71 and seeing the
5 configuration of *Laux*, we just heard Patent Owner make this mistake in that
6 he -- Patent Owner's attributing the power that would be in the proposed
7 combination to *Laux's* arrangement and saying there is this element 20 down
8 there, this auxiliary drive that feeds into the rotor. That auxiliary drive does
9 not exist as Mr. North just explained in the proposed combination because
10 the CVT that *Xing* offers has everything packaged into that one
11 transmission.

12 And so, *Laux* is doing something a little different. *Laux* is turning a
13 planetary gear that's inside rotor drum. And that's not part of the proposed
14 combination. So, if you put *Laux's* clutch right where *Laux* shows you to
15 put it in the proposed combination, then you're going to cut off all the power
16 downstream, and there is no power that continues to flow through.

17 And with that, Your Honor, that's all we have on our end.

18 JUDGE MAYBERRY: All right. Thank you, Counsel. I have you
19 still with 3-1/2 minutes from this first hour and so, that gives you 78-1/2
20 minutes for the next two proceedings if my math is right. And I'm sure after
21 our break, you'll correct me if I'm wrong.

22 MR. OGDEN: Thank you, Your Honor.

23 JUDGE MAYBERRY: With that, let's turn to Patent Owner's
24 Counsel for the surreply. And, Counsel, you used 26 of your first hour. So,
25 you know, you can start with you're ready.

1 MR. ARGENTI: Thank you, Your Honor. I have a few points to
2 respond to. Going to I believe it was Mr. Ogden's second point regarding
3 the predefined efficiency points. And he was referring to I think figure 5 in
4 *Xing* for the proposition that figure 5 has candidate engine speeds and
5 candidate engine loads and that, therefore, the efficiency points are based on
6 those candidate engine loads. What we still haven't heard and what we don't
7 hear from Petitioner is any explanation as to how those are optimal speeds
8 for those loads that they are pointing to. We haven't heard that explanation.

9 Let me see. Also, again, as to the two different embodiments, the two
10 different ways that *Xing* provides for determining the load power
11 requirement, we again heard Petitioner misrepresent our position on the
12 importance and relevance of the second embodiment. We do think it's
13 further illustration. But I want to be clear, we could completely ignore the
14 second embodiment where the load power requirement is measured directly
15 and their argument would still fail for the exact same reason. If we look just
16 at the first embodiment that uses that equation 1, all the arguments that we
17 have still hold true in terms of why everything subsequent to that, the speed
18 adjustments, are based on the load power requirement, not the engine load.
19 In no way does our argument depend on the second embodiment in direct
20 measurement of load power requirement. It's just a helpful further
21 illustration.

22 When we talked about the clutch, we heard Mr. North, I think, assert
23 that *Xing* says the hydrostatic path can go to zero, that that's what it
24 discloses. It does not disclose that. They're unable to cite anything in *Xing*
25 that says that. The closest they can get or at least they think they can get is

1 that same passage that we've looked at on slide 62 of their demonstratives
2 that talks about selective coupling. But as I pointed out earlier, that says
3 nothing about selective decoupling or disengagement or anything. It's
4 talking about degrees of coupling.

5 We also heard Mr. North argue now that once we've pointed out the
6 problem with the placement of the clutch and that it's not supported by the
7 prior art references, he now argues, well, there's only a couple places it could
8 go. And there are the places that the prior art teaches and then there are
9 places that they need now that the prior art does not teach. It can go in
10 multiple places in the transmission itself as *Xing* talks about. It could be
11 inside the CVT with the directional clutches. It could be the PTO that it also
12 explains is in the transmission. It could go before the transmission as *Laux*
13 teaches.

14 If they wanted to deviate from the teachings of the prior art and move
15 the clutch to a new location in their combination, they needed to address that
16 in the petition and provide a reason to do so. There's no explanation for that
17 in the petition. This is something that they've come up in the late states of
18 the case. It's not supported by the prior art and they've never provided any
19 reason that a POSA would have done it.

20 That's everything. Thank you, Your Honor.

21 JUDGE MAYBERRY: All right. Thank you, Counsel. You've taken
22 up another 3-1/2 minutes. So, that gives you a hair over 90 minutes for the
23 next set.

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1 And so, right now I have that we are at 50 minutes after the hour.
2 Let's go ahead and take 15 minutes and so we can get ready for the next
3 results. So, we will reconvene at five minutes past the hour. Thank you.

4 MR. ARGENTI: Thank you.

5 MR. OGDEN: Thank you.

6 (Recess)

7 JUDGE MAYBERRY: So, we are going to switch to arguments for
8 IPR2022-01394 and IPR2022-01395. But again, Petitioner is going to
9 open the arguments. Petitioner has 78-1/2 minutes. And before Petitioner
10 begins, give us an idea of how much rebuttal time you'd like to reserve.

11 MR. PHERO: I'd like to reserve approximately 15 minutes for
12 rebuttal.

13 JUDGE MAYBERRY: Right. You may begin when you're ready.

14 MR. PHERO: Thank you, Your Honor. May it please the Board, my
15 name is Graham Phero on behalf of Petitioner Wirtgen America. The
16 petitions have established that all challenged claim elements of the '995
17 patent are found in the prior art, and Patent Owner has not provided a
18 substantive rebuttal as to any of the alleged missing elements. Instead,
19 Patent Owner's arguments emphasize form over substance and attack
20 Petitioner for allegedly not showing certain features. Each of Patent
21 Owner's arguments fails.

22 Now, the number and breadth of the '995 patent claims necessitated
23 two petitions. Most of the challenged claim elements in these proceedings
24 are not disputed. So, I will briefly walk you through Wirtgen's arguments in
25 both the 1394 petition and the 1395 petition to show you why the challenged

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1 claims would have been obvious, based on the combination of *Volpe* and
2 *Piccoli* and 1394 and/or *Bitelli* and *Feliz* in the 1395. I will then address
3 why Caterpillar's arguments are wrong in each proceeding, and finally I will
4 address the recited means-plus-function limitations in claim 45. Go to slide
5 2, please.

6 Now the '995 patent has 63 total claims. Claims 1, 18, 36, and 45 are
7 the independent claims. Claim 18 is the broadest and so that is the primary
8 claim challenged in ground 1 in each petition. Slide 3, please.

9 This is the summary of the 1394 instituted grounds. We have seven
10 total grounds, and the 1394 relies on *Volpe* and *Piccoli*, and shows the
11 challenged claims would have been obvious to a person of ordinary skill in
12 the art. There is no dispute that the *Volpe* manual discloses a milling
13 machine with a manually movable wheel. It is also undisputed that *Volpe*
14 discloses a lifting column and a swing arm on that movable wheel.
15 Caterpillar, however, argues that the 1394 petition doesn't show that the
16 *Volpe* swing arm and lifting column disclosed the claimed support device,
17 which is claim element 18.2. Caterpillar's argument is without merit, as
18 we'll get to in just a minute.

19 Now looking to slide 4, this is a summary of the 1395 instituted
20 grounds and 1395 petition relies on *Bitelli* and *Feliz* as the primary prior art
21 references.

22 Separately, and in addition to the arguments presented in the 1394
23 petition, the 1395 petition also showed the challenged claims would have
24 been obvious to a person of ordinary skill in the art. I'll note that the 1395

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1 petition challenges all the claims that require a rotary actuator. Those claims
2 are not challenged in the 1394 petition.

3 Going to slide 5, I'll briefly note that both petitions were required
4 here, again, because of the breadth and number of claims. The 1394 petition
5 relies on *Piccoli*, which utilizes a linear actuator to pivot the wheel and a
6 linear actuator to turn the wheel. The 1395 petition relies on *Bitelli's* linear
7 actuator to pivot the wheel, and *Feliz's* rotary actuator to turn the wheel.

8 And as we see on slide 6, claim 1 requires a rotary actuator positioned
9 at an upper portion of the lifting column. That limitation is simply not
10 present in claim 18. Instead, claim 18 simply relies on a second actuator,
11 and that is linearly spaced apart from the first actuator. So, with that we can
12 go to slide 11, please.

13 Looking at slide 11, this is an overview of the '995 patent. We can see
14 in the upper left image, this is taken right from the petition, an annotated
15 image. We have the second actuator shown in yellow at the top of the listing
16 column. The left image does not show the pivoting actuator. That's actually
17 shown in the lower right image on slide 11, annotated figure 3. So, we have
18 figure 2 of the '995 patent in the upper left of this slide that shows the second
19 actuator that turns the wheel and we have the first actuator shown on figure
20 3 of the '995 patent. And that is what pivots the wheel between the
21 projecting and the retracted positions. If you please go to slide 49.

22 So, getting right to the heart of the matter here, the *Volpe* manual
23 discloses an element 18.2. That's the claim support device. The '995 patent
24 recites the support device is connected between the machine frame and at
25 least one of the ground engaging units, and that it includes a lifting column

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1 and is adapted to controllably raise and lower the ground engaging unit
2 about the axis relative to the machine frame.

3 So essentially, the support element and claim support device in
4 element 18.2 is simply what's between the frame and the wheel. We clearly
5 showed this in our petition as including the swing arm and the lifting
6 column. We have a bracket that labels the support device shown in yellow,
7 which is an annotation of figure AH-7 from the *Volpe* reference. Next slide,
8 please, slide 50.

9 So, looking again at what's disclosed in the *Volpe* reference, we have
10 the pin that's used to maintain that swing leg in either the projecting or the
11 retracted position. That's shown with elements 1 and 2 in this figure AH-7
12 on the right side of the slide. We have the swing arm and then we have the
13 lifting column that's labeled as 4 that goes up and down. So. Essentially. an
14 operator will remove the pin when they're sitting in the cab, they'll remove
15 the pin, and then they will have to get down from the cab, rotate that wheel
16 from the projecting position to the retracted position or vice versa, and then
17 reinsert the pin from the cab area in order to lock that wheel in place. You
18 could go to slide 51, please.

19 Now, the *Bitelli-Volpe* -- I'm sorry, the *Volpe* reference discloses a
20 manual process, so there are no actuators or there's no assisted automated
21 control of that swing leg. We rely on *Piccoli* to show a first actuator to pivot
22 the wheel and a second actuator to turn the wheel. You see here on slide 51,
23 we're relying on shift cylinder 76 as the claimed first actuator. And that's
24 what's pivoting the *Bitelli* -- that's what's combined with *Bitelli-Volpe* to
25 achieve claim element 18.3, which is the first actuator. Slide 52 please.

1 *Piccoli* also discloses the claimed second actuator that's to turn the
2 wheel and, in combination with the teachings of *Volpe*, satisfies claim
3 element 18.4. Again, 18.4 is simply a second actuator connected to the
4 lifting column and adapted to cause the lifting column to rotate.

5 Then if we go to slide 53, there's the additional limitation that they are
6 linearly spaced apart along the lifting column axis. There is no dispute that
7 *Piccoli* discloses a vertically separated actuators that satisfy this claim
8 element, and Caterpillar's expert also agrees. We go to slide 57, please.

9 Okay. Now to Caterpillar's arguments. Caterpillar's arguments again
10 emphasize form over substance. Caterpillar alleges that the petition does not
11 show the references teach element 18.2 rather than the *Volpe* manual does
12 not disclose the elements of 18.2. We will address that in just a minute.
13 Turning now to slide 61.

14 Again Caterpillar claims the petition did not show that *Volpe*
15 disclosed the support device. They latch on to a perhaps inarticulate
16 phrasing from the petition, but the very first sentence of this section, element
17 18.2, the support device, in the petition makes it very clear. *Volpe* discloses
18 the support device in the form of a swing arm and a lifting column, and that's
19 fully supported by our annotation of figure AH-7 that's reproduced here on
20 slide 61. Next slide please.

21 I think it's worth noting that Petitioner provided significantly more
22 detail on the disclosure of the support device in *Volpe* than the '995 patent
23 itself. You can see here in the left image, which is annotated figure 2 of the
24 '995 patent. The drafter simply chose to use an arrow pointing in a general
25 area with a numeral 40 to indicate the support device. Petitioner, on the

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1 other hand, color coded the swing arm and the lifting column and indicated
2 both of these are the support device with the bracket that's shown in yellow.
3 Slide 63, please.

4 Caterpillar's expert Dr. Klopp also acknowledged that *Volpe* discloses
5 a lifting column and a swing arm. And see here from the excerpts,
6 Dr. Klopp has no disagreement. There's a swing arm, there's a lifting
7 column, and in the petition we made it a very clear understanding of where
8 that support device is.

