Trials@uspto.gov
571-272-7822

Paper No. 34
Entered: November 20, 2024

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MERCEDES-BENZ USA, LLC,
Petitioner,
v.

YECHEZKAL EVAN SPERO,
Patent Owner.

IPR2023-01034 (Patent 11,208,029 B2)
IPR2023-01039 (Patent 9,955,551 B2)
IPR2023-01040 (Patent 9,955,551 B2)

Record of Oral Hearing
Held: October 23, 2024

Before JON M. JURGOVAN, JASON W. MELVIN, and
AARON W. MOORE, *Administrative Patent Judges.*

APPEARANCES:

ON BEHALF OF THE PETITIONER:

CELINE CROWSON, ESQ.
JOE RAFFETTO, ESQ.
SCOTT HUGHES, ESQ.
RYAN STEPHENSON, ESQ.
Hogan Lovells
Columbia Square
555 13th Street, NW
Washington, D.C. 20004

ON BEHALF OF THE PATENT OWNER:

BERNARD TOMSA, ESQ.
SANGEETA G. SHAH, ESQ.
ANDREW TURNER, ESQ.
Brooks Kushman P.C.
1140 3rd Street, NE
Washington, D.C. 20004

The above-entitled matter came on for hearing on Wednesday, October 23, 2024, commencing at 10:21 a.m., at the U.S. Patent and Trademark Office, 600 Dulany Street, Alexandria, Virginia.

1 P R O C E E D I N G S
2 - - - - -
3 JUDGE MELVIN: Okay, thank you. This is Judge Melvin. I'm
4 joined by Judges Jurgovan and Moore. This is a consolidated hearing for
5 three proceedings. Those are IPR2023-01034, reviewing Patent Number
6 11,208,029; and then we have IPR2023-01039 and -01040, those are both
7 reviewing Patent Number 9,955,551. This is *Petitioner Mercedes-Benz USA*
8 *v. Patent Owner Yechezkal Evan Spero*.
9 Could the parties make their appearances please, starting with
10 Petitioner?
11 MR. HUGHES: Yes, this is Scott Hughes from Hogan Lovells on
12 behalf of Petitioner Mercedes-Benz USA, LLC.
13 JUDGE MELVIN: Thank you, Mr. Hughes.
14 MR. TOMSA: Your Honor. Sorry. I'm on mute. Bernard Tomsa of
15 --
16 JUDGE MELVIN: No, go ahead. Mr. Turner there? No? All right.
17 MR. TOMSA: I can have each of my co-counsel step in front of the
18 camera if you'd like. We have one single camera on the podium. To avoid
19 feedback, we just kept the sound of this. So, Bernard Tomsa of Brooks
20 Kushman, representing Yechezkal Evan Spero, Patent Owner, joined by
21 Sangeeta Shah and Andrew Turner.
22 JUDGE MELVIN: Great. So in this combined hearing, each side has
23 an hour-45. The Patent Owner has a LEAP request. So I guess Patent
24 Owner has two hours, Petitioner has an hour-45. Time is yours to split as

1 you see fit among the three cases and reserving up to half your time for
2 rebuttal or surrebuttal. Does anybody have any questions before we begin?
3 MR. TOMSA: Is there an intention to take a lunch break or at least a
4 bathroom break at some point during this proceeding?
5 JUDGE MELVIN: We can. That sort of depends on if there's a
6 natural place to split it up. If you'd like, we can just break after Petitioner's
7 principal argument. Are the parties planning to separate the 01034
8 discussion?
9 MR. TOMSA: I think our argument sort of interweaves based on
10 who's presenting what, so there may not be a natural breaking point in the
11 middle of our argument. I guess at a minimum, at some point it would be
12 nice if we could just use the restroom.
13 JUDGE MELVIN: Certainly, sure.
14 MR. HUGHES: And for Petitioner, you know, there's a lot of
15 common issues, so our arguments go across both patents for the most part.
16 We'd be fine with a break, you know, when we're done presenting before
17 Patent Owner goes, if that would work for everyone.
18 JUDGE MELVIN: Okay, we can do that. And I will try and keep
19 track of your time. I ask that you do the same, especially as relates to your
20 intended reserve rebuttal time. We do have your slides, your demonstratives
21 in front of us, but you may share your screen if you prefer. Other than that,
22 we are ready to begin when you are with Petitioner.
23 MR. HUGHES: All right. Thank you, Your Honor.
24 JUDGE MELVIN: And do you know, Mr. Hughes, how much time
25 you'd like to reserve?

1 MR. HUGHES: Yeah, we're planning on reserving around 20
2 minutes, but likely we'll just reserve whatever we have left when we're done.
3 JUDGE MELVIN: Yep, sounds good. Thank you.
4 MR. HUGHES: All right. Thank you, Your Honors, and good
5 morning. As you can see, and I think, as has been discussed, we're here to
6 do three proceedings today, and these are related to the '551 and '029
7 patents.
8 If we go to slide 2, we're going to first do an overview of the patents
9 at issue here and the petitions. We're going to do an overview of *Alden*,
10 which is the main reference that's used in the grounds for these petitions.
11 And then we're going to go through some disputes. The first dispute is
12 whether *Alden* is enabled and if modifications to *Alden* are needed. The
13 second dispute is whether *Alden* increases light in the direction of road
14 curves. After that, we're going to go into some disputes that are relevant to
15 specific claims of the '551 patent. And finally, we'll do some disputes that
16 are relevant to certain claims of the '029 patent.
17 Going on to slide 3, we're now going to go into an overview of the
18 patents here. And as we can see on slide 4, we have the '551 patent. On the
19 left-hand side there is a continuation of this patent, which is the '503 patent
20 that you see in the middle of the slide. We discussed that last week. And
21 then the '029 patent is a continuation of the '503 patent. So these patents are
22 all related, and today we'll be discussing the '551 and the '029.
23 Going on to slide 5, this is an overview of the claimed invention in
24 the '551 patent. You can see on the right-hand side of the slide we have
25 claim 24 from this patent up, which is representative generally of what's

1 required in the independent claims of the '551 patent. And the independent
2 claims here are focused on systems that control headlights to diminish glare
3 to detected vehicles. And if we look at the claim, we can see that what's
4 required is a structure to incorporate some illuminating devices, a plurality
5 of individually controllable LEDs, electronic circuitry, or controlled
6 powering of these LEDs, one or more sensors that are going to detect
7 information about the environment here being coordinate specific
8 information, a controller, including at least a processor, and that controller is
9 going to change the emission of selected clusters of these LEDs based on the
10 sensed information.
11 Going on to slide 6. For the '029 patent, you'll see the claims are
12 very similar and have some of the same limitations as we discussed for the
13 '551. But here the independent claims of the ‘029 are focusing on systems
14 that control headlights to increase light in the direction of road curvature.
15 Looking at claim 1, which is representative of the independent claims in the
16 '029, there's again a plurality of LED light sources, again, like the '551, one
17 or more processors. These are going to receive information and receive first
18 data, in particular, that's going to include map data. And then that processor
19 is going to determine light changes in order to increase light in a direction of
20 the road curvature. And at the end, it's going to control LED light sources to
21 provide that determined or that increased light.
22 Going on to slide 7, we have an overview of the invalidity grounds in
23 these proceedings. We have the '551 patent on the left, and you can see here
24 that across both of those proceedings, the majority of claims are rendered
25 unpatentable by *Alden* alone. We also have for claims 28, 36, 44, 52, 60, 68,

1 76, and 84 *Alden* in view of *Kobayashi*. Then for certain claim 49, it's *Alden*
2 as modified by reference to *Stam*, in view of a reference to *Beam*. We have
3 *Alden* in view of *Kondo* for claims 8 and 10 to 14; and for claims 15 to 18,
4 it's *Alden*, *Kondo*, and *Stam*. On the '029 patent, the majority of grounds are
5 again *Alden*, this time in view of *Kobayashi*. And then for claims 9, 20, and
6 31, it's *Alden* alone or in view of *Beam*, in view of *Kobayashi*.
7 Now, going on to slide 9, we're going to do an overview of the *Alden*
8 reference. And as you'll see, *Alden* discloses all of the claim limitations we
9 just talked about for the '551 and '029 patents. *Alden*'s system, just like that
10 in these patents, is directed to an automatic headlight system here. This one
11 having automatic segmented illumination means, like we can see in
12 paragraph 25 on slide 9. And the purpose of *Alden* is for low beam
13 illumination, for example, being emitted in response to the detection of an
14 oncoming vehicle 33, while concurrently providing a second intensity or
15 alternate direction of illumination where no vehicle is detected. And this is
16 for *Alden*'s glare reduction purposes. And as we can see on paragraph 27 at
17 the bottom of the slide, the result is that the driver of 41, which is a detected
18 vehicle, has minimum glare while the driver of 47, the equipped vehicle, has
19 maximum light.
20 Going on to slide 10, we have *Alden* on the left, and we can see four
21 boxes here that are different figures from *Alden*. And figure 1 on the top left
22 there, that is showing this glare reduction. As we can see, we have a
23 detected other vehicle 33 and there are certain beams of illumination 35
24 directed to that vehicle, which would be *Alden*'s controlled dimmed low