9 If we go back to slide 62, please. Again, we have identified it with the
10 support device, and Dr. Klopp confirmed that the swing arm and the lifting
11 column are present in *Volpe*. If we could now please go to slide 60.

12 It's worth noting that in a prior *inter partes* review in IPR2018-01201,
13 the issue of whether or not the *Volpe* device was -- I'm a little out of my
14 order here. But if we go first to slide 66, Caterpillar's next argument is with
15 respect to motivation. They allege a person of ordinary skill in the art would
16 not have been motivated to combine *Piccoli*'s shift cylinders with *Volpe*.
17 Have to go back to 60, please.

18 Again, the motivation to automate *Volpe*'s manual swing arm with
19 hydraulic actuators was already resolved in a prior IPR petition and final
20 written decision. That's IPR2018-01201. There the Board already found
21 that a person of ordinary skill in the art would have been motivated to apply
22 hydraulic actuators with the *Volpe*'s manual. And I'll quote here "to
23 overcome the disadvantages of manually pivoting a support arm, and thereby
24 increase the efficiency and safety of pivoting the support arm." If we could
25 go to slide --

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1 JUDGE MAYBERRY: Excuse me, Counsel.

2 MR. PHERO: Yes.

3 JUDGE MAYBERRY: This is Judge Mayberry. You would agree, though,
4 in the IPR 2018-01210 - or 01201 proceeding that, we were talking about a
5 different combination, *Volpe* and *Ulrich*, not *Volpe* and *Piccoli* as we were
6 talking about here.

7 MR. PHERO: That's right, Your Honor. It was a different prior art
8 reference. *Ulrich* is not the same as *Piccoli*. However, the teachings from
9 *Ulrich* are very similar to the teaching of *Piccoli*. Both teach a hydraulic
10 actuator for pivoting a support arm and a hydraulic actuator for turning the
11 wheel. And it's the same -- well, it's not the same, but it's very, very similar
12 teachings from the prior art reference that are relied upon in this case.

13 JUDGE MAYBERRY: Thank you. And in the Petitioner's Reply, I'm
14 pretty sure, you do use the term "collateral estoppel" a few times. But would
15 I be correct to characterize that you did not do a full collateral estoppel
16 analysis as to this point?

17 MR. PHERO: That's correct. We didn't provide a full analysis of every
18 element of collateral estoppel in our Petitioner Reply. However, the
19 importance of this point is that this issue has already been resolved on near-
20 identical facts. So that's the point of the collateral estoppel argument that
21 we're trying to make in our Reply.

22 JUDGE MAYBERRY: All right. Thank you.

23 MR. PHERO: Continuing on to slide 74. It's also worth noting that in their
24 present argument that a person of ordinary skill in the art would not have
25 been motivated to automate the swing leg of the *Bitelli-Volpe*. That

1 argument is in direct contradiction with the prior argument Caterpillar made
2 in a prior proceeding. This excerpt is from the prosecution history of the
3 application that resulted in the '693 patent, *Dubay*. And it's very clear here
4 Caterpillar made the argument, "It is, therefore, a matter of course, that if the
5 increased costs are accepted, the skilled man must use the drive replacing the
6 human manual force if the rear support wheel has become too heavy due to
7 the size of the road construction machine." As we go to slide 67, please.

8 Again, Caterpillar is arguing that a person of ordinary skill in the art
9 would have exited the machine, removed *Volpe's* locking pin and safety
10 spring, then got back in the machine, adjusted the position of the support
11 arm, gotten out of the machine again, reinserted the locking pin and safety
12 spring. That's simply contrary to what's disclosed in *Volpe*, and what a
13 person of ordinary skill in the art would have done. If we go to slide 68,
14 please.

15 Mr. Orr testified, and he was not deposed on this point, stands
16 un rebutted, that a person of ordinary skill in the art would have understood
17 that the locking pin is reachable from the cab. That's within the art. In order
18 to pin that swing leg, the pin would have had to extend through the frame.
19 So, the frame is what the operator is standing on as they're in the cab, and
20 they would have reached down to pull up the pin and then gotten out of the
21 cab, manually move the wheel, and then gotten back in the cab and manually
22 inserted it again going downward. It simply wouldn't have been feasible,
23 and this is Mr. Orr's testimony, to have a person stand on the ground and
24 then reach upward to try to extend a pin through a swing arm and the frame.
25 That would have required a significant amount of force, and simply not what

1 a person of ordinary skill in the art would have done or understood. We go
2 to slide 69, please.

3 Again, Dr. Klopp acknowledged that the movable right rear wheel is
4 right next to the operator's seat and steering wheel. We can see it in
5 annotated figure DD-1 of the *Volpe* reference. Those two little red dots
6 represent where a person of ordinary skill in the art would have understood
7 to be approximate locations for the locking pin. That would have been
8 reached by an operator in the cab, it wouldn't have gotten down into the
9 ground to pull out that pin. Slide 70, please.

10 Now, looking at -- in general at the prior art for the motivation of
11 automating the voltage swing arm, that comes directly from the prior art
12 references themselves. We have the *Bitelli* '088, which is the same *Bitelli*
13 reference that's relied upon in the 1395 petition. *Bitelli* tells us that it was
14 awkward to have the operator, who is forced to carry it out, to get out of the
15 machine and to go on both sides and to move the wheel. It's not talking
16 about getting out to pull out a pin. He's talking about getting out of the cab
17 in order to grab on to that very heavy wheel and move it while on the job
18 site. Going to the next slide, please.

19 So, looking here on slide 71, Caterpillar's expert Dr. Klopp also
20 acknowledged that this is a very heavy wheel. If it's on flat, level ground,
21 that weight would be distributed through the pin. But in practicality, that
22 machine is going to be either on a grade or on a slope, and it's going to
23 increase the weight of that wheel as the operator tries to swing it. It's going
24 to make it extremely difficult. If we go to slide 72.

1 And that gets us back to why would a person of ordinary skill in the
2 art have automated this manual process? A person of ordinary skill in the art
3 would have seen the opportunity to take a very difficult movement and
4 process and add in the shift cylinder of *Piccoli*.

5 Now, Caterpillar argues that *Piccoli*'s hydraulic cylinder had a
6 different function than what's proposed in our combination, but it's very
7 clear from paragraph 42 of *Piccoli*, shift cylinder 76 is used primarily to
8 change the configuration of the machine by repositioning the leg assembly.
9 It's a very similar feature as we're relying upon to reposition the leg
10 assembly from a projecting position or pivoting it to a retracted position or
11 vice versa. We go now to slide 73, please.

12 To lay this out very clearly in our petition, a person of ordinary skill
13 in the art would have been motivated to take the *Piccoli* shift cylinder, apply
14 those teachings, then automate the movement of *Volpe*'s wheel. Going now
15 to slide 76.

16 Now, as additional motivation, the prior art teaches us that wheel
17 scraping was a problem for a fixed rear wheel when it was in the retracted
18 position. Caterpillar challenges that allegation, but that's an allegation.
19 That's a statement that comes right from the prior art. Caterpillar also argues
20 that *Volpe*'s AH-9 figure teaches away from adding a steering actuator due to
21 the sliding supports. That's also wrong. And finally, they argue that
22 *Piccoli*'s steering cylinder with *Volpe* is illogical. All three of these
23 arguments fails, and we're going to address them in turn. If we go to slide
24 77 first, please.

1 And there's another *Bitelli* reference, *Bitelli* '037. It's not a part of any
2 of the grounds, but this reference provides explicit motivation and how a
3 person of ordinary skill in the art would have understood the art. As I'll read
4 directly from this reference, when -- so, "One limitation shown by the
5 machine described in the aforementioned patent," and that aforementioned
6 patent is an Italian patent number that traces back to this reference here. But
7 the point is, when a person of ordinary skill in the art is looking at these
8 milling machines with reentering wheels, they would have understood that
9 they have a problem when they're in the retracted position laid out here in
10 paragraph 12 of Exhibit 1014.

11 When turning, these wheels, "scrape the ground with considerable
12 resistance" when they're in the retracted position. Again, this comes directly
13 from the prior art itself. That's what a person of ordinary skill would have
14 understood when they're looking to make the combination and the *Volpe*
15 reference with Piccolo. Go to slide 79, please.

16 Caterpillar claims that the sliding supports shown here in the *Volpe*
17 reference would have prevented a person of ordinary skill in the art from
18 making the proposed combination. Mr. Orr clarified that in our Petitioner
19 Reply. When you have a turning actuator, the sliding supports are no longer
20 needed and the sliding supports that you see in figure AH-9 of the *Volpe*
21 simply maintain that running direction of the wheel in either of the
22 projecting or the retracted position; keeps the wheel from wobbling as the
23 machine is being operated.

24 When you have a second actuator to steer that rear wheel, the slides
25 are no longer needed and they could be omitted from the combination. So,

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1 instead of teaching away, they're simply obviated by any -- by the second
2 actuator. If you go to slide 80, please.

3 Now, Caterpillar also argues that the petition doesn't establish how to
4 connect the respective actuators to the *Bitelli-Volpe* machine, but that was
5 well within the level of ordinary skill. And it's also worth noting that claim
6 18 does not recite any specific structure or other limitations requiring a
7 specific configuration for the first actuator or the second actuator as they're
8 connected into the system. It's also worth noting Caterpillar is treating a
9 person of ordinary skill in the art as an automaton, and completely
10 disregarding the background knowledge in the art. If we could go first to
11 slide 85.

12 We'll get into in more detail in just a minute. There are at least two
13 references that show how a person of ordinary skill in the art would have
14 known to connect a turning actuator to a lifting column in order to account
15 for that height adjustment. There's the *Dubay* reference, which is cited in
16 the background of the '995 patent. And then there's the *Busley* reference. If
17 we go to slide 82, please.

18 Starting first, slide 82, you can see we have an annotated figure
19 explaining exactly how *Dubay* incorporates a linear actuator in order to turn
20 the lifting column and, accordingly, the wheel. There's a ring 13, and that
21 ring 13 mates with the inner tube of the lifting column. As the linear
22 actuator pushes and pulls, it acts on that link ring, which in turn moves the
23 wheel in a rotational direction. This would have been well known by a
24 person of ordinary skill in the art as one possible way to incorporate a linear
25 actuator into a system such as that of *Volpe*. Going next to slide 83.

1 Another way that a person of ordinary skill would have known to do
2 this is to look at something like the feature described in *Busley*. *Busley*,
3 again, has the link ring, and it has a feature to connect that link ring to the
4 inner tube of the lifting column. The linear actuator acts on the link ring, it
5 pushes and pulls in order to turn that wheel. Again, these are features that
6 are well known to a person of ordinary skill in the art in making this
7 combination. Slide 84, please.

8 Now, Caterpillar's expert Dr. Klopp acknowledged that *Dubay*'s linear
9 actuator steered a lifting column, and that a person of ordinary skill in the art
10 would have been well aware of that reference. So, this is not a point that's in
11 dispute. It's also in the background of the '995 patent as a way this was
12 accomplished. Go now to slide 90.

13 So, each of Caterpillar's arguments with respect to ground 1 fail.
14 Turning now to ground 2, we have the *Volpe* and *Piccoli* references, and this
15 time we add in *Skotnikov*. *Skotnikov* discloses a controller and it discloses
16 certain sensors that are disclosing all the features in these additional claims
17 here. If we could go first to slide 91.

18 Again, claim 21 introduces for the first time a controller, and that
19 controller is adapted to coordinate the actuation of these actuators. And, you
20 can see here very clearly *Skotnikov* discloses a programmable controller in
21 the form of a control circuit. We've identified an annotated figure 6 of
22 *Skotnikov*. Slide 92, please.

23 We, in our petition, laid out why a person of ordinary skill in the art
24 would have relied on *Skotnikov*. *Skotnikov* provides this additional control
25 and coordination in order to be slightly more precise in how those actuators

1 are controlled and moved. This would have adjusted the orientation of the
2 movable rear wheel according to the sensor feedback, which is in some
3 additional dependent claims. Let's go to slide 93, please.

4 There's the first sensor here, which is sensor 155, discloses the recited
5 pivot sensor that's in claim 23. That sensor feeds back to be able to control
6 the second actuator. If we go to slide 94, please. Ninety-five?

7 We also have a sensor 154 and that feeds back in order to give
8 feedback for the first actuator. So, we have the pivot sensor feeding control
9 back to the first actuator and rotation sensor feeding back to the second
10 actuator. And a person of ordinary skill in the art would have taken these
11 teachings from *Skotnikov* and implemented it in the combined teachings of
12 *Volpe* and *Piccoli*. If we could go to slide 99, please.

13 Those remaining grounds, 3 to 7, are not separately argued by Patent
14 Owner. And so those grounds satisfy all the features of the claimed
15 elements in the '995 patent and rise and fall with our other arguments. If we
16 could go now, let's turn to the 1395 petition and slide 112.

17 So, in the 1395 petition, we have three grounds. We have the *Bitelli*
18 reference in combination with *Feliz*. And as I mentioned earlier, the *Bitelli*
19 reference discloses a milling machine that has a pivoting actuator. It lacks a
20 turning actuator to turn the wheel. That's why we rely on *Feliz*, and a person
21 of ordinary skill in the art would have used *Feliz*'s rotary actuator in order to
22 provide turning of that wheel. Again, with ground 2 --

23 JUDGE MAYBERRY: Excuse me, Counsel.

24 MR. PHERO: -- we bring in *Skotnikov*. Yes?

1 JUDGE MAYBERRY: This is Judge Mayberry. I'm sorry to interrupt you,
2 but I hadn't realized you were going to pivot to the other proceedings so
3 quickly. I did have a question about claim 30, and I apologize if you talked
4 about it and I missed it, but specifically your slides 88 and 89. And I'm most
5 interested in Mr. Orr's testimony at paragraph 191. And it's on the next
6 slide, on 89, and you have it actually highlighted in yellow. And could you
7 direct me to the support or what basis Mr. Orr has for making this statement?

8 MR. PHERO: Certainly. So, Mr. Orr is endowed with all of the knowledge
9 of a person of ordinary skill in the art, and he's relying on what he would
10 have known and understood. Connecting the pivoting actuator to the swing
11 arm is something that's well within the knowledge of a person of ordinary
12 skill. And if we look, for example, this is acknowledged by Dr. Klopp on --
13 if we go to slide 129, please. We'll come back to slide 89 in just a minute.
14 A person of ordinary skill would have understood that the pivoting actuator
15 can be connected with a clevis and a pin. So, looking at the '995 patent,
16 that's what's utilized the clevis and a pin, which is a well known connection
17 method from the '995 patent. It's something that's also in *Dubay*.

18 So, if we go back to slide 82, please. You can see in *Dubay*, again,
19 this is a prior art reference that a person of ordinary skill in the art would
20 have known and relied upon, has the same pin and clevis joint with actuator
21 20B -- well, it's actuator 20. And as it's connected there at 1024, there's the
22 same pin and clevis connecting the actuator from the frame to the swing
23 arm.

24 So going back to Mr. Orr's testimony on slide 89, Mr. Orr makes it
25 clear that he is relying upon the knowledge of a person of ordinary skill in

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1 the art. A person of ordinary skill in the art would have easily been able to
2 make this combination to apply a shift cylinder, and could have used
3 something like a, clevis and pin that's disclosed in *Dubay*, and that's on the
4 right side. Simply move *Volpe*'s lifting column between the projecting and
5 retracting positions, a person of ordinary skill in the art would have
6 understood that the *Piccoli* shift cylinder does not need to be connected to a
7 lifting column, as demonstrated by other state-of-the-art references, such as
8 *Dubay*. So, Mr. Orr cites *Dubay* and relies on what's known in the art in
9 order to make that connection.

10 JUDGE MAYBERRY: Okay. All right. Thank you.

11 MR. PHERO: Do you have any further questions on the 1394 before I
12 proceed to the 1395?

13 JUDGE MAYBERRY: No, I don't. Thanks.

14 MR. PHERO: So, if we could then go back to slide 112, please. Again, just
15 as an overview of our grounds here, we have the *Bitelli* reference, which is a
16 milling machine that uses an actuator to pivot the wheel from a projecting to
17 a retracted position. And we rely on *Feliz* as a rotary actuator to turn a
18 lifting column. We rely on ground 2, again, on *Skotnikov*. So, for the claims
19 that add in controller and the other claims that rely on sensors. And then
20 finally in ground 3, we have *McColl*, which discloses *Ackerman*'s steering.
21 Go please to slide 114.

22 We'll cover these elements briefly, but *Bitelli* shows a machine frame.
23 I don't think that's in dispute. If we go to slide 115, *Bitelli* also shows that
24 this is a support device. Now, Caterpillar disputes that the petition
25 established a support device, but Caterpillar does not dispute that *Bitelli*

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1 discloses the swing arm and the lifting column. They just dispute that the
2 support device is not showing that element.

3 As with the 1394 petition, our 1395 petition laid out the swing arm
4 that's been identified here in yellow, and the lifting column that's identified
5 in purple in annotated figure 4 from Exhibit 1011. Looking at the right-
6 handed annotation, we see the ground engaging unit and it's able to pivot
7 between the projecting and retracting positions. 116, please.

8 Now looking at the first actuator, the *Bitelli* reference shows that first
9 actuator connected from the frame to the right linkage, linkage 11, of that
10 support device in order to move it between projecting and retracted
11 positions. We just talked about the pin and clevis joint. That's also shown
12 here in *Bitelli*, where we have the little portion 18 that comes off of link 11
13 and that has a pin joint to the first actuator, and that's what allows it to move
14 from the projecting position to the retracting position as that actuator extends
15 and retracts.

16 If we go to slide 117, please. Looking at the second actuator, *Bitelli*
17 doesn't disclose the section actuator. That teaching comes from the *Feliz*
18 reference. *Feliz* discloses a rotary actuator that's used to rotate an inner tube
19 of a lifting column to turn that wheel. You can see the lifting column is
20 identified through our annotations of figure 4 of *Feliz*. And the rotary
21 actuator is the steer motor we've identified in figure 3 of *Feliz*. Going to
22 slide 118, please.

23 Now, *Feliz* is positioned as rotary actuator at the upper portion of the
24 lifting column. And that's what's taught to a person of ordinary skill in the
25 art and that's how it's applied in the combination with *Bitelli*. So, we have a

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1 rotary actuator. It's positioned at an upper portion of the lifting column as
2 taught by *Feliz*, and it's able to turn the inner tube of that lifting column as is
3 explained in our petition at page 35.

4 Going to slide 119, please. Our materials also showed, much like
5 with the other references in the 1394 petition, where we have *Volpe* and
6 *Piccoli*, a person of ordinary skill in the art here also would have been
7 motivated to combine *Bitelli* and *Feliz* to achieve that turning functionality,
8 especially when the right rear wheel is positioned in the retracted position.
9 That motivation comes from the references themselves. And -- I'm sorry, it
10 comes from the prior art itself, and we'll get into that in just a minute. Going
11 to slide 120, please.

12 Now, both *Bitelli* and *Feliz* disclose large machines that utilize lifting
13 columns. *Bitelli* has lifting columns on a milling machine. *Feliz* has
14 another large machine that utilizes lifting columns. And *Feliz* shows
15 rotation of that wheel. This is not a point disputed by Caterpillar. There's
16 no dispute at all that *Feliz* discloses rotating an inner tube of a lifting
17 column. Slide 123, please. But let's go to Caterpillar's arguments starting
18 with claim 18.2 against the support device.

19 Next slide please, slide 124. Caterpillar claims again that our petition
20 in the 1395 proceeding didn't establish a support device that includes a
21 lifting column. You can see here from our annotation of figure 4 from
22 *Bitelli* and in our discussion on our petition that the support device is shown
23 as annotated as a swing arm and lifting column. And both of those things
24 are shown within the bracket we've identified as support device. It includes
25 both things. And, again, this is much more detailed than what was shown in

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1 the '995 patent with respect to support device. You could go to Slide 125,
2 please. 126, please.

3 Again, it's a very similar argument with respect to 1394 petition, but
4 Petitioner's arguments with respect -- or, I'm sorry, Caterpillar's arguments
5 with respect to the support device in 18.2 and I'm not being shown the
6 petition clearly fail. Go to slide 128, please.

7 Now, Caterpillar also argues that the petition never shows the
8 hydraulic cylinder is connected to a support device. So, this is a similar
9 argument that we just discussed with respect to claim 30 of the 1394
10 petition. But here, *Bitelli* makes it very clear that the first hydraulic cylinder
11 and it is connected to the system, uses a movable stem 16B fixed to a
12 bracket 18 belonging to a first arm 11. This is the portion that we cite to in
13 our petition, and we show it through annotated figures as well. And these
14 annotations are reproduced on slide 128. On the right side, those are figures
15 3 and 5 from *Bitelli*. Go to slide 129, please.

16 Now, with respect to element 18.3 and this is -- we showed in our
17 Petitioner Reply as well as in our petition how a person of ordinary skill in
18 the art would have connected that first actuator and swing arm that's
19 disclosed in the patent.

20 Now, the '995 patent shows that an end of the first actuator is
21 connected by an unlabeled pin and clevis. Dr. Klopp clarified what that is,
22 and that is a known feature to engineers looking to connect actuators.
23 Again, a person of ordinary skill in the art would have used a pin and a
24 clevis to make such a connection. So, slide 129, please.

1 Again, Caterpillar's argument with respect to the petition not showing
2 the first actuator also fails. Now, substantively, there's no dispute as to what
3 is disclosed in *Bitelli* '088. It's simply that the petition failed to show it.
4 Caterpillar continues that line of arguments with the petition failed to show
5 why a person of ordinary skill in the art would have combined the *Feliz*
6 rotary actuator with *Bitelli*. That argument also fails. Go to slide 133,
7 please.

8 So, again, we discussed this earlier with respect to the 1394 petition.
9 But the prior art establishes that wheel scraping was a known problem with
10 milling machines having a wheel that moves into a retracted position. When
11 that wheel is in the retracted position, it scrapes the ground during a turn.
12 That is not something a person of ordinary skill in the art would want. A
13 person of ordinary skill in the art would have looked to add a turning
14 capability. That's why a person of ordinary skill in the art would have
15 looked at *Feliz*. Go to 135, please.

16 Now, wheel scraping was a known problem. We've just discussed
17 that in the prior art. Dr. Klopp also contradicted Caterpillar's arguments by
18 admitting several different reasons why a person of ordinary skill in the art
19 would, in fact, have sought to steal -- steer a retracted non-coaxial rear
20 wheel. He's indicated there could be any number of reasons: maximum grip
21 in a turn, tire life, a number of other things. But the point is a person of
22 ordinary skill in the art would not have wanted that wheel to scrape when it's
23 in that retracted position, it would have looked at turning functionality. Let's
24 go to the next slide, please, slide 136.

1 Now, when we look at why a person of ordinary skill in the art would
2 abuse *Feliz* and why it would have kept the rotary actuator at the upper
3 portion of the lifting column, well, that's because that's what *Feliz* teaches.
4 *Feliz* teaches to have the rotary actuator at the upper portion of the lifting
5 column. So, in integrating those teachings of *Feliz* with the teachings of
6 *Bitelli*, that's exactly what a person of ordinary skill would look to do. They
7 would have added the teachings of the rotary actuator and turned that
8 interior portion with respect to the attitude of the lifting column. Slide 137,
9 please.

10 Now, Caterpillar continues with their argument that all of the features
11 from steering motor and the shafts and all these different things would have
12 made it untenable for a person of ordinary skill in the art to combine the
13 steering motor of *Feliz* into the lifting column of the *Bitelli* reference. But
14 again, a person of ordinary skill in the art would have known what's in the
15 art. They would have known how to take that steer motor and apply it
16 directly on top of the lifting column, as is required in some of the claim
17 elements. If we go to slide 138. It's worth noting that there is another
18 reference with a lifting column that, in fact, has a very similar teaching. It
19 has a rotary actuator on a lifting column that moves between different
20 positions, and it turns the interior portion of that lifting column.

21 A person of ordinary skill in the art would have been well aware of
22 the *Titford* reference, and would have been motivated to use similar
23 functionality from, as is taught by *Feliz*, and implementing it in the *Bitelli*
24 combination. If we go to the next slide.139, please.

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1 State-of-the-art evidence has been utilized in a number of different
2 Board proceedings. We cite one here, *GOMACO Corp. v. Guntert and*
3 *Zimmerman Co.*, and IPR2020-01698. Again, this is something that's
4 regularly done. This is a predictable technology. And a person of ordinary
5 skill in the art would have looked to the evidence of the prior art in making
6 the combination and combining the elements. Slide 140 please.