1 beam light. We see other beams 37 being directed to areas with no other
2 vehicles, and those would be the high beam light.
3 Now, in addition to reducing glare for other drivers, *Alden* indicates
4 that its segmented headlight systems can be used for other functionalities.
5 We see in figure 11 that *Alden*'s segmented headlight systems can be used to
6 concentrate or direct light around curves, for example, where reflectors like
7 157 are sensed. And then in figures 12 and 13 on the right-hand side, we
8 can see that *Alden*'s segmented headlights can also perform functionalities to
9 direct light uphill and downhill.
10 Going on to slide 11, *Alden* discloses the claimed individually
11 controllable LEDs. As we see on figure 5 in the left, there can be an array of
12 LED elements 119 that are mounted onto a curved structure. And *Alden*
13 indicates that its headlights, for example, can comprise this array of
14 individual lighting elements, which can be white LEDs. And each of these
15 lighting elements is independently controlled by a corresponding switch
16 from an array of switches.
17 Going on to slide 12. *Alden* also discloses the claimed circuitry to
18 control the powering of these LEDs. We can see from paragraph 27 of
19 *Alden* at the top of the slide that it has a left light control circuit 55a and a
20 right light control circuit 55b, and these control the power flow to the LEDs
21 in order to determine what their illumination would be. And we can see
22 these control circuits on the left-hand side here in figure 3, where we have
23 55a on the left in that box and 55b on the right.
24 Going on to slide 13. *Alden* also discloses the claim sensors for
25 detecting information. As *Alden* explains early on, like at paragraph 8 that

1 we see at the top, one part of *Alden* is to "automatically control each
2 illumination sector in response to sensed environmental conditions." And
3 how does *Alden* do this? *Alden* explains at paragraph 27 that there is a left
4 sensor 51a and a right sensor 51b, and these are light sensors that detect the
5 light from the environment around the vehicle. And for example, when it's
6 looking for other vehicles, as it says in paragraph 27, these can detect the
7 two headlights of a first illuminated spot and a second illuminated spot. And
8 we can see those as the dark circles at figure 3 on the left within that left and
9 right sensor array. Those dark circle dots represent the sensed light of the
10 headlight of an oncoming vehicle.
11 Going on to the next slide, *Alden* also discloses the claimed
12 controller and processor with corresponding logic. We can see in figure 3
13 on the left, *Alden* has a logic and CPU 71. And *Alden* explains that this
14 switch -- the switches in the CPU's -- sorry, that this CPU and logic controls
15 the switches we saw in figure 5 and figures 3 to indicate in response to those
16 sensed environmental conditions. So when *Alden* senses the environmental
17 conditions, that information is passed to the processor, which then generates
18 control signals to control the power to the different switches for the different
19 lighting elements.
20 And we see here on slide 15, what that logic in *Alden* is. We can see
21 figure 4 on the left indicates it is the controlling logic for *Alden*'s system.
22 And going through when *Alden*'s system is on, as we see at 89, 91, and 93,
23 the CPU is first going to check each sector of the left and right light sensors.
24 And it's looking for, as we see, whether there's threshold light present at
25 each one of these sectors. Now, using the light sensor data, the CPU

1 compiles a left and a right sensor map. And these left and right sensor maps
2 are compared and used to determine which zones need dimmed illumination
3 and which zones need high beam illumination. And we can see that there, as
4 part of this is determining the distance to the objects that are detected in
5 order to determine what the illumination should be. And finally, at the end,
6 the LEDs in the headlights are then switched to high beam or switched to
7 dim to create the desired illumination pattern.
8 Now going on to slide 16, we can see that *Alden* also identifies
9 upcoming road curves, including by detecting light from reflectors
10 positioned along the road. And we see that in figure 11 at the left where we
11 have reflectors 157. And for example, at paragraph 36 of *Alden*, it
12 specifically mentions that it can sense these reflectors and then control the
13 light to concentrate it into the corner. Specifically, based on the data
14 indicating that the road ahead curves, *Alden* adapts the shape of the light
15 pattern from the headlight to shift light in the direction of the curve so that
16 the curve is illuminated with greater intensity and distribution of light. And
17 we can see that in figure 11 on the left.
18 Now, the first dispute between the parties is whether *Alden* is
19 enabled and whether it requires modification or whether Petitioner is
20 modifying it. And this applies to all claims of the '551 patent and claims 8,
21 19, and 30 of the '029 patent.
22 Going on to slide 18. First, the legal standard for enablement.
23 "Disclosures in prior art publications are presumed enabled and Patent
24 Owner bears the burden to show non-enablement." This is from the *Amgen*
25 case. Now, "Patent Owner must show undue experimentation will be

1 required for a POSITA to perform the claimed invention based on the
2 teachings in" the reference, in this case *Alden*, in order for it to be shown to
3 be non-enabling.
4 Now, the Federal Circuit has laid out certain factors that should be
5 considered in determining whether undue experimentation is required, and
6 these come from the *In re Wands* case that we can see here at the bottom of
7 slide 18. And these factors include things like the quantity of
8 experimentation necessary, the amount of direction or guidance presented,
9 the presence or absence of working examples, the nature of the invention,
10 state of the prior art, relative skill in the art, predictability or unpredictability
11 of the art, and the breadth of the claims.
12 Going on to slide 19, Patent Owner has failed to show that *Alden* is
13 not enabled. So Patent Owner merely claims that *Alden* is "ambiguous and
14 does not provide sufficient precision and detail." However, Patent Owner
15 does not discuss any undue experimentation or any of the *Wands* factors, and
16 neither does Patent Owner's expert, who was a little bit unfamiliar with the
17 standard and admitted that he does not offer any opinions as to any
18 experimentation that he either considered or performed or that would be
19 required.
20 Moving on to slide 20, Patent Owner bases a lot of its argument that
21 *Alden* is non-enabling on its idea that figure 5 is limited to a headlight with a
22 single row of LEDs. And when they say "single row," they mean there is
23 only one row of LEDs, exactly as shown in the figure. Now this argument
24 fails.

1 It's clear from *Alden* when a POSITA would read in its entirety that a
2 POSITA would understand figure 5 is not limited to a single row of LEDs.
3 And the Board correctly found this at Institution. As we see on the right-
4 hand side of slide 21 here, the Board, for example, in the '1039 and '1040
5 indicated that while *Alden*'s figure 5 shows a sectional view of one
6 segmented headlight embodiment, that does not restrict the embodiment as a
7 whole to a one-dimensional array. And a similar determination was made,
8 as we can see below.
9 Now, how does Patent Owner make this argument that figure 5 is
10 limited to one row? Well, they do it by reading figure 5 in isolation and
11 ignoring the rest of *Alden*'s disclosures. But in discussing figure 5, *Alden*
12 explains that each LED is controlled by a corresponding switch and a switch
13 array, and that each switch is controlled by the CPU and logic previously
14 described. And *Alden* expressly says this at paragraph 29, talking about
15 figure 4 -- or sorry, figure 5. Now, that CPU and logic previously described
16 refers to figures 3 and 4 and their corresponding descriptions.
17 And Patent Owner's expert even admitted this when he was asked at
18 deposition, as we see on the right, if he would agree that in paragraph 29 it's
19 referencing CPU and logic previously described, he said yes. And when
20 asked whether it's true that the only CPU and logic previously described is in
21 paragraphs 28 and 27, he said, I believe that's the only previously described
22 CPU and logic. Now, paragraphs 28 and 27 refer to and discuss figures 4
23 and 3, respectively. Thus, *Alden*'s figure 5 cannot be viewed in isolation. It
24 must be read in connection with the descriptions of figures 3 and 4.

1 And going on to slide 23, there's additional evidence in *Alden* that is
2 not limited to a single row of LEDs. And for one, *Alden* shows differing
3 illumination across a two-dimensional plane. Here we have figure 3 on the
4 right and *Alden* indicates, for example, a paragraph 27 that as shown in
5 figure 3, the shaded circuit area indicates portions of the headlight to be dim
6 while the non-shaded circuit area represents the portions which will be on
7 high beam. Thus, *Alden* says, it "distributes high beams throughout its
8 distribution areas, except in a box in the direction" of the detected vehicle.
9 And we can see this on the right where we have the diminished two-
10 dimensional box at 75 and 81 where the other vehicle was detected, and the
11 broader field of illumination in the yellow, which would be, for example, if
12 it's reducing glare, high beam illumination again in a two-dimensional, two-
13 dimensional array, two-dimensional plane.
14 Going on to slide 24. We mentioned that *Alden* says for figure 5 it's
15 using the CPU and logic previously described. And again, figure 4 is that
16 logic. And we can see from figure 4 that it's clear that *Alden* is compiling
17 two-dimensional sensor maps and working in an XY two-dimensional space.
18 Figure 4 discloses the CPU logic, compiling two-dimensional or XY sensor
19 maps of the detected light and determining dimmed and high beam zones
20 within this XY space. This was explained by Petitioner's expert, Dr.
21 Papanikolopoulos. And we can see that in figure 4 where it checks an AL1
22 sensor position up to an XYL sensor position and does the same for the right
23 where we go to an XYR sensor position.
24 Now, as Dr. Papanikolopoulos explained, this is a clear indication
25 that the sensor sectors are distributed in two dimensions: X and Y. For this

1 logic to apply to figure 5, as *Alden* expressly says it does, a POSITA would
2 understand that a two-dimensional array of LEDs would be used
3 corresponding to the two-dimensional sensor sectors.
4 Going on to slide 25. There's even additional evidence in *Alden* that
5 figure 5 is not limited to a single row. First, figure 5 just shows a sectional
6 view of a row of LEDs to illustrate the segmented lighting, with it being
7 understood that the full array in the front-on view would be two-
8 dimensional, as similarly shown in figures 6 and 7 of *Alden*. Second, *Alden*
9 discloses that figure 5 illustrates the segmented headlight comprised of an
10 array of lighting elements, not a row of lighting elements. Again, the
11 segmented headlight with the array of lighting elements corresponds to the
12 array of switches. Now, also, for *Alden*'s figure 5 LEDs to direct light uphill
13 and downhill, which *Alden* says it can, there must be multiple rows of LEDs
14 with some angled and positioned on the curved surface to direct light
15 upwards and others angled and positioned to direct light downwards.
16 Going on to slide 26. So with its presumption that figures 5 and 3 are
17 totally distinct, or there need to be some kind of modification here, Patent
18 Owner argues that no presumption of enablement should attach to *Alden*
19 because Petitioner does not rely on express disclosure, but rather modifies
20 figure 5 using figure 3 and piecemeal descriptors. Now, this is incorrect. As
21 we've explained, it's *Alden* itself that links figures 3 and 5 together and
22 indicates that as a whole these must be read together to understand how the
23 invention works. And clearly there's no piecemeal modifying of *Alden*.
24 For example, we're not modifying figure 5 of *Alden* to do anything
25 with the switches. *Alden* itself explains how this is going to work. *Alden*