7 We've covered this, but, again, Mr. Orr testified both in the petition
8 and in support of our Petitioner's Reply deck, that a person of ordinary skill
9 in the art would have -- it would have been within the level of ordinary skill
10 to take the steer motor of *Feliz* and apply it at an upper portion of a lifting
11 column and *Bitelli* in order to disclose the claim elements. Now, that's
12 not -- the upper portion of the lifting column, again, is not a requirement
13 that's in claim 18. We find that in claim 1 and some of the other dependent
14 claims. Go to slide 141, please.

15 So just as we had the *Dubay* reference and the *Busley* reference
16 explaining how person of ordinary skill in the art would have interpreted the
17 teachings of our asserted grounds, likewise here a person of ordinary skill in
18 the art would have look to the prior art and implementing the fine teachings
19 of *Bitelli* and *Feliz*. Slide 142, please. Now, looking to Caterpillar's
20 argument, they dispute that a person of ordinary skill in the art would have
21 taken the teachings of *Feliz* and applied them in a way to achieve the claim
22 elements. Mr. Orr directly refutes that in response to Petitioner's Reply and
23 Mr. Orr's testimony is not rebutted. Patent Owner chose again not to cross
24 examine Mr. Orr, and he explained that a person of ordinary skill in the art is
25 simply taking the teachings from *Feliz* as they're in *Feliz*, its location is at

1 the top of a lifting column, and moved it onto the top of the lifting column of
2 *Bitelli*. That combination would have been straightforward for a person of
3 ordinary skill in the art and well within their skill. That teaching, again,
4 comes from *Titford*. We go to slide 143, please.

5 Now, Patent Owner does identify a slight lack of clarity with the
6 *Bitelli* reference. There are two plate 13s. There's a plate 13 that's
7 connected to the linkages and that are responsible for rotating the wheel and
8 lifting column from the projecting and retracted positions. Then there's
9 another plate 13 that's described in figure 1. And that plate 13 is connected
10 to the bottom of the inner tube of the lifting column and to the wheel.
11 While, there's a slight inconsistency here, it's not difficult for a person of
12 ordinary skill in the art to properly interpret what's being disclosed in *Bitelli*,
13 and Mr. Orr provided that testimony in support of our Petitioner Reply.
14 Once the Patent Owner identified that discrepancy, we addressed it
15 appropriately. And there's nothing in the *Bitelli* reference that indicates the
16 inner tube of the lifting column is keyed to the outer tube of the lifting
17 column. Go to slide -- you could go to slide 148, please.

18 Now, Petitioner -- I'm sorry, Patent Owner made an argument in their
19 reply that the inner tube of the lifting column of *Bitelli*'s keyed to the outer
20 tube of the lifting column and in *Bitelli*.

21 There is no disclosure of that in the *Bitelli* reference, and there's no
22 testimony -- expert testimony from Caterpillar to further clarify that. Again,
23 we simply have it looks to be an angular feature not described. We don't
24 know what it is. And that alleged key way is not shown. For example, go
25 back to slide 147. There's no key way shown in figure 2 of *Bitelli* or any of

1 the other figures that would indicate that they are, in fact, keyed together.
2 Patent owner chose not to depose Mr. Orr on his testimony with respect to
3 the plate 13 and the only testimony that -- in evidence that remains with
4 respect to how the rear wheel of *Bitelli's* jack works is Mr. Orr. If we go
5 now to slide 158, please.

6 Caterpillar provides another argument with respect to claims 1, 36 and
7 45 that we haven't shown that the alleged second actuator meets this same
8 rotational direction limitation that's recited in these claims. So, I'd like to
9 clarify that and just to explain that what claim 1 requires is that the second
10 actuator maintain the same rotational direction of said at least one ground
11 engaging unit in each of said projecting and retracted positions.

12 Now, what this limitation does not mean is that the second actuator
13 maintain that rotational direction while turning between each of the
14 projecting and retracted positions. It doesn't say that. If Caterpillar wanted
15 the claim to require that the second actuator is doing that maintaining during
16 the movement, it should have claimed it that way. So, what is actually
17 claimed is that the second actuator maintains the rotational direction when in
18 either of those positions.

19 So, for example, if the *Bitelli* machine is driven straight ahead, that is
20 let's say zero degrees rotation. And then using the rotation of *Feliz*, we're
21 now at five degrees for a turn. The rotational direction is maintained and
22 then it's moved back by the second actuator into zero degrees of rotation.
23 Now the right rear wheel is pivoted into the retracted position. And again,
24 we can run through the same turning situation where we have zero degrees
25 straight ahead. And then the second actuator, as disclosed by *Feliz*, rotates a

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1 five-degree turn and then back again. We have here the second actuator is
2 maintaining the rotational directions in the different projecting and retracted
3 positions. That's all that required by the claim. And that's exactly what we
4 showed in our petition.

5 If there aren't any further questions with respect to the 1309 petition
6 specifically, I'd like to move into means plus function, but I'll pause for a
7 moment.

8 JUDGE MAYBERRY: All right, it doesn't look like it. And, Counsel, just
9 – you know, you have about 13 minutes of your primary argument time.

10 MR. PHERO: Thank you, Your Honor. So, if we could go now to slide 19.
11 So, the Board's rules, 37 CFR 42.104(b)(3), indicate that the petition should
12 identify the means-plus-function limitations when the claim to be construed
13 contains a means-plus-function limitation. Now, the *Costco Wholesale v.*
14 *Robert Bosch* case stands for the proposition that not all means-plus-function
15 elements actually have to be construed. So, we'll start there. And if we go
16 to slide 20.

17 JUDGE MAYBERRY: Excuse me, Counsel?

18 MR. PHERO: Yes, Your Honor.

19 JUDGE MAYBERRY: Oh, this Judge Mayberry, if I may ask a couple of
20 things about that *Costco Wholesale* case. First, I just want to understand
21 your understanding. If you believe that *Costco Wholesale* is binding on this
22 panel.

23 MR. PHERO: Oh, Your Honor, it was an Institution decision. I don't know
24 that it's binding on this panel, but I think it is informative.

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1 JUDGE MAYBERRY: All right. And it's more significant, and, again, you
2 have that highlighted passage at the end, your yellow highlighting stopping
3 abruptly before the little footnote 8. But footnote 8 says, "As a practical
4 matter, however, we note that a" -- sorry, I lost it. "As a practical matter,
5 however, we note that a petitioner who fails to offer a claim construction of
6 a potential means-plus-function limitation of a challenged claim may very
7 likely run the risk of failing to demonstrate a reasonable likelihood," because
8 we're talking Institution here, "of success on the merits for failing to address
9 adequately the patentability of the claim subject matter. That is a separate
10 issue."

11 So, but isn't that separate issue really what Patent Owner is talking
12 about, that you can't demonstrate the claim is unpatentable if you have not
13 construed the claim?

14 MR. PHERO: Yes, Your Honor, that is Patent Owner's argument as we
15 understand it. But that is not the case as we presented our arguments in our
16 petition. The primary thing to understand here is that while we did not set
17 out an analysis of the means-plus-function terms in the claim construction
18 section of our petition, specifically with respect to the 1395 petition, we do
19 attribute by way of reference to the dependent claim elements the particular
20 structure and function of the means-plus-function terms as required under
21 section 1206 and under the Board's rules. Our scenario is identical to that of
22 the Petitioner in *American National Manufacturing*. There, the Board found
23 Petitioner's analysis sufficient to analyze the means-plus-function claim
24 elements.

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1 Now there's another Institution decision which, again, is not a final
2 written decision, but there's another Institution decision in the *Microchip*
3 case, *Microchip Technology v. HD Silicon Solutions*. So, let me just get into
4 the record first here. *American National Manufacturing v. Sleep Number*
5 *Corporation*, that was IPR2019-00500. We cited this in our reply, but I just
6 wanted to read that into the record. But we have it. And then the second
7 one is *Microchip Technology Inc. v. HD Silicon Solutions*, IPR2021-01089.
8 Both of those cases are Board precedent, and both of them support our
9 position that we have adequately identified sufficient structure in our
10 petitions in order for the Board to be able to conduct their analysis with
11 respect to the means-plus-function claim elements. I'll start --

12 JUDGE MAYBERRY: Excuse me, Counsel. When you said "Board
13 precedent," it's not -- you would agree it's not binding precedent?

14 MR. PHERO: Yes, your Honor.

15 JUDGE MAYBERRY: And I guess I'm a little concerned in your reference
16 to *Microchip Technology*, because when I look at the analysis in that case,
17 the -- and specifically at petition 24-25, that's paper 1 of the -- in the
18 IPR2021-01089 proceeding, the Petitioner did do a rigorous functional
19 analysis where they identified the function and corresponding structure. The
20 only difference is they did it within their presentation of the limitation, not in
21 the claim construction section. So that seems to be what, you know, was
22 pointed to in that case, in the ultimate Institution decision.

23 Then in *American National*, I'm not quite sure about it, at least in that
24 case, it appears that the panel there thought significant that there was an

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1 actual reference 6.3, which then the panel attributed as providing a function
2 and structure analysis in real (phonetic).

3 And could you point me to where in your petition you do this type of
4 cross-referencing that we could kind of piece together your analysis?

5 MR. PHERO: Certainly. So, if we go to slide 21, please. So, just kind of
6 give some context here. So, in our Petitioner Reply we tried to show the
7 mapping, and I can give you a cite for the petition in just a second here. But
8 the mapping comes from our treatment of the dependent claims. So, all of
9 the means-plus-function terms were addressed either explicitly or in the
10 context of dependent claim features. If we're looking at the 1394 petition,
11 there was an explicit construction of means-plus-function terms. Really
12 what we're talking about is the controller means and the controller means in
13 both the 1394 and the 1395 petitions, the disclosure of the controller means
14 comes from dependent claim 60. Now, it's on slide 22, please.

15 So, again, claim 45 is a controller means for coordinating the
16 actuation of said first and second actuator means. Claim 60 provides the
17 structure and says. "Wherein said controller means includes a programmable
18 logic device connected to a memory device." We show where that feature is
19 shown in the prior art, and it's not disputed by Patent Owner that an alternate
20 construction would, render the claim feature patentable. Instead, it's simply,
21 well, the petition doesn't identify it. Your analysis should end there. And
22 we strongly disagree with that characterization, Your Honor. This is a claim
23 that the features are shown clearly in the prior art, and the rules are satisfied
24 by our petition and by our treatment of the dependent claims.

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1 JUDGE MAYBERRY: Excuse me, Counsel. Judge Mayberry again. If I
2 understand your position, it's that for your analysis in claim 45, which has a
3 means-plus-function term, your analysis of claim 60 shows the structure
4 that's disclosed in the patent to satisfy the function of the controller means
5 recitation in claim 45. And because Patent Owner doesn't dispute the merits
6 of claim 60, you've satisfied the requirement, but didn't Patent Owner
7 dispute the merits of claim 25, saying that you did not meet your
8 requirements?

9 MR. PHERO: They disputed that we did not meet our requirements. They
10 did not dispute that the controller means as shown in the *Skotnikov*
11 reference. So granted, it is Petitioner's burden, but Petitioner has shown
12 what the structure is in claim 60 for that controller means in claim 45. That's
13 enough to satisfy the Board's rules on this point and enough in order to
14 conduct the analysis.

15 JUDGE MAYBERRY: Excuse me. I'm sorry to interrupt you, but haven't
16 you now provided a burden shift of production anyway? You are forcing
17 Patent Owner to produce arguments and evidence directed to a dependent
18 claim, which otherwise, if they can demonstrate that you did not meet your
19 burden as to the independent claim, the dependent claim has been just
20 proved patentable for the reason that you have not proven the independent
21 claim unpatentable. So, it seems to me your approach here is providing a
22 burden of production on the Patent Owner, which I don't really read into the
23 law or our rules. How would you respond to that?

24 MR. PHERO: Your Honor, I don't think we're shifting the burden of
25 production here on the Patent Owner, but what we're doing is with means

1 plus function, there's the risk of a lack of clarity. If the petition doesn't
2 identify what the structure and the function is, there's the risk of ambiguity
3 or the Patent Owner might not know how to respond to those substantive
4 arguments. Here, there's no ambiguity. It's controller means for
5 coordinating the actuation of said first and second actuatable means. That is
6 disclosed further and clarified further in claim 60 and in claim 60 we show
7 exactly what that is. Patent Owner hasn't said it's unclear what a controller
8 means could possibly be in the prior art. Again, it's our burden, not theirs.
9 But we showed what the controller means is in the prior art in claim 45 and
10 in claim 60. There's no ambiguity as to what a controller means with respect
11 to claim 45 of the '995 patent.

12 So, it's not a burden shift. It's simply an understanding of how do we
13 avoid the risk of ambiguity with respect to a means-plus-function claim
14 term? Here there is no ambiguity.

15 JUDGE MAYBERRY: All right. Thank you, Counsel. I will let you know
16 you've got about a minute and a half until you start getting into your rebuttal
17 time.

18 MR. PHERO: Thank you, Your Honor. I think with respect to the means
19 plus function claim terms, again, controller means is informative. We have a
20 number of other means functions -- means-plus-function claim elements that
21 we've addressed in our papers. And I think all the means-plus-function
22 claim terms rise and fall together. Petitioner has established in the petitions
23 that there's enough in order to conduct the requisite analysis. Obviously,
24 Patent Owner disputes that, but our papers are clear on that point.

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1 One additional point with respect to the alternative construction. So,
2 if we look to slide 543. Caterpillar claims that we can't prove claim 45 was
3 obvious in the 1394 petition because we provided a claim construction that
4 didn't apply it. We disagree with that, Your Honor.

5 We did provide a claim construction for what we thought the second
6 actuatable means should be. We said it should be construed to be a second
7 actuator -- I'm sorry, a rotary actuator positioned at an upper portion of the
8 lifting column. That would have made claim 45 scope commensurate with
9 claim 1. That was something that was not adopted by the District Court, and
10 it was something that we foresaw perhaps might not be adopted by the
11 District Court. So that's why we provided this alternative construction. To
12 the extent that the second actuator was not so limited as to require a rotary
13 actuator position to the top portion of a lifting column, that's why we
14 provided the analysis of claim 45 in the 1394 petition.

15 We think our analysis is thorough and all that is needed for a person
16 of ordinary skill in the art to agree that the features are disclosed in *Bitelli* --
17 I'm sorry, in the *Volpe* reference and in Piccoli, and claim 45 again requires
18 the use of *Skotnikov* for the controller. But the claimed elements would have
19 been obvious over the applied art.

20 So, if there's no further questions, I'll reserve the remainder of my
21 time.

22 JUDGE MAYBERRY: All right. Thank you, Counsel. You have 14
23 minutes for your rebuttal.

24 MR. PHERO: Thank you, Your Honor.

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1 JUDGE MAYBERRY: So, with that, we'll turn over to Patent Owner.
2 And Patent Owner, you have 90-1/2 minutes. Do you know how much you
3 would like to reserve for rebuttal?

4 MR. ARGENTI: I don't expect I will use all of my time, Your Honor, but I
5 will reserve, let's say, 10 minutes for surrebuttal.

6 JUDGE MAYBERRY: Excellent. Thank you.

7 MR. ARGENTI: Thank you, Your Honor. So similar to what I did when I
8 was addressing the 1395 case, I plan on going through a copy of my
9 demonstratives that I have here, and I'll let everybody refer to their own
10 copies of our demonstratives that you have available to them rather than put
11 them on the screen. The first set, I believe, is again Paper 24 for the 1394
12 case. Also, just to let you know, what I plan to do is go through all of the
13 issues for the 1394 case first before turning to the 1395.

14 So, looking at our demonstratives for the 1394 case, I will start at our
15 slide 4, which lists the grounds of challenge. And here I will just point out
16 that the disputed issues that I'm going to address center on grounds 1 and 2,
17 the first two lines there.

18 Turning to slide 5, the next slide, we see those deficiencies that I'll
19 address. One other thing I'll note is that in addition to the deficiencies that
20 we have listed here on slide 5, we also pointed out that Petitioner failed to
21 identify corresponding structure for dependent claims 61 and 62, which
22 contain means-plus-function limitations. And they didn't dispute that in
23 their reply.

24 So, even if the Board credits their arguments regarding supporting
25 structure for the other means plus function terms, and as we'll discuss, you

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1 should not, they failed to make a similar argument for those two dependent
2 claims. They're not in dispute.

3 So, now turning to slide 6 and the first issue, which goes to
4 Petitioner's allegations that *Volpe* discloses element 18.2. The claim element
5 requires a support device, including a lifting column. Petitioner says that
6 *Volpe* has a swing arm that serves as the recited support device. And below
7 that, Petitioner says that *Volpe* has a sliding support that was the recited
8 lifting column. There are two problems with these allegations. One,
9 Petitioner never alleges that *Volpe* has a swing arm that includes a lifting
10 column. That's what their mapping would require to satisfy the claim
11 language, and it's a prima facie deficiency in their challenge.

12 Two, Petitioner's attributing disclosure to *Volpe* that it doesn't actually
13 have. *Volpe* never says anything about a swing arm. Petitioner gets that
14 terminology from a different reference, *Dubay*. So, turning to slide 7, we
15 pointed out in our preliminary response that Petitioner can't supplement
16 *Volpe*'s disclosure with *Dubay* and the Board agreed in Institution. It's clear
17 that *Dubay* is talking about something other than the *Volpe* reference
18 because *Dubay* refers to a prospectus, whereas *Volpe* is an operator's
19 manual, and *Dubay* refers to a machine with a different model number than
20 *Volpe*. And there's no evidence in the record as to how similar or different
21 those machines might be. Turning to slide 8.

22 JUDGE MAYBERRY: Excuse me, Counsel?

23 MR. ARGENTI: Yes.

24 JUDGE MAYBERRY: Judge Mayberry. Do you have Petitioner's
25 demonstratives in front of you?

1 MR. ARGENTI: Your Honor. Yes.

2 JUDGE MAYBERRY: (Inaudible) and direct you, and specifically

3 61. Well, 61 and 62. There's really the same annotated figures.

4 MR. ARGENTI: Yes, Your Honor, I see them.

5 JUDGE MAYBERRY: And I'm trying to understand your argument
6 for independent claim 2. Are you saying that the petition did not adequately
7 indicate that the green and purple structures are what it was mapping to
8 claim element 18.2?

9 MR. ARGENTI: Yes, Your Honor, that's correct. That is our
10 position that we've raised here. What you look at in the figure is
11 identification of a lifting column, identification of a swing arm, and then the
12 support device bracket. It's not really clear what it's referring to. If you
13 look at the text, the text is referring to those components separately when
14 mapping the purported swing arm to the support device and then the lifting
15 column to the lifting column element. So that's one problem is that it's
16 unclear. And even if you're going to give them credit for that bracket
17 extending to both in the figure, I think there's a disconnect between that and
18 what they actually say in their words in the petition. So that's one problem.

19 And then the second problem is their characterization. You know,
20 Petitioner is the one that added the green highlighting to a collection of
21 components in *Volpe* and refers to them as a swing arm. *Volpe* doesn't use
22 that term, "swing arm". He never -- that's not something that you find in the
23 reference.

24 JUDGE MAYBERRY: But, Counsel, doesn't it work that way? Isn't
25 that what -- connected to the lifting column, that structure that we see in

1 green allows the operator to get out of the tab and pull the pin or perhaps
2 pull the pin and get out of the tab and move that structure from a retracted to
3 a projected position?

4 MR. ARGENTI: Well, that's a very interesting question, your Honor,
5 and to answer that, I would turn back to our demonstrative slide 8. Here, we
6 have selections of testimony from Petitioner's expert, Dr. Orr. And as you
7 see in the first quote, he testified that he was unable to determine which parts
8 of what he called the swing arm in Volpe actually moved. And again,
9 remember swing arm isn't a term that the reference even uses. So their
10 burden, their expert, he's saying, yeah, that's what we've highlighted in
11 green, but I can't really tell you which parts of it move.

12 JUDGE MAYBERRY: But some parts of it move. There's really no
13 question about that. Everybody can agree that some part of that green
14 structure moves.

15 MR. ARGENTI: But we don't know which parts. We don't know --
16 Volpe does say that the wheel moves from a projected to a retracted position,
17 so I'm willing to go that far. Beyond more in -- Volpe never even calls out
18 those green highlighted parts as a, you know, single component. At least as
19 far as we know, it doesn't refer to them as a swing arm. And then we have
20 their expert saying he can't tell which parts of it move or not. I mean, he
21 says it again and again that Volpe doesn't provide the necessary detail to
22 really explain how it works or what its components are. We see that again in
23 the rest of the quotes on slide 8 where he was unable to answer questions
24 about how the machine in Volpe works.

1 I want to point out that Petitioner argues in their briefing that Dr. Orr
2 qualifies as a POSA under the level of ordinary skill definition, but that's not
3 where the analysis needs to end, because we showed that he didn't achieve
4 those qualifications until years after the invention date here. So, he has no
5 firsthand knowledge about the state of the art at the relevant time, including
6 what *Volpe* describes, the machine that's in *Volpe*. And here, we see him in
7 slide 8 repeatedly admitting that *Volpe* doesn't give him enough information
8 to tell him how it works. So, I think that raises the question, where did that
9 understanding come from? He had to educate himself by reviewing the prior
10 art at issue in this case. He didn't know from his experience. I think he was
11 in high school at the time. But then when we asked him questions about the
12 main prior art reference in this case, he says, I can't tell you, there's not
13 enough detail there. So he raises a creditability issue about the weight to
14 give Mr. Orr's testimony. It's not about the admissibility.

15 Now, turning to our slide 9, Petitioner also raises an argument that
16 Caterpillar should be collaterally estopped from arguing *Volpe* doesn't
17 disclose element 18.2, but as we pointed out in our briefing and as you
18 raised in your questioning, they didn't perform a collateral estoppel analysis.
19 They didn't go through the necessary factors. And even if you look at just
20 the first factor, this argument fails. The claim limitation that is in dispute
21 here was not at issue in the earlier case, a support device including a lifting
22 column. So their arguments regarding element 18.2 should be rejected.

23 Now, turning to slide 10, Petitioner has also failed to show a reason to
24 modify *Volpe* to add *Piccoli*'s chip cylinder. As we see here, the petition
25 says that the reason to do so would be to improve speed and safety by

1 automating the process so that the operator doesn't have to get down off the
2 machine. But our expert, Dr. Klopp, explained that the operator would still
3 have to get off the machine, in fact, potentially more times than before the
4 modification to remove the locking wheel holding the pin in place. And he
5 also explained that that change would create unsafe operating conditions.

6 We see part of that testimony here and the rest is cited in our briefing.

7 Now, turning to slide 11, Petitioner then argued that the operator
8 wouldn't have to get off the machine because you could pull the locking pin
9 up from in the operator's seat. We heard that again today. But this is the
10 annotated figure for that argument at the top left of this slide. And they
11 conveniently left out that the part of that figure in *Volpe* showing that the
12 operator's seat is well above the pin location. And they also overlooked that
13 the operator still has to get down off the machine for the wheel swing
14 process because *Volpe* explains that you have to put a wooden block under
15 the drum. So their motivation argument doesn't make sense.

16 Turning to slide 12, after we pointed out the flaws in their first
17 motivation argument, they tried again with a collateral estoppel theory, but
18 again, they have not gone through the actual legal requirements for collateral
19 estoppel. And again, we see that the earlier case they rely on had
20 meaningful distinctions from their challenge here, including a different prior
21 art combination.

22 Now, turning to slide 13 and Petitioner's motivation to add *Piccoli's*
23 steering cylinder to *Volpe*, here Petitioner again fails to provide a viable
24 motivation to combine. First, they haven't shown that having *Volpe's* rear

1 wheels fixed in a forward-facing position were the problem, which is the
2 reason they say that you would have added steering.

3 And if we turn to slide 12, they have. in fact. overlooked in the
4 petition that *Volpe* uses a specific structure to keep both its wheel facing as
5 well as keep its wheel directly underneath the support. And that second
6 function is important. When they addressed this today during their
7 argument, they only addressed the first function of that sliding support,
8 which is to keep the wheel in a forward-facing direction. But the sliding
9 support is also there to keep the wheel aligned under its support and provide
10 stability. And this sliding support is the adjustable slide 1 in figure AH-9
11 that we see here on slide 14 is absent from the petition. The petition doesn't
12 say anything about that figure or that aspect of *Volpe*. But you can't keep it
13 if you change the rear wheel so that it can now steer. So you've created a
14 problem where the rear wheel is less stable because you have removed the
15 guide that keeps it under the support.

16 Now I'm going to move to slide 16 and skip one. So moving past the
17 independent claim to dependent claim 30, which requires a linear actuator
18 connected to the swing arm, Petitioner has no support for this in the prior art.
19 They admit *Piccoli*'s actuator is connected to the lifting column, not the
20 swing arm. And they don't cite to any prior art that's part of the ground that
21 would satisfy this claim requirement. So it is a missing limitation, as they
22 concede. To get around this, they argue that a POSA would have had reason
23 to move the connection point from the lifting column to the swing arm. But
24 as we pointed out in our Patent Owner response, that ignores the reason that
25 *Piccoli* uses the lifting column connection, which is to benefit steering.