1 indicates at paragraph 29, talking about figure 5, that each lighting element
2 is independently controlled by a corresponding switch. And Patent Owner's
3 expert admitted that this is how *Alden* would work. As we see on the right
4 bottom here of slide 26 when asked at deposition, "So if there were nine
5 LEDs, you would have nine switches, right?"
6 And their expert said, "I believe so." "And if there were 27 LEDs,
7 there would be 27 switches, right?" And he says, "There should be, yes."
8 So again, it's *Alden* itself telling us exactly how figure 5 would work
9 with the switch array, like as shown in figure 3.
10 Going on to slide 27. Patent Owner also makes some arguments that
11 Petitioner has not shown on patentability because the annotated figures used
12 do not accurately depict *Alden*. And in particular, Petitioner's -- or Patent
13 Owner argues that the petition mischaracterizes *Alden*'s disclosures by
14 relying on annotated figures with an inaccurate scale. Now, some of these
15 examples of the figures are shown on the right-hand side. And as you can
16 clearly see, these were just made to be representative, so we can kind of see,
17 looking visually at a figure, what *Alden* is describing, how the figure 5 LED
18 array works.
19 And going to slide 28, it's clear that these annotations accurately
20 depict *Alden*. First, Petitioner and its expert, Dr. Papanikolopoulos, made
21 clear that the annotated figures demonstrate the concepts disclosed in *Alden*
22 and are not intended to be to-scale technical drawings. And this is consistent
23 with case law, as is well established that patent drawings are not to scale.
24 And we can see here an example from Dr. Papanikolopoulos in his initial
25 declaration, for example in the '1040, where he specifically even indicates

1 "the annotated figure below, and other similar annotated figures herein,
2 should be considered only as high-level representations to illustrate the
3 different low beam and high beam light that characterizes the different
4 sectors." And we can see here again from the Federal Circuit in a
5 *Hockerson-Halberstadt* case, "it is well- established that patent drawings do
6 not define the precise proportions of the elements."
7 So as is clear, these were demonstrative to illustrate generally what
8 *Alden* is disclosing. These were not and are not to-scale technical drawings,
9 for example, that an engineer could go and use to build the system.
10 Now we're going to move on to the second dispute, as we can see
11 here on slide 29, and this is whether *Alden* can increase light in the direction
12 of road curves. Now, this applies to all of the claims of the '029 patent. And
13 as you'll see, it also applies to certain dependent claims of the '551 patent.
14 And these are all listed here on slide 29.
15 Now, we can see the claims here on slide 30, first, claims 1 and 12
16 on the left-hand side of the '029 patent require to increase light in a direction
17 of the road curvature. Similarly, claim 23 of the '029 patent requires that
18 there's increased light in a direction associated with the shape change of a
19 road ahead of the vehicle. Again, that's shape change could be a curve.
20 Claim 26 of the '551 patent states that there's a requirement to accommodate
21 the upcoming road curvature by adaptation of a light pattern. And then we
22 look at some of the other claims in the '551 on the right, which recite
23 accommodate the road curvature by changing illumination in at least a
24 direction of the curve. And these indicate that this can be done by adapting
25 the light pattern, at least one of color, intensity, or spatial distribution.

1 Going on to slide 31, it's clear from *Alden* that it does this. *Alden*'s
2 system can increase light in the direction of road curves. We see we have
3 paragraph 36 on the upper right-hand side of the slide. And this is where
4 *Alden* is describing figure 11, which you also see. And in figure 11, *Alden*
5 accommodates road curvature by adapting the light pattern to concentrate
6 light to look around corners in response to road conditions, thereby
7 increasing the amount of light in the area of the curve. We can again see
8 that in figure 11 where now the light is clearly directed into that road curve.
9 *Alden*'s system adapts the shape of the light patterns from the headlights to
10 shift light to the left, for example, in the direction of the curve, so that the
11 curve is illuminated with greater intensity and distribution of light, just as we
12 see here in the figure.
13 Going on to slide 32. So how is this increase in light done and how is
14 the detection done? Well, we see here from figure 4 that *Alden* -- one part of
15 *Alden*, when it's done its process is to switch certain segments to high beam.
16 And as Dr. Papanikolopoulos explained in his deposition, the road curve
17 accommodation functionality is achieved using the same logic described in
18 figure 4, with the system now configured to detect light from roadside
19 reflectors and switch LEDs aimed at segments, including the reflectors, to
20 high beam. So again, we can see in paragraph 36 right in the middle, it says
21 that it does that because it senses the road turns by receiving light from
22 reflectors. Again, figure 4 is this controlling logic for how you are then
23 going to switch the elements.
24 Now, Patent Owner argues, as we see on slide 33, that *Alden* lacks
25 any ability to determine whether detected light is a reflector indicative of a

1 curve which would warrant curve emission or detected light indicative of a
2 vehicle which warrants glare reduction. But this is not the case. *Alden* can
3 clearly distinguish between reflectors and headlights and has those two
4 separate functionalities that it has described that its system can perform.
5 Now, a POSITA would understand from *Alden* that, as we see in figure 4, it
6 teaches checking for light above a certain threshold at each location of the
7 sensor array. And we can see that where it asks, is threshold light present at
8 A1L down to XYL? And then similarly for the right sensors, where we're
9 also checking for whether threshold light is present at each sensor position.
10 Going on to slide 34. Now, as we've explained, the logic of figure 4
11 would apply to detecting roadside reflectors. To distinguish between
12 different objects such as roadside reflectors and oncoming vehicles the
13 threshold would simply be adjusted based on the type of object. And Dr.
14 Papanikolopoulos, as we can see in his declaration, indicated that to a
15 POSITA this is exactly what *Alden* teaches. He stated, for example, that,
16 "To distinguish between different objects, such as the reflectors or incoming
17 vehicles, a POSITA would have understood from *Alden* that the threshold
18 intensity or distance of the process described in figures 3 and 4 may, for
19 example, simply be adjusted based on the type of object." And,
20 "Additionally, *Alden*'s system also evaluates the location/distance of
21 detected lights in determining the headlight distribution pattern, which could
22 also be used to differentiate between different objects."
23 For example, as we saw in figure 3, which was an example of
24 reducing glare for an oncoming vehicle, there were two dots for an
25 oncoming vehicle headlight. As we can clearly imagine in the figure 11

1 where we have multiple reflectors along the road, we would have a much
2 greater series of dots showing up on the detectors indicating that road curve.
3 Going on to slide 35. Patent Owner also argues that *Alden* can't
4 increase light in the direction of curves and, specifically, Patent Owner
5 argues that *Alden* cannot adapt the intensity or spatial distribution of the
6 light pattern and cannot increase the direction of the road -- increase in the
7 direction of the road curve because *Alden*'s primary objective is to maximize
8 light, and so all LEDs must be on high beam unless specifically dimmed.
9 This is incorrect. A POSITA would understand that *Alden* can be used for
10 different applications, including dimming where other vehicles are sensed
11 and separately directing light into the area of road curves.
12 And *Alden* expressly says in paragraph 61 that the different methods
13 described therein can be used in combination. And we see here on the slide,
14 Dr. Papanikolopoulos explained that "even if maximizing light and
15 selectively dimming only the sectors required to minimize glare was
16 considered *Alden*'s primary purpose, nothing in *Alden* suggests that its
17 system must always operate to achieve this purpose, especially when
18 performing other functionality expressly disclosed in *Alden*. That is, a
19 POSITA would clearly understand that even if its primary purpose is to
20 reduce glare, it can still perform the other functionalities that are disclosed in
21 the same reference.
22 Going on to slide 36, it's clear that *Alden* does not default all LEDs
23 to maximum high beam. Instead what *Alden* says, and we can see this on the
24 left-hand side in an excerpt from Dr. Papanikolopoulos' declaration, *Alden*
25 discloses in paragraph 61 that its LEDs are "operable within a range of

1 intensities," and further, "when the equipped vehicle approaches a left-hand
2 curve," for example, "the LEDs aimed towards the left side of the headlight
3 distribution area could be controlled to direct light to illuminate the curve,
4 while those aimed elsewhere could be terminated or dimmed." This follows
5 from *Alden*'s descriptions of how its system works, including in paragraphs
6 27 to 29, paragraph 36 expressly discussing the road curves, and paragraph
7 61 that indicates you can have a control within a range of intensities.
8 And we can see this again at the annotated figure here, where we
9 could have the LEDs at the bottom of that array here, which are angled in a
10 position so that they direct light. You know, for example, if we were
11 assuming we're looking down here towards the left, then those ones could be
12 illuminated to produce that illumination pattern where we're illuminating to
13 the left-hand side in front of the vehicle into the direction of the curve.
14 Going on to paragraph 37, there's additional evidence that *Alden*
15 does not default all LEDs to maximum high beam. As we can clearly see in
16 figure 4, which is the controlling logic and how the system works, the LEDs
17 are not on high beam by default, but rather *Alden* must, as we see in box
18 109, switch other segments to high beam. That is, *Alden* actively switches
19 between high and low based on the determinations that are made.
20 Now, going on, we see here slide 38, we're going to move on to some
21 disputes on other claims in the '551 patent IPR proceedings. The first of
22 these on slide 39 is whether *Alden* can identify vehicles. Now, claim 8 of
23 the patent recites "identifying at least one of road objects, people, and/or
24 vehicles." Now, *Alden* could not be clearer that it does this. We can see in
25 paragraph 6 of *Alden* that its system includes a means for sensing the

1 locations of other vehicles, said means dividing the exterior space into
2 sectors, and determining if an automobile is present in each sector. We see
3 again in paragraph 25 that *Alden* system comprises a means to detect the
4 sector in which 33 or any other vehicle is located, and that there are specific
5 means for sensing locations of vehicles.
6 Going on to slide 40. So, despite those clear indications in *Alden* that
7 it is actively checking for and identifying other vehicles, Patent Owner
8 argues that *Alden* never recognizes anything as a vehicle. Instead, Patent
9 Owner argues that it assumes light above a threshold indicates an oncoming
10 vehicle, and Patent Owner argues that *Alden*'s system would respond in the
11 same fashion regardless of the actual source of such light.
12 So, for example, Patent Owner argues if there was house lights or
13 streetlights, *Alden*'s system would respond the same way. It doesn't know if
14 that's an oncoming vehicle or not, but a POSITA would understand that the
15 claims merely require identifying an oncoming vehicle without specifying
16 particular steps for that identification. And the claims do not require the
17 system to operate with a specific level of accuracy. That is, the claims don't
18 say the system can never get it wrong and identify something as a vehicle
19 that may not, in fact, be a vehicle.
20 And that's important because perfect accuracy, as we see on slide 41,
21 is not legally required. Rather, as was explained in the *Fitbit* case, prior art
22 that sometimes explicitly meets the claim elements is sufficient to show
23 unpatentability, just as a device or process that sometimes infringes
24 nonetheless infringes. So here where *Alden*'s system is clearly set up to look
25 at the road in front of it where it expects other vehicles to be, detect light

1 specifically from the headlights of those vehicles, and identify that as being
2 a vehicle in a specific area renders this claim limitation unpatentable. Now,
3 whether *Alden*'s system might at times make a mistake, and if there's a bright
4 enough house light or two house lights together, identify that as a vehicle,
5 that doesn't negate the fact that it renders the claim unpatentable. If
6 anything, even though it may not be a vehicle, it has still even identified that
7 house as a vehicle.
8 Now, with claim 48, as we see on slide 42, it's similar, but claim 48
9 recites classifying. And we can see that here on the right-hand side, where
10 the claim states that "the first light is determined based at least in part on
11 classifying the object based at least in part on the data." And Patent Owner
12 argues that "*Alden* does not disclose this classifying element in claim 48
13 because it never assigns an object a classification from among multiple
14 classes or types of objects."
15 If we go to slide 43, we can see that this is, again, wrong. What
16 *Alden* does is it senses light from objects, including other vehicles. After it
17 senses light, *Alden* uses a threshold to classify that object. And we see this
18 in the process in figure 4 that we've discussed in detail. When *Alden*
19 classifies an object as a vehicle, it's clear that it then provides dimmed
20 illumination where that vehicle is present, and *Alden* provides high beam
21 illumination in sectors where no vehicles are detected. Accordingly,
22 detected objects in *Alden* will be classified as a vehicle if the light is above
23 the threshold or not a vehicle if the light is below the threshold.
24 Now, going on to slide 44, *Alden* makes a similar argument with
25 respect to classifying as it did with identifying. Again, they argue that its

1 system "responds in the same fashion regardless of the actual source of
2 light." And one, this may be incorrect, as we've seen in *Alden*, there's the
3 dimming for detected headlights, and then there's also the directing of light
4 when roadside reflectors are detected. So *Alden*'s system may respond
5 differently depending on what it's sensing. And again, from the *Fitbit* case,
6 "Prior art that sometimes explicitly meets the claim elements is sufficient to
7 show unpatentability." So, *Alden*'s express disclosures of detecting the
8 headlights of vehicles being above a threshold and classifying that as a
9 vehicle is sufficient to show unpatentability.
10 JUDGE MELVIN: Mr. Hughes, I have a question.
11 MR. HUGHES: Yes.
12 JUDGE MELVIN: So do you think that rule from *Fitbit* would apply
13 to a system that, let's say, any detected light above a threshold is a vehicle,
14 right? Basically, there's no other characteristic, just threshold, and that is,
15 you know, that the light is distinguished from background. So essentially,
16 any detected light is a vehicle. I mean, is that really what the *Fitbit*
17 statement is directed to?
18 MR. HUGHES: I think the *Fitbit* statement is directed to, you know,
19 if you have something that in operation sometimes is going to, you know,
20 explicitly meet that claim element, like we have in *Alden*, and it couldn't be
21 clearer, it's set up to detect the headlights of other vehicles, and it does this.
22 So when it's performed that functionality, it's explicitly met the claim
23 limitation of classifying that light as another vehicle.
24 Now, in your scenario, if you know a system was set up that any
25 light it's going to say that's a vehicle, you know, technically, the system is

1 still classifying it as a vehicle. It may be totally wrong, but the claims,
2 again, don't say the system has to be right every single time. So even if you
3 had a system that's set up and says, I'm in an environment, any light I detect
4 I'm going to classify it as a vehicle, it has performed the classification step
5 that's required by the claim, even if it gets it wrong.
6 Now, in *Alden*, we don't really need to worry too much about that,
7 because it's clear from the description, this is a system that's set up so the
8 sensors are looking at the roadway in front of a vehicle. It's set up to look
9 for, for example, oncoming vehicles that are going to be right in that
10 pathway, right in the roadway. Or it's set up to look for the roadside
11 reflectors, which, again, are going to be right in that area, in the roadway,
12 right around the vehicle. That's what its system set up to do, and that's the
13 classification that it performs based on what it detects.
14 JUDGE MELVIN: So just a follow-up question on the classifying
15 versus identifying. Like, in that way, it seems like your understanding of
16 classifying would be broader than identifying, because classifying would be
17 just from the perspective of the system doing the classification whereas
18 identifying might have some more objective notion to it.
19 MR. HUGHES: It could, but I think the way that they're used in the
20 claims, there's not much of a difference here. And it's clear if you -- for
21 example, you know, if I classify this in front of me as being a piece of paper,
22 I've also identified that as a piece of paper. So there, you can't say if you do
23 one, you cannot do the other. It's clear --
24 JUDGE MELVIN: Oh, for sure.

1 MR. HUGHES: -- you can both classify something as, for example,
2 in *Alden* being an oncoming vehicle, and you've also identified that as being
3 the oncoming vehicle.
4 JUDGE MELVIN: Okay.
5 MR. HUGHES: So unless there's other questions there, I'll move on
6 to slide 45. And this is discussing independent claim 32 of the '551 patent.
7 Now, this claim requires a differing illumination above and to either side of
8 a dimmed beam. And we can see on the left-hand side what Patent Owner
9 argues is that in figure 5 of *Alden*, which illustrates to them a single row of
10 LED elements, it is, therefore, "incapable of satisfying the claim limitations
11 of creating a beam diminished in intensity relative to the broader field of
12 illumination, illuminating at least above and to either side of the beam." But
13 a POSITA would understand, again, *Alden* is not limited to a single row.
14 And as the Board found in Institution, *Alden* expressly discloses that
15 it provides non-dimmed illumination above an oncoming vehicle. And we
16 can see this clearly in figure 3 here. What *Alden* does is, as was clear and
17 we've gone through this, it senses where the two headlights are. It then
18 presumes or assumes that there's going to be a driver, so it extends the box a
19 little bit above those to account for the space the driver is going to be
20 occupied. And that box that we see in figure 3 here is what the dimmed light
21 is going to be. Now, as we can clearly see, there are other switches both
22 above and below and to either side of this that are not going to be dimmed.
23 They are not the dimmed box. So we are going to get that broader field of
24 illumination above and to either side of the dimmed beam, which is in the
25 box around that vehicle.

1 The next dispute here on slide 46 is with respect to independent
2 claim 40. And this is whether *Alden* discloses concurrently detecting
3 multiple vehicles. And it does. Now, Patent Owner argues that "*Alden* fails
4 to enable control over light directed to multiple vehicles because it does not
5 describe concurrent detection of multiple vehicles and instead simply
6 references vehicles encountered in the distribution area serially over time."
7 Now, this is not what *Alden* says. *Alden* never says that it detects
8 vehicles serially, and it never says it cannot concurrently detect multiple
9 vehicles. Instead, its system can detect the location of multiple vehicles and
10 dim the light to all detected vehicles at the same time. *Alden* says this, for
11 example, at the abstract where it states that the equipped vehicle driver will
12 have some maximum -- there will be maximizing areas of high beam for the
13 benefit of the equipped vehicle driver, "while concurrently all areas with
14 other drivers present receive low beams so as to minimize glare for the
15 betterment of other drivers." And we see again it's drivers, plural, and
16 concurrently, all areas with other drivers receive these low beams.
17 This is also indicated in claim 1 of *Alden* that we can see on slide 46,
18 where there's a means for "sensing the location of other vehicles," plural,
19 and a "means for diminishing the amount of light directed to said other
20 vehicles," again, plural.
21 Now, I'd also note this is how *Alden*'s system works. When we think
22 of figure 4, it's checking for all objects which could be multiple vehicles and
23 dimming the light to all objects that are above that threshold.
24 The next I'm going to go to on slide 47, claims 72 and 80, and these
25 claims require laterally adjacent limitations here. We can see this in claim