1 Turning to slide 17, Petitioner now argues that it's only relying on the
2 actuator from *Piccoli* for its ability to move the lifting column, not for its
3 impact on steering. And they say those are two distinct purposes in *Piccoli*.
4 But that is at odds with the reference. *Piccoli* doesn't make a distinction
5 between those two different functions. The whole reason *Piccoli* moves its
6 lifting column is to benefit steering by getting a tighter turning radius. So
7 Petitioner can't separate one function from the other. But more importantly,
8 Petitioner's challenge to claim 30 should be rejected because the claim
9 limitation just isn't found anywhere in *Volpe* or *Piccoli*.

10 Now turning to slide 18 and the means-plus-function limitations in
11 ground 2. As we see here on slide 18, there are a number of these means-
12 plus-function terms at issue. As the Institution decision notes, the petition
13 provides a construction for three of the four means-plus-function limitations
14 in independent claim 45 and for none of the additional means-plus-function
15 limitations found in the dependent claims that are listed here on this slide.

16 Turning to slide 19, Petitioner has two key obligations when it comes
17 to the challenged claims containing means-plus-function limitations. First,
18 rule 104(b) says that where a challenged claim may be construed under 112-
19 6, the Petitioner has to provide a construction that identifies the claimed
20 function and the corresponding structure in the specification. And second, to
21 show obviousness of a claim with a means-plus-function limitation, you
22 have to prove that the corresponding structure was present in the prior art. If
23 you haven't identified corresponding structure in the specification, you
24 necessarily cannot show where that corresponding structure is in the prior
25 art. The petition fails on both of these points.

1 JUDGE MAYBERRY: Excuse me, Counsel.

2 MR. ARGENTI: Yes.

3 JUDGE MAYBERRY: This is Judge Mayberry. Looking at those
4 two points, let's take the first one off the table. You would agree that the
5 Board can waive their rules, so whether the rule applies rigorously or not,
6 let's forget that right now. Let's go ahead and waive it just between you and
7 me right now.

8 MR. ARGENTI: I'm willing to play along with the hypothetical,
9 Your Honor, without conceding that it would be appropriate to waive the
10 rules here.

11 JUDGE MAYBERRY: Okay. So looking at *Fresenius*, didn't
12 Petitioner do exactly what it states? Didn't Petitioner identify corresponding
13 structure present in the prior art that then satisfies the limitation? So, if we
14 went through all of their analyses of all of the means-plus-function
15 limitations and look at the structure they identify and then turn to the
16 challenged patent, those would be the same or at least equivalent structures
17 to what is disclosed in the patent. So, haven't they done their job?

18 MR. ARGENTI: No, they certainly haven't, Your Honor. If you look
19 at *Fresenius*, even just this quote that we have on this slide, it says that the
20 challenger must prove that the corresponding structure or an equivalent was
21 present in the prior art. That corresponding structure is the structure that has
22 been identified as part of the claim construction process. Whether it's an
23 explicit claim construction under a heading that names claim construction or
24 whether it's part of the invalidity analysis, there needs to be a discussion of
25 the function recited in the claim, the corresponding structure in the

1 specification, and then a showing of where the corresponding structure from
2 the specification is found in the prior art. You can't jump directly to the
3 prior art and say, well, that's corresponding structure. You need to go
4 through the steps of identifying the claimed function, the corresponding
5 structure in the specification, and then where that corresponding structure is
6 found in the prior art, and they've failed to do that here.

7 So, turning to slide 20, if we look at the first means-plus-function
8 element at issue, independent claim 45 recites a second actuatable means for
9 rotating the ground engaging unit. As we see here on this slide, the petition
10 said that this term should be construed under 112-6, and provided a
11 construction to that end requiring a rotary actuator. But when you get to the
12 claim 45 analysis in the ground, they have a footnote at page 45 of the
13 petition acknowledging that they do not apply their construction for this
14 term. So there's a clear disconnect between the construction they advanced
15 and the ground of challenge. And as the Board observed in the Institution
16 decision, *Piccoli* doesn't satisfy the construction in the petition, rendering
17 the challenge to claim 45 and its dependents fatally flawed.

18 Now, Petitioner argued that the footnote from page 45 of the petition
19 provides an alternative construction. But we can see here that that's not true.
20 It doesn't satisfy any of the requirements of 112-6 for identifying claimed
21 function or corresponding structure. The Petitioner basically said that they
22 are not applying their own construction. And saying that they're not
23 applying their own construction is not providing an alternative § 112, ¶ 6
24 construction.

25 JUDGE MAYBERRY: Excuse me, Counsel.

1 MR. ARGENTI: Yes.

2 JUDGE MAYBERRY: Judge Mayberry again. How does the
3 District Court's construction impact our analysis going forward? Our rules
4 say that we need to at least consider a District Court construction that has
5 been put in the record. And as I understand, the District Court has construed
6 the second actuatable means to encompass either rotary actuator or linear
7 actuator. And you've got a linear actuator in the analysis here. So what are
8 we to do with that?

9 MR. ARGENTI: I believe that for that particular term that the District
10 Court gave reach, Petitioner is not relying on that construction and saying
11 that they are adopting that construction going forward. Their position is that
12 they are relying on the purported alternative construction from this footnote.
13 And as we've just discussed, there is no alternative construction. So I don't
14 think that the Board needs to reach or apply the District Court's construction
15 because that's not what Petitioner is asking the Board to do.

16 And then I'll point out that as to these other means-plus-function
17 terms that I'm going to address where Petitioner didn't address -- provide
18 any claim construction at all, they're also not part of the District Court claim
19 construction order. So, there are numerous deficiencies, numerous claim
20 elements that aren't analyzed by Petitioner that the District Court
21 construction doesn't impact at all.

22 JUDGE MAYBERRY: Great, thank you.

23 MR. ARGENTI: Now I'll turn to slide 21 where Petitioner argues
24 that they satisfied the 112-6 requirements when addressing certain dependent
25 claims. They say that the discussion of those dependent claims addresses

1 narrowing limitations that provide corresponding structure, but that's not the
2 case.

3 First, the dependent claim analysis Petitioner points to doesn't even
4 mention the means-plus-function limitations. In fact, as we see here on this
5 slide, Petitioner specifically removed the word "means" from those
6 discussions, replacing it with brackets. They were treating those claims
7 exactly the same as the claims that don't recite means limitations.

8 Second, the dependent claim analysis contains no reference to the
9 specification, so it can't be viewed as identifying supporting structure in the
10 specification.

11 Third, there's no reference to those dependent claims in the
12 Petitioner's discussion of the claims containing the means-plus-function
13 limitations, including independent claim 45. The Petitioner never says it's
14 relying on the dependent claims to identify the corresponding structure. For
15 example, the claim 45 discussion of a controller means never refers to
16 dependent claim 60, which Petitioner now tries to rely on for corresponding
17 structure. And if we look at the claim 60 discussion at the bottom right here,
18 it removes the word "means" from the claim.

19 Moreover, they then go on to allege *Skotnikov* discloses a
20 programmable logic device to satisfy claim 60. But then if you look at claim
21 45, they never mention anything about a programmable logic device. So, if
22 that is the corresponding structure, claim 45 doesn't even allege that that
23 structure is found in the prior art.

24 And I'll also point out I think we heard Counsel for Petitioner say that
25 when pointing to this claim 45 and claim 60 issue, they argue that there's no

1 ambiguity in view of this, no ambiguity with respect to what the controller
2 means is in claim 45. But I will point out that claim 60 doesn't say that the
3 controller means, or the controller brackets, as they presented on the slide, it
4 doesn't say that the controller means is a programmable logic device. It says
5 that the controller means includes a programmable logic device.

6 So, even if you're taking their arguments at face value and accepting
7 everything that they say -- and there are so many reasons that you shouldn't
8 -- this still doesn't get them to arguing that the corresponding structure for a
9 controller for claim 45 is a programmable logic device.

10 Now I'll turn to slide 22 and claims 25 and 53, which fail for an
11 additional reason beyond the means-plus-function issue. Claim 45 requires
12 associating a rotary sensor with the second actuator and a linear sensor with
13 the first actuator. Petitioner says *Skotnikov* discloses that its sensor 155 is a
14 rotary sensor because it's configured to detect the angular position of a
15 rotary sensor -- sorry, of a rotary actuator. And then they say that if you're
16 using a sensor on a linear actuator, like a hydraulic cylinder, it would be a
17 linear sensor. We see that in both of the excerpts here. So, they say a rotary
18 sensor is something that detects the angular position of a rotary actuator, and
19 they say a linear sensor is something that detects linear displacement of a
20 linear actuator. But in their combination that they're mapping to the claims,
21 both actuators are linear actuators and they never explain where the rotary
22 sensor comes into play. Their mapping is inconsistent with their own
23 explanation about the difference between a rotary sensor and a linear sensor
24 and when it would have been obvious to use one versus the other.

1 Now turning to slide 23. Petitioner argues in reply that a rotary sensor
2 can be associated with a linear actuator, but you don't find that anywhere in
3 the petition. All they have in the petition is an assertion that you use a rotary
4 sensor for a rotary actuator and a linear sensor for a linear actuator, which
5 doesn't get them to the rotary sensor for the second actuator recited in the
6 claims.

7 Unless there are any questions about the 1394 case, I'll move on this
8 the 1395.

9 So, turning to the 1395 proceeding, I will again refer to our copy of
10 the demonstrative exhibits. And I believe, again, these are Paper 24 on the
11 docket for the 1395. I'll start by turning to our slide 3. And I'll point out
12 that in the 1395 case, the challenge to independent claim 18 suffers from two
13 missing elements. The Petitioner fails to explain where they're found in the
14 prior art. Those are highlighted in blue and red here, respectively. The first
15 is a requirement for a support device including a lifting column. Again,
16 that's 18.2 that we just discussed in 1394. And the second requirement is for
17 a first actuator connected to the support device.

18 Turning to slide 4 and independent claim 1, this challenge has the
19 same problem that I just mentioned regarding claim 18 plus one more
20 missing element that's highlighted in green here. Claim 1 requires that the
21 second actuator be adapted to maintain the same rotational direction of the
22 ground-engaging unit in each of the projecting and retracted positions.
23 Petitioner's combination fails to satisfy that limitation as well.

1 Turning to slide 5, we see the grounds of challenge. In this IPR,
2 we're dealing with the combination of *Bitelli* and *Feliz*. We have *Skotnikov*
3 again being added for ground 2.

4 Slide 6 summarizes the deficiencies that we've identified in our
5 papers. Rather than reading from this list, I'm just going to jump right into
6 them. I'll turn to slide 7, and again, element 18.2, where the petition fails to
7 show that the combination of *Bitelli* and *Feliz* discloses element 18.2, which
8 requires that the support device include a lifting column. As in the 1394
9 case, the petition treats these as straight elements and overlooks the
10 requirement that one include the other. You see that in the text of the
11 petition that we have here on the slide where it treats them as separate issues,
12 but it really becomes apparent in the annotated figure that we see here on the
13 slide where the swing arm is identified as the alleged support device and the
14 lift column is called out separately using a lifting color. The petition simply
15 makes no effort to address the actual claim language. And we heard
16 Petitioner's counsel looking at this same annotated figure assert that the
17 support device bracket extends to both. I think that's simply not a credible
18 reading of this figure. It's using the same color as it used for the swing arm
19 and it doesn't extend even halfway down to the lifting column.

20 Turning to the next slide, slide 8, and element 18.3 --

21 JUDGE MAYBERRY: Excuse me, Counsel.

22 MR. ARGENTI: Yes.

23 JUDGE MAYBERRY: This is Judge Mayberry. Before you move on
24 to that, I did want to make sure I wasn't missing a subtle aspect of your
25 argument. Are you -- is it Patent Owner's position that element 18.2

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1 requires some type of single structure? That multiple structures connected
2 together isn't good enough? Or are you just saying that the Petitioner failed
3 to demonstrate that these connected structures are together a support device?