1 72 at the top right, where the system has to vary illumination provided to the
2 target by the selected cluster relative to illumination provided to areas
3 laterally adjacent to the target. And then it has to maintain a variance of
4 illumination provided to the target relative to the laterally adjacent areas.
5 Now, *Alden* does this. As we've discussed, it senses which sectors
6 contain other vehicles, dims the light just to those sectors, and does not dim
7 the light to any sectors which would be to either side of it. Now, Patent
8 Owner argues that *Alden* does not disclose the laterally adjacent limitation
9 because the annotated figure 5 in the petitions illustrates areas immediately
10 adjacent to the sensed vehicle or target illuminated with the same low beam
11 light as the sensed vehicle. So what it appears that Patent Owner may be
12 arguing is that if a vehicle is only partly in a sector maybe, so some area
13 right next to the vehicle is also dimmed to low beam, that means that the
14 laterally adjacent areas cannot be at a different illumination relative to the
15 illumination right at the vehicle. But this is wrong.
16 A POSITA would understand that all the claims require is that
17 illumination toward the target is varied relative to areas laterally adjacent to
18 the target. This is again what *Alden* does. It discloses its high beams
19 illuminate sectors laterally adjacent to the sectors in which low beam light is
20 emitted where there's a detected vehicle. And we can see this in figure 1
21 here, where we have some low beam light directed at the vehicle 35. And
22 then in sectors laterally adjacent, where there's no vehicles, we see the high
23 beam light 37. And variance of illumination between the target vehicle and
24 laterally adjacent areas is also maintained as the target vehicle sectors are

1 dimmed and the laterally adjacent areas with no vehicles are switched to
2 high beam in real time in *Alden*.
3 You know, *Alden*'s figure 4 process makes clear that it's operating on
4 a loop. And in fact, in paragraph 28, *Alden* even indicates that its process
5 operates in real time. So in real time, *Alden* is detecting, is there a sector
6 with a vehicle? That will be dimmed. Sectors to either side, laterally
7 adjacent, with no vehicle will be high beam.
8 Going on to slide 49. Here this relates to the dependent claims that
9 you can see here on the top of the slide. And the issue here is whether *Alden*
10 can both diminish glare and accommodate a curve. Now, Patent Owner
11 argues that because *Alden* cannot tell the difference between headlights and
12 reflective signs or those roadside reflectors, its system cannot both diminish
13 glare and accommodate a curve. But as we went over a little bit earlier,
14 *Alden*'s system can clearly do both. It can clearly detect reflectors and
15 oncoming vehicles with its light sensors. And again, we see from Dr.
16 Papanikolopoulos how he explained that, if anything, this would just be
17 adjusting that threshold for what you want to detect.
18 Now, again, as we go to slide 50, *Alden* clearly discloses that it can
19 do both. In describing figure 11, where the system is used to concentrate
20 light to look around corners, *Alden* discloses that "this can be achieved with
21 the segmented sensing elements and segmented light distribution elements
22 described herein." That's what *Alden* says at paragraph 36. Now, those
23 segmented sensing elements and segmented light distribution elements
24 include the sensors that we saw in figure 3 and the LED arrays and the LED
25 system of figure 5.

1 And *Alden* further discloses in paragraph 61 that "one or more of the
2 methods employed herein may be used in combination to vary illumination
3 in a segmented system." So *Alden* at 61 is expressly telling us that its
4 system can do everything that it said. It can reduce glare for other drivers
5 and it can also perform the other method of concentrating light to look
6 around curves when a road curve has been detected.
7 And Dr, Papanikolopoulos explains to this in more detail when he
8 was asked about it in his deposition. We can see that on the right-hand side
9 of slide 50 where he explained what's happening when there's this detection.
10 *Alden* is "using the LEDs described in figure 5 and the corresponding
11 paragraph and makes this dim while the other has full light in order to
12 increase the visibility for the driver. In figure 11, I believe, the same
13 structural figure 5 can do the dual," and this was supposed to be purpose.
14 "In other words, I can have dots of the reflectors -- instead of having the dots
15 that correspond to the headlights, I have dots that correspond to the
16 reflectors on the side of the road. So I want to -- as we drive, we want to be
17 able to see this better. So it's going to send as much light as possible to this
18 one by using the same structure."
19 So again, it's *Alden*'s same system can do both. The structure of
20 figure 5 and those headlights can be controlled with the same logic and the
21 same sensors and switch arrays of figure 3 to achieve both purposes here.
22 Going on to slide 51.
23 JUDGE MELVIN: Mr. Hughes, I just have a question there before
24 you go on. So you say “the same logic.” I think, by that, you mean the
25 same hardware. I mean, there's clearly some different logical decisions that

1 are made with regard to how to, you know, set the lights for either a high
2 beam, low beam, or some other illumination level. So is that right, that that's
3 what you're referring to?
4 MR. HUGHES: Yes, Your Honor, it's the same hardware that we've
5 been discussing for 3, 4, and 5. And then when we say the same logic, what
6 we -- what we're indicating is figure 4 gives us the logic flow of the
7 decision-making. And it's that same logic flow of checking for light above a
8 threshold at each sector, making your left and right sensor maps, checking to
9 see where the objects are there. And then like, the difference would come,
10 you know, if you're going to reduce glare, the switching would be low beam
11 where you've sensed another vehicle. But, you know, if you're doing the
12 roadside reflector, as it says in paragraph 36, with, you know, there, you
13 would be switching to high beam where you have the reflectors. So it's the
14 same logic flow, but clearly, you know, modified as is indicated at 36 for
15 what you would be doing when you're looking around a corner instead of
16 reducing glare.
17 JUDGE MELVIN: Right. Thank you.
18 MR. HUGHES: So going on to slide 51, we see claims 29, 37, 45, 53,
19 61, 69, 77, and 85. These are dependent claims that recite "identification of
20 the upcoming road curvature is based at least in part on sensor data provided
21 by one or more of the sensors of the vehicle and wherein the adaptation of
22 the light pattern is based at least in part on the sensor data." Now, the
23 independent claims from which these depend also recite sensors "for
24 detecting coordinate specific information about the illuminated area."

1 If we go to slide 42 [*sic*], Patent Owner argues in its response that
2 "the sensor data must refer to the data from the sensors in the independent
3 claim," kind of an antecedent basis argument. When these dependent claims
4 say "the sensor data," it has to be from the previously recited sensors.
5 Now, Patent Owner in the response argued that Petitioner cited
6 *Alden*'s "steering wheel rotation sensor as providing the sensor data" for
7 these dependent claims, "but the rotation sensor does not detect coordinate
8 specific information" as is required and recited in the independent claims.
9 So that is they're saying we can't rely on the steering wheel sensor because
10 it's not the sensor from the independent claims. But in the petition,
11 Petitioner clearly cited to the light sensors in *Alden* for the independent
12 claims and in these dependent claims clearly relied upon those same light
13 sensors to provide the same light sensor data now being used to identify
14 when a road curves. And we can see this in the '1040 petition, for example
15 at the bottom of slide 52 here, that *Alden* "can sense when a road curves in
16 front of a vehicle based on sensor data detecting reflectors 157 along that
17 road."
18 So going to slide 53, what happens now? Realizing its mistake that
19 the Petitioner did not rely just on the steering wheel sensor for this element
20 in these dependent claims, in surreply Patent Owner now argues that
21 "Petitioner cannot rely on the light sensors detecting reflectors because the
22 light sensors cannot distinguish between headlights and road signs." But
23 again, this is the same argument we've discussed multiple times now.
24 *Alden*'s system can clearly detect both reflectors and oncoming vehicles with
25 its light sensors. As Dr. Papanikolopoulos said, if anything, this would

1 simply be an adjustment of the threshold level based on the object you want
2 to detect.
3 Going on to slide 54. This is with respect to dependent claim 51.
4 And the issue here is really what's a typo in the petition. And what
5 happened in the petition is that claim 51 was, in the overall grounds, was
6 listed in an *Alden* only section, and Patent Owner uses that to say Petitioner
7 only argued that claim 51 is unpatentable over *Alden* alone. But this is
8 incorrect. The petition clearly explains that "claim 51 is the same as claim
9 49, except for an additional limitation." And the petition clearly explained
10 that "claim 51 is rendered obvious by *Alden* for the same reasons as claim 49
11 for common elements."
12 And we can clearly see this when we go to the petition where it
13 expressly discusses claim 51 in detail. We can see the petition says claim 51
14 is substantially identical to claim 49. And then towards the bottom, as you
15 can see here, the petition expressly stated that claim 51 would be
16 "anticipated and rendered obvious by *Alden* for the reasons given above for
17 the common elements. *See supra* claim 49."
18 So what do we have here? Well, claim 51 includes a limitation of a
19 non-emitting state. Now, that's also an element in claim 49, which we can
20 see here on the right. So this element in claim 51 is one of those common
21 elements in claim 49 that the petition clearly stated is rendered obvious for
22 the same reason given for 49. So what do we have?\
23 Well, if we go to claim 49 to take a look at this, we can clearly see
24 that claim 49 was discussed in the context of *Alden* alone or is modified by
25 *Stam* in view of *Beam*. And with respect to the non-emitting state element,

1 it's very clear that the petition relied on *Alden* in view of *Beam* to render
2 obvious the limitation of emitting light or a non-emitting state. So that is to
3 say, if you look at the petition in context, it's very clear that for claim 51,
4 and the reference is made for that, it's clear the petition was indicating that
5 that would be rendered obvious for the same reasons as 49, which would be
6 *Alden* in view of *Beam*.
7 Now, we're going to move on to some disputes for the claims in the
8 '029 patent. As we can see at slide 57, the first of these is, can *Kobayashi*'s
9 map data be used with *Alden*? And the answer here is yes. Now, *Kobayashi*
10 is a reference, just like *Alden*, which has headlights, that it's going to change
11 to adapt for upcoming road curves. In particular, you know, as was stated in
12 the petition, it would have been obvious to modify *Alden* in view of
13 *Kobayashi* to determine the required changed shaping of light to
14 accommodate upcoming road turns based on map data, which *Kobayashi*
15 discloses from its GPS system, using that GPS map data to indicate when
16 there's going to be a road curve and adjusting headlight beams accordingly.
17 Now, as was stated in the petition, *Alden* would continue to perform the
18 same determination of changed light patterns to accommodate upcoming
19 road curves or changes in road shape, only now it would make the
20 determination based on receiving map data indicating the road structure.
21 If we go to slide 58, this is for independent claims 1, 12, and 23. The
22 issue here is does *Alden*, in view of *Kobayashi*, disclose control, at least a
23 first plurality of the LED light sources to provide light prior to the motor
24 vehicle reaching the road curve? And the answer is clearly yes. *Alden*
25 directs light into the corner or into these curves in response to, for example,