4 MR. ARGENTI: I believe it's the latter, your Honor. We're not
5 arguing that the support device needs to be a single, unitary component, if I
6 take it that goes to your question. Although that does remind me I wanted to
7 to point out -- thank you, Your Honor -- we heard Wirtgen's counsel assert
8 both as to the 1394 and the 1395 that you find a more detailed description of
9 the support device in the prior art than you do in the '995 patent itself. And
10 they posted your review up on the screen and the arrow 40 and they said,
11 this is, you know, a vague assertion. They're ignoring the written
12 description of the '995 patent. The written description -- and I would refer
13 to column 4 line 51 -- there is explicit disclosure that the support device 40
14 includes a lifting column 46. And so there's clear disclosure for what's
15 claimed in our claims. It's a detailed description. And it's pointing to -- it's
16 identifying a different structure than what Petitioner relies on in their
17 petitions, in both petitions, as corresponding to the claimed support device.

18 Now turning to slide 8 and element 18.3, again, that requires a first
19 actuator connected to the support device. And here again, we have the
20 petition not explaining how they think the prior art satisfies the claim. As
21 we see here on the slide, they rely on *Bitelli's* hydraulic cylinder 16 as the
22 recited first actuator. And they rely on the arms highlighted in orange as the
23 claimed support device. We see that in the annotated figure from the
24 petition here on slide 8. But beyond identifying those components, the
25 petition never explains how they are connected or even asserts that they are.

1 While in the Institution decision, the Board found it sufficient to interpret
2 that figure as showing a connection via bracket 18, that's not an
3 understanding that's actually set forth anywhere in the petition. Not to
4 mention, when we get to claim 30, we'll see that Petitioner relies on that
5 bracket as part of the first actuator, unlike what they say here for claim 18.

6 Now turning to slide 9, beyond the failure to show that all claim
7 elements are found in the prior art, the petition also fails to provide a
8 reasoned explanation as to why a POSA would have modified *Bitelli's*
9 machine to use *Feliz's* rotary actuator. Petitioner argues that a POSA would
10 have done this to rotate the inner tube of *Bitelli's* lifting column, thereby
11 adding steering capability to the rear wheels. But as our expert, Dr. Klopp,
12 explained, this wouldn't work in *Bitelli*. *Bitelli* uses a four-bar linkage to
13 keep the wheels in the same orientation as it pivots between positions,
14 projected and retracted. That four-bar linkage is what Petitioner relies on as
15 mapping to the claimed support device. So they can't say this is something
16 that would be eliminated or overcome with the combination and the
17 modification. They need that four-bar linkage for their mapping, but the
18 very same four-bar linkage prevents steering in *Bitelli*.

19 Now turning to slide 10, we pointed out that the lifting column in the
20 wheel affixed to plate 13, which is part of the four-bar linkage used to
21 maintain the wheel orientation. Petitioner came back in reply arguing that
22 that's a typo in *Bitelli* and we heard that again today. And they say *Bitelli*
23 actually has two components labeled plate 13, which is not something that
24 they mentioned in the petition. We only heard about this typo for the first
25 time when we pointed out the problem with the challenge in their theory. In

1 any event, it doesn't help them. It doesn't change the fact that the four-bar
2 linkage maintains the wheel in the same direction in *Bitelli*, which means
3 that the inner tube of the lifting column is rotationally fixed to plate 13 here
4 in figure 3. That is accomplished through the interlocking groove and
5 projection annotated in red here on slide 10. The inner tube and outer tube
6 are both rotationally fixed to the plate, which is part of the four-bar linkage
7 that they rely on without modification. They failed to appreciate this when
8 devising their combination, but it undermines their reason to combine *Bitelli*
9 and *Feliz*.

10 Now, turning to slide 11. The second problem with the combination
11 of *Bitelli* and *Feliz* is that the reason *Feliz* puts its steering column -- sorry,
12 its steering mechanism at the top of its piston skirt wheel support doesn't
13 apply to *Bitelli*. In *Feliz*, the wheel support is located inside the frame of the
14 vehicle and uses a central motor located inside the frame to steer both
15 wheels. And the motor and the top of the wheel support are all fixed to the
16 frame. As Dr. Klopp explains, that makes the upper portion of the wheel
17 support the only reasonable location for the steering mechanism in *Feliz*.
18 And that's not the case in *Bitelli*, where the lifting column is outside the
19 frame and Petitioner's combination uses separate motors for each wheel.

20 We pointed this out and Petitioner doesn't dispute that *Feliz*'s reasons
21 for placing its steering mechanism in a particular location don't apply to
22 *Bitelli*. Instead, they responded that it would be the natural location for it.
23 That's the language they used. That it would be the natural location for a
24 steering mechanism in *Bitelli*. But despite that assertion, they were unable
25 to come up with a single example of such a natural location in the prior art.

1 When they're pointing to the *Titford* reference, which they fall back on after
2 we pointed out this issue with *Feliz*, they haven't pointed to anything in
3 *Titford* that says steering mechanism is at the top of a lifting column. All
4 they do is point to the fact that it's located somewhere adjacent to the wheel,
5 so it does not support their natural location theory.

6 Now, turning to slide 12 and claim 30. This claim requires that the
7 first actuator has a second end connected to the swing arm. And as I
8 mentioned when discussing 18, there's an inconsistency between their
9 mappings for independent claim 18 and dependent claim 30. For claim 30,
10 they argue that the first actuator in the flange 17 plus hydraulic cylinder 16
11 plus bracket 18, and those collective elements are directly connected to
12 swing arm 11, as we see here in their annotated figure. And that's different
13 than what they do for claim 18 where they point to hydraulic cylinder 16 on
14 its own as the first actuator. And while I explained in the petition they don't
15 say anything about the swing arm connection for claim 18, at best, it appears
16 that they rely on an indirect connection to bracket 18, which is not identified
17 as part of either the actuator or the swing arm. This just highlights the
18 failure to present their case with specificity, which limits our ability to
19 respond. Their challenge should be rejected as deficient and inconsistent.

20 Now, turning to slide 13 and ground 2, Petitioner's challenge here
21 raises two closely related issues, one with respect to motivation to combine
22 and another with respect to the sufficiency of the claim language -- sorry, the
23 claim mapping. I'm going to jump right into that second issue, the claim
24 mapping, and I'm going to move to slide 15. Each of independent claims 1,
25 36, and 45 require some form of the requirement to maintain the same

1 rotational direction of the ground engaging unit in each of the projected and
2 retracted positions. Dependent claims 21 and 22 add related requirements
3 but the controller coordinate the action of the first and second actuators,
4 including to maintain the rotational direction. The issue I already addressed
5 about *Bitelli*'s four-bar linkage maintaining the wheel's orientation also
6 creates a problem for Petitioner's mapping to these claims.

7 Turning to slide 16, the problem is that to the extent anything is
8 maintaining the rear wheel's orientation, it's that four-bar linkage in *Bitelli*.
9 And that's the case even if you add steering capability, because with *Bitelli*'s
10 arrangement, you don't need to steer the wheels to maintain their orientation
11 as they move from projected to retracted. The four-bar linkage takes care of
12 that. But that doesn't satisfy the claim because it's not the actuator in their
13 combination. But the only thing that steering would do would be to move
14 the wheels out of a consistent orientation, which doesn't satisfy the claim.
15 There's no dispute on this point. Petitioner admitted in their reply that
16 *Bitelli*'s linkage maintains the wheel's orientation. You see that in the
17 bottom excerpt here on slide 16. And they have never proposed changing
18 that in their combination.

19 So, turning to slide 17, faced with this problem, they came up with a
20 fallback argument, which is what we heard today. They argue in their reply
21 that the claim is satisfied by completing a turning maneuver in each of the
22 projected and retracted positions. Basically, they say when you straighten
23 the wheels out in the projected position, you are maintaining their
24 orientation relative to when you straighten the wheels out in the retracted
25 position. But that's not the theory that they laid out in the petition. And

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1 more importantly, it's not what's claimed. The claim says, maintain the
2 same rotational direction, not change the orientation and then change it back.
3 What they propose in their fallback argument is essentially the opposite of
4 what is claimed.

5 Nowm turning to slide 18 and the means-plus-function limitations.
6 Their analysis of these claim elements suffer from many of the same
7 problems that are already addressed for the 1394 case. But here, they have
8 an additional problem because they did not even propose 112-6
9 constructions for the support means, first actuable means, and second
10 actuable means terms in claim 45.

11 So, we'll go to slide 20. And as we see on slide 20, the petition
12 acknowledges that they have taken the position elsewhere that the means
13 terms of claim 45 should be construed under 112-6, but they say they don't
14 need to do that here because, in Petitioner's view, it's not necessary. That's
15 from petition 17. But it is necessary. It's required are by rule 104(b). It's
16 also required in order to prove obviousness under the Federal Circuit's
17 *Fresenius* decision among others. They can't just skip the required steps, as
18 the institution decision recognized.

19 Now, turning to slide 21 and their reply. As in the 1394 case, the
20 Petitioner argues that the petition identified corresponding structure in its
21 discussion of certain dependent claims, but that fails here for the same
22 reason that it does in 1394. There was no reference to those dependent
23 claims in claim 45. In the dependent claim analysis, it deliberately removed
24 the word "means" from the limitations being discussed. Plus, at no point,

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1 whether it's in claim 45 or any of the dependent claims, the Petitioner
2 referred to the specification to identify corresponding structure.

3 None of the cases that they've cited have said that this is an
4 acceptable approach. You don't find it in *ANM*. You don't find it in
5 *Microchip*. You don't find it in *Costco*. None of the cases that they cite
6 involve a circumstance like here where there's not only no reference
7 between the independent claim and the dependent that they're now relying
8 on, but also, no reference in either the independent or the dependent claim to
9 the specification. So the challenge to the means-plus-function claims should
10 be rejected. Thank you.

11 JUDGE MAYBERRY: All right. Thank you, Counsel. You've got
12 more than enough time left for rebuttal.

13 So with that, we'll turn back to Petitioner. And Petitioner, you have
14 14 minutes to respond to Patent Owner's reply.

15 MR. PHERO: Before I get started, it's brought to my attention in that
16 my video might not be broadcasting. Are you able to see me?

17 JUDGE MAYBERRY: No. I hear you loud and clear. We're unable
18 to see you, but --

19 MR. PHERO: Okay.

20 JUDGE MAYBERRY: -- if you want to work to quickly fix it, that
21 would be fine. Otherwise, I found that you adequately presented your
22 arguments just by hearing your voice and showing your slides. So, whatever
23 you feel you need to do to maintain your client's position.

24 MR. PHERO: Thank you, your Honor.

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1 MR. SLAY: If you're able to drop and then dial right back in, your
2 video will come back on. For some reason, it blocked out, but that should
3 fix the problem. I'm not sure if you can just dial the SIP that I gave you.

4 MR. PHERO: I'm afraid of what will happen if I drop and then try to
5 come back in, so I think maybe we'll just proceed.

6 MR. SLAY: Okay.

7 MR. PHERO: But again, I apologize that you're not seeing me. So,
8 with that, I will get going.

9 So I'd first like to address our expert, Mr. Orr. Mr. Orr has the
10 credentials of a person of ordinary skill in the art. There's no dispute.
11 Patent Owner's only dispute is when he acquired those credentials. There is
12 not a single case cited by Patent Owner that says a person of ordinary skill in
13 the art must have his credentials as of the time of the effective filing date.
14 There is no case.

15 If we go to slide 8, please. As was recently clarified in the *Kyocera*
16 decision -- this is *Kyocera Senco Industrial Tools, Inc. v. International*
17 *Trade Commission*, 22 F.4th 1399 [sic], in order to be qualified to offer
18 expert testimony, that person of ordinary skill in the art must possess those
19 credentials. Mr. Orr clearly does here. There's no dispute about that.
20 Patent Owner's only dispute is when he acquired those credentials.
21 However, Mr. Orr made it very clear during his cross-examination and in his
22 declarations that he was conducting his review from the perspective of a
23 person of ordinary skill in the art at the time of the invention.

24 If we could pull down the slides for just a quick second. I'd like to
25 turn now -- it seems the Board clearly understands the issue with respect to

1 element 18.2 of the support means. Again, I think our petition is very clear
2 with what we are calling the support means. It includes the feature that
3 connects the frame to the wheel that's in *Volpe*, the swing arm, and that
4 lifting column. *Volpe* doesn't have to call it a swing arm, but for good
5 measure, Caterpillar's own expert called it a swing arm.

6 We're not relying upon the *Dubay* reference to supplement anything
7 in *Volpe*, but it is worth noting that Caterpillar admitted in the oral hearing
8 for the 1201 proceeding that the machine that's disclosed in *Dubay* with
9 reference to *Volpe* is, in fact, the exact same machine that's described in the
10 *Volpe* reference. Caterpillar's arguments don't make a lot of sense here and
11 they continue to counteract arguments they've made in prior proceedings.