1 the detection of the roadside reflectors 157, which would be ahead of the
2 vehicle. Figure 11 of *Alden* shows, for example, that the light has already
3 shifted to the left while the vehicle here is still traveling straight and has not
4 yet entered into the curve.
5 Now, as we see on slide 59 here, Patent Owner argues that *Alden*
6 only discloses the timing of the redirection of light in connection with its
7 steering wheel rotation sensor, which it discusses in figures 14 and 15, and
8 not with respect to figure 11. But as we just saw, figure 11 clearly shows
9 that this light has been adjusted before the vehicle is turning.
10 In addition, like we saw at paragraph 28, *Alden* expressly states that
11 its system is "responsive to changing environmental conditions in real time,"
12 and thus, once it detects the light of the reflectors on a curve, it's going to
13 adjust that light in real time, again, prior to the vehicle reaching the curve.
14 And Dr. Papanikolopoulos explained this is what a POSITA would
15 understand. As he indicated, "A driver begins to turn the steering wheel,"
16 for example, "prior to entering the curve in order to align the vehicle with
17 the direction of the curve." So even if we are using the steering wheel
18 sensor, we're also going to start changing the light before we go into or all
19 the way around the curve. And that's because a driver or vehicle would want
20 to turn, so the system would control it before entering the curve, and you're
21 going to be illuminating that curvature as you drive along the road.
22 Now, in addition, this would at least be obvious in view of the
23 teachings of *Kobayashi*. Now, *Kobayashi*, as we see on slide 60, "also
24 discloses controlling lights prior to the vehicle reaching a road curvature."
25 We can see this at figure 10 on the right-hand side. When the vehicle is at

1 position A, we can see its direction of travel indicated by the dotted arrow is
2 straight ahead, but the direction of the irradiation or the headlights is going
3 off to the left. So figure 10 depicts this vehicle k approaching a road
4 curvature, and it shows that the direction of the irradiation point has been
5 altered in the direction of that, for example, left-hand turn before the vehicle
6 reaches the curvature.
7 On slide 61, Patent Owner argues that *Kobayashi* "does not direct
8 light prior to the motor vehicle reaching the road curve," and they point to
9 the disclosure in *Kobayashi* that, "as shown at point A in figure 10, when the
10 vehicle turns to the left, the left shoulder is irradiated. When the vehicle
11 turns to the right, the right shoulder is irradiated." Now, this is a general
12 description of what's happening. Figure 10 of *Kobayashi*, as we stated,
13 clearly shows that when the vehicle turns, the shoulder of the road is already
14 illuminated because, like we see at point A, it's already redirected the light.
15 Going on to slide 62, this is with respect to dependent claims 5, 16,
16 and 27 of the '029 patent. The issue for these is, "Does *Alden*, in view of
17 *Kobayashi*, disclose the increase of light in the direction of the road
18 curvature includes at least an increase of light emitted at a level below high
19 beam light and directed in the direction" of the curve? And the answer is
20 yes.
21 Now, *Alden* discloses that its system is "operable within a range of
22 intensities between high beam and low beam." It discloses this at paragraph
23 61. And as Dr. Papanikolopoulos testified, "controlling the LEDs directed to
24 sectors, including the road curvature, to emit increased light below high
25 beam light, such as a 'medium' intensity, would allow the driver to

1 sufficiently see the road curvature, but would not blind potential oncoming
2 vehicles that are not yet visible." We need to keep in mind, you know,
3 *Alden* does indicate one concern is to reduce glare. And one way to do this
4 would be when you're driving around a curve, so you may not be able to see
5 oncoming vehicles yet, you don't want to go all the way to maximum high
6 beam light in case another vehicle comes around that curve. You don't want
7 to blind them immediately, but you still want to illuminate that curve. Like
8 Dr. Papanikolopoulos said, it would have been obvious to do this by going
9 somewhere in between: doing intensity that's enough to illuminate the
10 curve, but would not blind potential oncoming vehicles that are not yet
11 visible.
12 Going to slide 63, with respect to dependent claims 6, 17, and 28, the
13 issue is, "Does *Alden*, in view of *Kobayashi*, disclose a second change,
14 adapting the light patterns of the headlights or headlamps in a direction of a
15 second road curvature and control at least a second plurality of the LED light
16 sources?" The answer, again, is yes. Now *Alden* discloses that iterative
17 real-time process, continuously determining the light output for the LEDs in
18 its array. And that would include determining a second light change that
19 adapts the light pattern in the direction of a new different curve. As the
20 vehicle moves in real time and senses different curves, the LEDs are going
21 to react in real time to illuminate those different curves. In addition, we can
22 see that *Kobayashi* also teaches continuously reshaping the headlight beam
23 pattern as a vehicle proceeds along multiple road curves using its map data.
24 Now, with respect to claims 7, 18, and 29, as we see here on slide 64,
25 the issue is whether *Alden*, in view of *Kobayashi*, discloses "providing light

1 directed in the direction of the road curvature from an LED not providing
2 light directed in the direction of the road curvature prior to the change."
3 And the answer is yes, and *Alden* alone renders this unpatentable. And in
4 addition, *Alden*, in view of *Kobayashi*, renders this unpatentable.
5 We go to slide 65. As explained in the petition, this can be seen in
6 figure 11 of *Alden*. So we see in figure 11 of *Alden* we have light where it's
7 coming from light sources that are all going and directing light to the left.
8 Now, how does it do this? Well, as Dr. Papanikolopoulos explained, a
9 POSITA would have understood that *Alden*'s system will concentrate light to
10 look around corners when a curve is detected. And it does this by emitting
11 light from LEDs directed towards the curve, which may not have been
12 previously illuminated as they do not direct light generally ahead, and thus it
13 changes shape of the overall illumination by emitting light from LEDs not
14 providing light directed towards the curve prior to the change. So that is, if
15 we think about that array, if we have an LED at one extreme end, that may
16 not be turned on, but because it's going to direct light far to the left, if you
17 approach this road curve, that LED can be turned on.
18 Additionally, as I stated, *Alden*, in view of *Kobayashi*, renders this
19 obvious and this is on slide 66. *Alden*, as modified by *Kobayashi*, would
20 continuously reshape light as a vehicle proceeds along a road with multiple
21 curves. A POSITA would understand if the road has a left-hand curve
22 followed by a right-hand curve, the combined system would select the
23 second set of LEDs for the right-hand curve and that would include some
24 that clearly were not illuminating the left-hand curve. So as the vehicle goes

1 from one curve to the other, you're going to have different LEDs turning on
2 and off to illuminate those different curves.
3 If we go to slide 67, this is dependent claims 8, 19, and 30. And the
4 issue with these claims is whether *Alden*, in combination with *Kobayashi*,
5 discloses "the limitation of using data captured by one or more cameras to
6 determine a position of another vehicle." The answer, again, is yes. *Alden*'s
7 system includes a sensor 45 and that sensor can detect the presence of other
8 vehicles. We can see that sensor 45 towards the bottom of figure 2 on the
9 right. And as you'll see, there's a lens element in the front, a box, and then
10 the detector array in the back.
11 And going to 68, this is how *Alden* describes this sensor unit. It can
12 include a primary lens 49 and a detector array 51. And this detector array
13 can be a photodiode array or it could be a CCD. It's something that's
14 detecting the photon intensity. Now, *Alden* also discloses that the detector
15 array is "converting photons to electrons which are sent into a light
16 controlling circuit, including logic and memory." So the detectors sense
17 this, convert the light into electrons or electric signals, that's going to give
18 you your image. That's the image from the camera.
19 And *Alden* further discloses that its system includes the left sensor
20 51 and the right sensor 51b, which are again these camera sensors, and they
21 detect, for example, the light from the headlights of other vehicles. And we
22 can see that in the image on the detectors on the right-hand side here where
23 we have clearly those two dots for the headlights of the vehicle.
24 Going on to slide 69. I'm sorry, did you have a question, Your
25 Honor?

1 Okay. The issue here is, "Does *Alden*, in combination with
2 *Kobayashi*, disclose the control of the second plurality of LED light sources
3 is based at least in part on third data received from a non-camera sensor of
4 the motor vehicle?" And the answer is yes. Now, both *Alden* and
5 *Kobayashi* disclose such non-camera sensors. *Alden* discloses, for example,
6 using a steering wheel rotation sensor and *Kobayashi* discloses using a GPS
7 sensor. Now, as the petition explains, a POSITA would understand that
8 control of the second plurality of light sources, which from the claims are,
9 you know, being controlled to reduce glare to another vehicle, can be based
10 on *Alden*'s steering wheel sensor data and *Kobayashi*'s GPS sensor data.
11 That is, that same control of these sources to reduce glare to another vehicle
12 can be controlled using the steering wheel data as well or the GPS sensor
13 data.
14 So we see here on slide 70 that *Alden* discloses "the method of
15 controlling the headlight output based on the steering wheel sensors" in
16 paragraphs 39 and 40. And here *Alden* discloses that "one or more of these
17 methods may be employed in combination to vary illumination in a
18 segmented system." This is from paragraph 61 of *Alden*. So again, *Alden*'s
19 telling us that its different systems and methods can all be used together in
20 the overall headlight system. And as was explained in the petition and by
21 Dr. Papanikolopoulos, a POSITA would have understood that controlling the
22 headlight output based on the steering wheel rotation sensor could be used in
23 combination with dimming sectors in which an oncoming vehicle is
24 detected.

1 And again, as Dr. Papanikolopoulos explained, we see this on the
2 right, you know, "the equipped vehicle may be traveling along a road that is
3 initially straight with an oncoming vehicle ahead." So when it detects that
4 oncoming vehicle, it's going to dim the light. But then, as Dr.
5 Papanikolopoulos explains, we can see this in the middle there, after
6 referencing paragraphs 26 and 28 of *Alden*, if the "equipped vehicle then
7 approaches a right-hand curve, the driver of the equipped vehicle will begin
8 to turn the steering wheel to the right. The steering wheel rotation sensor
9 will detect the steering wheel has been rotated X degrees." *Alden* says it
10 does this at paragraph 58.
11 In response, the system will change the headlight output direction in
12 corresponding FX degrees to maximize the visibility. And this change of the
13 headlight output direction will further include controlling the LEDs aimed at
14 the oncoming vehicle to diminish glare. By doing so, the area dimmed to
15 diminish glare will be maintained around the oncoming vehicle. That is, you
16 can see if I have light directed at an oncoming vehicle in one sector, but I'm
17 going to go around a curve, that light is going to shift. The steering wheel
18 sensor is telling me how much. Well, I want that light to stay on the
19 oncoming vehicle. I don't want to go around a curve and bring high beam
20 light on. So what do I do? Just like *Alden* says, I shift the light based on the
21 amount I've turned the steering wheel.
22 Now, as we see here on slide 71, this control could similarly be
23 achieved using data from *Kobayashi*'s GPS sensor. And Dr.
24 Papanikolopoulos explained this as well, as was set forth in the petition.
25 "Like before, *Alden*'s light sensors could detect an oncoming vehicle and

1 dim a plurality of LEDs aimed at that vehicle to diminish glare." Then when
2 you have the curve, "the headlight output direction will be changed based on
3 *Kobayashi*'s GPS sensor data indicating that the equipped vehicle is
4 following a road curve." Again, "control of the plurality of LEDs dimmed to
5 diminish glare could be based, at least in part on data from this non-camera
6 sensor."
7 If we go on to slide 72, this is with respect to dependent claims 9, 20,
8 and 31. And the issue here is whether *Alden*," in combination with
9 *Kobayashi* and *Beam*, discloses the control of the second plurality," which
10 would include "termination of light from at least one LED." And now, first,
11 "*Alden*'s system alone could operate LEDs at zero intensity." Again, "it
12 discloses that the LEDs can be operated in a range of intensities" at
13 paragraph 61, and clearly with its power control to send power to the LEDs
14 to control the intensity, those could also be turned off.
15 Now, as was explained in the petition, "Additionally, it would have
16 been obvious to combine *Beam*'s teachings of operating LEDs at zero
17 intensity with *Alden*'s system." And as we can see on the right-hand side of
18 slide 72, *Beam* in particular expressly discloses that you're going to, similar
19 to *Alden*, determine areas of these micro beams which would be similar to
20 *Alden*'s LEDs emitting light and which ones are going to be blanked. And it
21 does this through blanking them to absorb or deflect light surface. And just
22 like *Alden*, *Beam* is doing this because it's detected another vehicle and it
23 wants to reduce glare there, just like *Alden*. So in that sector it's saying, go
24 ahead and terminate the illumination.

1 Now, finally, we have dependent claims 21 and 32 of the '029 patent.
2 Now, the issue with these claims is, does *Alden*, in combination with
3 *Kobayashi*, disclose to utilize or utilizing "one or more optical control
4 elements included in the motor vehicle to control light from at least the first
5 plurality or second plurality of the LED light sources?" The answer is yes.
6 Now, these claims, as Patent Owner is going to argue, are related to a
7 method, a memory storing instructions, or a processor doing something.
8 Now, clearly, in *Alden*, its processor and CPU and logic is utilizing the lens
9 in *Alden*'s system in order to make sure that the light goes into the specific
10 sectors. That's how *Alden*'s system is set up.
11 *Alden* discloses that its LEDs "are on a curve along the focal point of
12 a headlight lens 121 such that the light from each lighting element goes into
13 a specified portion or portions of the headlight distribution area." That is,
14 *Alden*'s system knows which LEDs are directing light into which sector, and
15 its processor controls them accordingly because the lens there is present. So
16 the processor controlling the system is utilizing that lens to ensure that when
17 it instructs this LED to shine light, it knows exactly what sector that light is
18 going to go into. That's built into how *Alden*'s system is working for figure
19 5.
20 So a POSITA would understand that *Alden*'s lens "is an optical
21 control element utilized by the processor to produce the desired headlight
22 distribution pattern." And we can see that in figure 5 below. And I'll note in
23 addition that dependent claims 22 and 33 expressly state that this optical
24 control element could, in fact, be a lens, just like is described in *Alden*.

1 I will stop there and ask if there are any questions from Your
2 Honors.
3 JUDGE MELVIN: So, just on that last point, that's a claim
4 construction position, right? That utilize/utilizing doesn't require some sort
5 of active modulation of the optical control element.
6 MR. HUGHES: I don't know if it's claim construction, Your Honor,
7 because the claims don't mention any active control. The claims just recite,
8 like we see here, that you have to utilize an optical element to control light
9 from the first plurality.
10 JUDGE MELVIN: Well, isn't that exactly why it's an issue of claim
11 construction? If the claims required expressly -- active control, active
12 modulation -- then there wouldn't be much need for claim construction,
13 right? But Patent Owner's taking the position, as I understand it, that the
14 words "utilize or utilizing" sort of are a sufficient reason to import that
15 notion of active control to the optical control elements as construed.
16 MR. HUGHES: And we would respectfully disagree with Patent
17 Owner that this is requires active control or requires construction. But, you
18 know, to the extent you do want count claim construction on this, you know,
19 we would be happy to address it. I will say, you know, like we talked about,
20 we can be informed by the dependent claims here, which, again, expressly
21 state this optical control element can be a lens. So if we read that claim 22
22 with claim 21, for example, we can see if we just replace, you know, "lens"
23 into this, we can say, utilize one or more lenses included in the motor
24 vehicle to control light from at least the first plurality or second plurality.
25 Again, there's no question this is what *Alden* does.

1 And I'll also note, you know, to the extent there is some active
2 control of an optical control element, that would be required, as we set forth
3 in the petition, you know, *Alden* does also disclose the variable refractive
4 elements. And as set forth in the petition, you know, these claims would at
5 least be obvious in view of that, even if, you know, it's assumed that the lens
6 itself is not somehow utilized or utilized -- or utilized or being utilizing from
7 a processor.
8 JUDGE MELVIN: That obviousness combination of different
9 embodiments in *Alden* is sort of an alternative position?
10 MR. HUGHES: That's correct. As was set forth, you know, we first
11 state the lens is this optical control element. It's clearly utilized by the
12 processor and by the method in order to -- you know, when the LEDs are
13 controlled by the processor, it's that lens which is controlling the light so it
14 goes into the certain sectors. Without the lens, you wouldn't have control of
15 the light from at least the first or second plurality to do what *Alden* wants it
16 to do. And as you said, yes, then the alternative to that is it would have at
17 least been obvious in view of the variable refractive elements.
18 JUDGE MELVIN: Okay. Thank you.
19 MR. HUGHES: Thank you, Your Honors.
20 JUDGE MELVIN: So I have your time at 34 minutes remaining.
21 MR. HUGHES: Thank you.
22 MR. TOMSA: Your Honors, would now be a good time to use the
23 restroom or would you like me to present first?
24 JUDGE MELVIN: That's fine with me. If you'd like, we can take a
25 five-minute break.

1 MR. TOMSA: Is that okay with Opposing Counsel?
2 MR. HUGHES: Yes, that's fine with us.
3 MR. TOMSA: Okay. Thank you, Your Honors. We'll be back in a
4 moment.
5 JUDGE MELVIN: All right. Thank you.
6 (Recess)
7 JUDGE MELVIN: So, Mr. Tomsa, whenever you're ready.
8 MR. TOMSA: Thank you, Your Honors. Bernard Tomsa, Brooks
9 Kushman, presenting on behalf of Patent Owner Yechezkal Evan Spero.
10 Joining me today in argument, our co-counsel, Sangeeta Shaw and Andrew
11 Turner. We would like to reserve 15 minutes of time for rebuttal or
12 whatever time we have remaining. We will attempt to track that as accurate
13 as possible. And we thank Your Honors for granting Counsel Turner his
14 LEAP practitioner time.
15 Your Honors, before I step into my presentation, I'd like to make a
16 point. When Opposing Counsel stated that in figure 11 it uses the same
17 logic and has the same appearance previously noted for vehicle detection,
18 that wasn't simply a statement Opposing Counsel made during this oral
19 argument. That's actually a quote from their experts. So if we can go to
20 slide 60 very quickly, this is what Dr. P. said during his expert deposition.
21 "My dots here are going to be reflectors. The reflectors are going to see
22 something corresponding -- it will have the same appearance on the image as
23 headlights." It will use the same logic which is described in figure 4.
24 There's no qualification of this logic as being something different or

1 corrected or having a second threshold. It's simply the figure 4 logic.
2 Right?
3 So there is no clarification made by the expert. In fact, right after
4 this, in his deposition, the expert said that it's going to produce a different
5 output pattern. So somehow, incongruously, he has the same detection that
6 has the same appearance using the same logic, and yet he has differing
7 output patterns. Right?
8 So again, this isn't simply a statement that Petitioner gets to correct
9 because they said something seemingly ambiguous during this argument.
10 This is a statement made by their expert, and it's described in a way that
11 makes it clear that there's a problem with all them.
12 Now, we're going to get to some other problems, all the in
13 Petitioner's argued. You go to slide 2, please. Slide 2 is just a brief
14 overview of where our argument will go. In the interest of saving time, I
15 will move on to slide 8.
16 Now, first we'd like to discuss what paragraph 47, which is a
17 correlation to paragraph 29, has the same language, just happened to be on a
18 single page, so it's easier to paste in, what this teaches -- actually teaches
19 about *Alden*. And it's very important to understand this is an anticipation
20 argument, and it's limited to what's taught and it's limited to what's said and
21 it's limited to what's shown.
22 First, paragraph 47 says that figure 5 "illustrates the segmented
23 headlight means." It does not say cross section, it does not say slice. It says,
24 this is the segmented headlight means. And it says, this is the "controlling
25 switch array." Now, when Petitioner presented their proofs in this oral