12 Going along the lines of motivation, I think with respect to 18.2,
13 again, the operator's not getting out of the machine to pull in. If we look at
14 PDF page 100 of the *Volpe* manual, there's a little bit of clarification here.
15 Let me get it pulled up for you. You can see the swing. You can see here
16 it's labeled D as the outer portion of the lifting column. And we can see --
17 I'll lightly it for us here -- this part is not moving up and down. I've
18 highlighted it there. That is exactly where the pin is going to go into that top
19 portion through the frame into that swing arm. That's what's going to pin it
20 to the frame. A person of ordinary skill is not going to get out of the -- not
21 getting out of the cab to pull that pin. The only way they're going to be able
22 to exert enough force on that pin is to be in the cab. Pull that down, please.

23 Going back to *Piccoli* and the alleged missing limitation, a person of
24 ordinary skill in the art would have known how to make these connections.
25 A person of ordinary skill in the art would have known to use a pin and

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1 clevis joint. There's no dispute here. We're not having an argument as to
2 how all of the different ways a person of ordinary skill in the art would have
3 known how to connect it. It's within the art, and we've showed you with
4 respect specifically to *Dubay*, the other prior art references.

5 If we go back to means-plus-function, *American National*
6 *Manufacturing* did not satisfy the steps that Patent Owner is now saying are
7 required in order to render the claims unpatentable. *American National*
8 *Manufacturing* had a Petitioner with very similar facts to what we have here,
9 and the Board in that case found that the treatment of the dependent claim
10 features was enough and rendered the means-plus-function claims
11 unpatentable. They should do so here as well.

12 Now, if we look at -- pull the slide back up, please. Well, Your Honor
13 asked for where in our petition we go through the -- if we could go to slide
14 20, please -- where in the petition we have it. I'll just run through real quick
15 here. Controller means in claim 45, that's going to be on page 70 of the
16 1394 petition and it's going to be on pages 87 to 88 of the 1395 petition.
17 Again, we addressed claim 60. Claim 60 depends from claim 45. The
18 Petitioner satisfactorily showed the structure and the dependent claims and
19 there is no dispute that the dependent claims fall within the scope of the
20 independent claim. These dependent claims are part of the specification, so
21 while Patent Owner is saying that we didn't show where in the specification,
22 we did. Claim 60 is in the specification, clarified what that means-plus-
23 function element is in claim 45. Additionally, the dependent claim satisfies
24 the structure --

25 JUDGE MAYBERRY: Excuse me, Counsel.

1 MR. PHERO: What, your Honor?

2 JUDGE MAYBERRY: This is Judge Mayberry. I think if you were
3 responding to me, you could give me those page numbers. I think my
4 question was a little different, because like in *American National*
5 *Manufacturing*, the panel there relied on an express reference in the means-
6 plus-function claim limitation to claim 3 in that case, which the panel then
7 said provided the functioning structure. So I was wondering, in your
8 analysis of claim 45, I couldn't see where you actually made an express
9 cross reference to claim 60 to be, as you said, the same facts as we saw in
10 *American National Manufacturing*.

11 MR. PHERO: Your Honor, you're right. Claim 45 does not include a
12 cross reference to claim 60, but claim 60 gives you the structure that you
13 need in order to analyze claim 45. The case that Patent Owner cites,
14 *Edwards Lifesciences v. Boston Scientific*, there was no treatment
15 whatsoever of the means-plus-function limitations and there were no
16 dependent claims in order to clarify what that structure is. So you've got
17 *Edwards* on the one hand which has no structure, no clarification, and then
18 you have *American National Manufacturing* on the other hand, where they
19 have the explicit cite to claim 3, and then you have ours where we're using
20 the dependent claims to verify that structure. So, our facts align more
21 closely with *American National Manufacturing* than *Edwards Lifesciences*.

22 Moving on, any further questions on that, Your Honor?

23 JUDGE MAYBERRY: No.

24 MR. PHERO: Going to Petitioner's argument with respect to the
25 detail of the petition for certain elements, for example, in 18.2, the support

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1 means as well as the connections. Our petition provides more detail than is
2 provided in the '995 patent itself. The '995 patent doesn't even label the pin
3 and clevis joint that we referred to either earlier that Petitioner's -- I'm sorry,
4 Patent Owner's expert, Dr. Klopp, had to annotate for us. That's on slide
5 129.

6 So, again, a person of ordinary skill in the art would have understood
7 how to make these connections. The '995 patent understands that and
8 references a number of references, including *Dubay* in the background
9 section. They don't even instruct a person of ordinary skill in the art what
10 those elements are because a person of ordinary skill in the art would have
11 understood what these elements are and they would have known how to
12 make those connections.

13 JUDGE MAYBERRY: Excuse me, Counsel. Judge Mayberry. How
14 do you respond to Patent Owner's concerns about the inconsistency in how
15 actuator 1 in bracket 18 were treated in claim 18 as compared to claim 3?

16 MR. PHERO: With respect to which petition, Your Honor?

17 JUDGE MAYBERRY: So, in my understanding, Patent Owner
18 argued that when you analyze claim 18, you've got your actuator that says
19 attached to bracket 18, which is then part of arm 11. But then in claim 3,
20 you seem to indicate that the bracket 18 is part of actuator 1.

21 MR. PHERO: Yeah, I think what we're talking about the 1395
22 petition, and so what Patent Owner --

23 JUDGE MAYBERRY: Oh, yes, I apologize.

24 MR. PHERO: What Patent Owner is arguing is that we have an
25 actuator in *Bitelli* and we have two linkages in *Bitelli*. We're not disputing

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1 that *Bitelli* disclosed the four-bar linkage. We're embracing it. That's
2 exactly what's shown in *Bitelli*. Patent Owner is saying -- what we've said
3 in our petition, which, again, it's right here in front of you on slide 128
4 citing petition at 26 and *Bitelli* reference at paragraph 25, we say that the
5 first actuator means consist in a first hydraulic cylinder. That's what's
6 disclosed in *Bitelli*. We cite to paragraph 25.

7 Again, a person of ordinary skill in the art can readily look at *Bitelli*
8 and readily understand that the first actuator is connected to that linkage 11.
9 That's what's shown in figure 3. That's what's shown in figure 5. That's
10 what's described in paragraph 25. There's no dispute as to what's shown. I
11 think what they're trying to do is a gotcha that says, oh, well, you didn't
12 show this extra piece, this bracket 18. You didn't include that as part of
13 your annotation. Well, Your Honor, that's simply a nonsense argument
14 because we have shown you where the first actuator is in *Bitelli*. It's clearly
15 that first actuator, the first hydraulic cylinder 16.

16 Now, if we go to claim 3 -- give me one moment, Your Honor. I'm
17 looking at slide 151. We have an annotation that tries to explain with
18 respect to claim 3 the first end and second end of the actuator. It's without
19 dispute that when a person of ordinary skill in the art looks at *Bitelli*, they
20 see a pivot joint connecting the one end of first actuator to the frame and the
21 pin and clevis joint connecting the second end of that actuator to element
22 number 18. I think Patent Owner is trying to draw a very narrow
23 interpretation of what we've shown with our annotations, but the annotations
24 are very clear to a person of ordinary skill in the art as to what's disclosed.

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1 Claim 30 has the first actuator with a pin and clevis joint connected to
2 that support arm linkage 11. That's what's moving the four-bar linkage and
3 the leg between the projecting and retracted positions. There's no disavowal
4 of a second end or a first end or anything like that. I think perhaps we could
5 have been little more clear with our annotations, but *Bitelli* itself is clear as
6 to what is shown in figures 3 and figure 4. And we've established that,
7 again, by showing these figures on page 151 of our demonstratives.

8 JUDGE MAYBERRY: All right, thank you.

9 MR. PHERO: So, with that, I see I'm coming up on my time. For all
10 the reasons we've discussed today, we respectfully request that you render
11 all challenged claims unpatentable on both the 1394 and 1395 proceedings.
12 Thank you, your Honor.

13 JUDGE MAYBERRY: All right, thank you, Counsel. And so we'll
14 return to Patent Owner for their surreply.

15 MR. ARGENTI: Thank you, Your Honor. I will do my best to make
16 sure I complete it in my remaining time.

17 So, I'm going to turn first to what we just herd from Mr. Phero
18 regarding their expert, Mr. Orr. He referred to the Federal Circuit's *Kyocera*
19 case. That *Kyocera* case is not on point here. As I explained during my
20 argument, this is not an issue of qualifications under the Federal Rules of
21 Evidence or the admissibility of Mr. Orr's testimony. It's an issue of the
22 credibility to be given his testimony and the weight to be given his
23 testimony.

24 We pointed out that he didn't reach the qualifications of a POSA until
25 at least six years after the invention date, so he does not have firsthand

1 knowledge of the state of the art at the time, which is not a legal bar from
2 him testifying in this case. But it does go to credibility given his testimony
3 that there's not a lot of detail in *Volpe* and his inability to answer questions
4 about *Volpe*. If *Volpe* was what he used to educate himself as to what's
5 going to on with the machine in *Volpe*, then I would argue that that is
6 insufficient based on his own testimony. He admitted that *Volpe*'s
7 disclosure is very thin. He was unable to answer questions about how it was
8 put together, how to works. And he doesn't have person knowledge. That's
9 what the issue is in terms of his qualifications.

10 Now, moving to the second issue, Mr. Phero brought up page 100 of
11 *Volpe*. And apologies, I didn't catch the slide that it was on of Petitioner's
12 demonstrative exhibits, but there was reference to page 100 of the *Volpe*
13 PDF to make a point about the location of the pin. And he highlighted the
14 upper portion of the lifting column and showed that that's where the pin is.
15 That's totally consistent with the point in our surreply. The area that he
16 highlighted is below the operator's feet, rendering it difficult, if not
17 impossible, to reach down and pull that pin.

18 And then we heard Mr. Phero say, the operator's not getting out of the
19 cab to pull that pin. Well, yes, the operator is getting out of the cab because
20 that's what *Volpe* says. It's a manual swing operation. The operator gets
21 out of the cab to put the block under *Volpe*. The operator gets out of the cab
22 to swing the arm in *Volpe*. So, it's totally consistent that the operator is
23 getting out of the cab to pull that pin that's below the operator's feet when
24 the operator's sitting in the seat. So, whether it's before the modification or
25 after the modification, the operator's getting out of the cab.

1 I want to then jump to the means-plus-function limitation. There was
2 discussion, Mr. Phero referred to the *American National Manufacturing*
3 case. I mentioned this earlier, but I just want to point it out again since he
4 brought that case up. *American National Manufacturing* is not the exact
5 same circumstances as here, as Mr. Phero alleged. In *American National*
6 *Manufacturing*, as Your Honor recognized, the petition for the means-plus-
7 function claim made specific reference to an earlier claim that was not a
8 means-plus-function claim. And the Board also found in that case that there
9 was discussion of the specification and the corresponding structure in the
10 specification. And that was not with reference to a claim. It was the written
11 description and figures of the specification. Petitioner has not cited a single
12 case for the proposition that pointed to prior art with reference to a
13 dependent claim satisfies the requirement that you identify corresponding
14 structure in the specification. They don't have that case.

15 Now, turning to one of the last issues that Mr. Phero addressed
16 regarding claim 30 and *Bitelli*. He argued, well, it's very clear that there's
17 an actuator and two linkages in *Bitelli*. I would argue that that's not clear
18 because we don't know what they rely on as the actuator. On one page of
19 the petition, it is the hydraulic cylinder. On another page of the petition, it is
20 the hydraulic cylinder and the brackets on either side. I think that's what he
21 was referring to as the linkages. So, sometimes, it's an actuator and two
22 linkages, and other times, it's just an actuator. So, that, again, goes to the
23 issue with their failure to lay out their case with specificity.

24 He acknowledged that their petition could have been more clear with
25 the annotations, but he seems to think that that's a trivial issue. It's not. It

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1 goes to their burden of proving unpatentability. And they've failed to do it
2 here.

3 Thank you.

4 JUDGE MAYBERRY: All right. Thank you, Counsel. And so this
5 is Judge Mayberry again. I really want to thank both Patent Owner's
6 counsel and Petitioner's counsel for their presentation of these three
7 proceedings.

8 And with that, all three of these cases have been submitted and we are
9 off the record.

10 (Whereupon, the proceedings at 2:14 p.m. were concluded.)

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