1 argument, they pointed to language from figure 3 and using this left and
2 right control circuit that we see here on the left-hand side of slide 8.
3 Figure 47 provides its own control circuit, switch array 115. It
4 doesn't say, go back to this diagram, figure 3, and get this hardware of a
5 control circuit. That's a control circuit presented for illustrative purposes in
6 figure 3. And then when we get to the actual teachings of figure 5, *Alden*
7 tells you that it has a switch array.
8 And as Petitioner noted, that switch array has a corresponding
9 number of switches that correspond to the number of LEDs shown. *Alden*
10 shows us nine LEDs. It ascribes functionality to those nine LEDs. It tells us
11 what areas of the field of view those nine LEDs cover.
12 And importantly, Your Honor, even if this were a cross section, even
13 if you viewed it that way, a one-row switch array and a multi-row switch
14 array would look exactly the same in cross section. So there's an ambiguity
15 here that isn't resolved simply by deciding to view this picture right here as a
16 cross section, because it would look no different whether it was one row or
17 two.
18 Furthermore, there's additional language in paragraph 47 that
19 indicates that the 119 and "other lighting elements are on a curve along the
20 focal point." We view that as a biconvex lens. It has a single focal point in
21 the center. That curve with those nine LEDs is positioned along that focal
22 point pursuant to exactly what paragraph 47 says.
23 And finally, Your Honor, paragraph 47 says that, "Each switch is
24 controlled by the CPU and logic previously described," notwithstanding the
25 XY coordinates that are used for the sensors, not for control. We look at the

1 switch control requirements of the logic of figure 4, and that says "switch
2 requisite headlight segments to dim." It does not say switch all
3 corresponding XY headlight segments. That means whatever your switch
4 array looks like, you take the requisite segments that need to be dimmed for
5 that array to control that particular LED to accommodate that detected
6 vehicle, and those are the segments you switch to dim. It's a marked contrast
7 from up above, where it goes through a litany of steps in order to detect X
8 and Y positions for a detector that may be common to all embodiments, but
9 for a switch array, which is not.
10 Can we move to slide 3, please? Your Honors, it's important to note
11 that in the Institution Decision, this Board correctly noted for the '1039 IPR
12 and the '1040 IPR that the argument was generally limited to the anticipation
13 grounds, because Petitioner has not accurately established the motivation to
14 combine, at least with respect to the independent claims. Right? And this
15 same we can see on slide 4. This is limited equally to an anticipation
16 argument. It's very important to understand that anticipation arguments have
17 some very strict requirements.
18 All right, can you go to slide 13? There are several points we'd like
19 to make today that relate to the rigorous guidelines for anticipation, and
20 some of these are explained here on this slide. Right? Petitioner, now on
21 reply, has taken an ambiguous position with respect to figure 2 -- or figure 5,
22 that it's a two-dimensional array. It is a longstanding principle of law, Your
23 Honor, that you cannot rely on an ambiguity in a teaching in order to
24 predicate an anticipation rejection. Whether you look at the *Wasica* case we
25 show here or go back to the *Turley* (phonetic) case from 1962, or go back to

1 the case that *Turley* cites as its predecessor, every single one of those cases
2 held the same way: an anticipation rejection cannot be predicated on an
3 ambiguous reference. And in every single one of those cases, the ambiguity
4 was simply one of two things. It could have been interpreted one way or it
5 could have been interpreted another way. And the fact that the question was
6 unresolved by the reference was sufficient to establish enough ambiguity to
7 render the reference insufficient for ambiguity.
8 So long before we ever get to the point of deciding whether or not
9 *Alden* does or doesn't teach the limitations of the claims, we have to look at
10 Petitioner's proofs and decide if they're even sufficient proofs for
11 anticipation. This was not addressed by a Petitioner during their opening
12 argument, and it's a major problem with their proofs, Your Honor.
13 Now, originally, as you can see on the bottom left of slide 13, we
14 had pointed out, the Petitioner's essentially presented a non-functional
15 embodiment by choosing to rely on the two-dimensional switch array of
16 figure 3 instead of the one-dimensional switch array that figure 5 would
17 provide as switch array 115, Petitioner has an explicitly two-dimensional
18 control switch. What do those control switches do? They control power to
19 the LEDs to which they are connected.
20 Not only does paragraph 47 say that each LED should be controlled
21 by a corresponding switch, but there's a bigger problem. We don't know
22 what the corresponding switches are. If the control circuit is a 2D array and
23 if there's an output pattern desired on the 2D array, where some switches in a
24 column would instruct low emission and some switches in a column would
25 instruct high emission, and I guess all the switches are mapped to the LED,

1 then you have two different drivers to that LED instructing conflicting
2 control and some unintended output is going to resolve. Right? So they
3 created -- this is not an embodiment. This is from *Alden*. For some reason
4 they flipped back to figure 3 to borrow hardware that figure five never tells
5 you to borrow, and they created a non-functional embodiment.
6 Also, importantly, Your Honor, and I'll get again to this later, they
7 never refuted the functionality argument. They never said, well, a 2D array
8 would work with a 1D array, and here's why. They didn't say it in reply and
9 they haven't said it today. Right? So they are left simply with an argument
10 that we are wrong about figure 5 and figure 5 has to be a two-dimensional
11 array. The problem is, Your Honor, not only is this a new position of theirs,
12 the figure 5 is a two-dimensional array, but it renders the teaching
13 ambiguous, and that interpretation renders the teaching unsuitable for usage
14 and interpretation.
15 This wasn't as much of a problem in the petition because they
16 actually made statements in the petition that would explicitly require that
17 array to be one-dimensional if those statements were to be true. I will get to
18 that proof in a moment, Your Honor, although first I'd like to go to slide 14
19 and point out that it is impermissible and inappropriate for Petitioner to
20 modify its theory of proof. They originally set up a system that was based
21 on a 2D switch array and a one-dimensional LED array, and they don't get to
22 switch their theory of proof now to a two-dimensional switch array,
23 regardless of the fact that the Board considered a possibility that it's a two-
24 dimensional switch array, and regardless of the fact that we pointed out that
25 it would be inoperable were you combining a two-dimensional switch array

1 with a one-dimensional LED array. They're stuck with the proof they
2 presented in the petition.
3 Nonetheless, Your Honor, I would point out the flaws in this proof as
4 they present. First of all, Your Honors, we'd like to go to slide 18 and some
5 record sites to show exactly how Petitioner not only displayed a one-
6 dimensional LED array in the petition, but made statements that simply
7 wouldn't be true if they weren't thinking about this at the time of petition as a
8 one-dimensional array. So, if we can go to the '039 IPR, and we can look at
9 first at page 15.
10 Okay. So, on 15, it states, *Alden* discloses that "each LED is at a
11 different angle based on its position along a curve." Right? A fairly
12 innocuous statement, but dissected, it says "each" LED is at a different angle
13 based on its position along a curve. Right? So, already they've started with
14 the proposition that every single one of the LEDs in that lamp, however
15 many there are, have to be at a different angle. Well, were there multiple
16 rows of LEDs, those LEDs in a corresponding column would not be at a
17 different angle. Right? This is further reinforced by their argument on page
18 38.
19 JUDGE MELVIN: Mr. Tomsa, doesn't that position assume
20 something about the curvature in two dimensions? You're assuming, like, a
21 cylindrical shape for the headlight. But based on *Alden*'s teaching of
22 accommodating light vertically or steering light vertically, I'm not sure that
23 would make any sense.
24 MR. TOMSA: Well, it requires a curve along the focal point. So the
25 only way that you could get a curve along the focal point, where it's a semi-

1 spherical, would be to spin that curve around the focal point. Right? But
2 *Alden* clearly doesn't teach that that's done. And then the question, as my
3 co-counsel pointed out in the last (inaudible) argument is, where are the
4 remainder of those LEDs? Because at that moment in time, you have a
5 three-dimensional array that curves forward. And so you would see those
6 underlying LEDs were that a semi-sphere sliced in half. Right? If we look
7 at this as a cross section, it can only be a cross section of a semicylinder.
8 Anything else would reveal some underlying LEDs.
9 So I apologize, Your Honor, can I progress to my next record site?
10 JUDGE MELVIN: Sure.
11 MR. TOMSA: Go to slide 38, please. Page 38, rather. Okay. This
12 is an argument the Petitioner made for non-contiguous LEDs, right? And
13 we're not here to discuss whether or not the non-contiguous argument. This
14 is evidence of how Petitioner was using the LED array as a one-dimensional
15 array. And they said if three LEDs are selected, such as those in Greenland,
16 then the top and bottom most LEDs would not be touching or sharing a
17 border. Now, can you go to my slide 18, please?
18 And I'll reread this quote in context. This is the picture that was
19 presented on page 39. Following that, and again I quote, "If three LEDs
20 were selected," such as those in green, right, "to create the low beam
21 illumination, then the top and bottom most LEDs would not be touching or
22 sharing a border." Well, if that were a two-dimensional array and those red
23 high beam LEDs extended all the way around that green section, that
24 statement is categorically untrue. So either they were being disingenuous
25 here or they were simply stating a position that relied on this as a one-

1 dimensional LED. There's no other way to read that statement as being true.
2 Those LEDs aren't even separated by the green LEDs because, again, in a
3 two-dimensional view, as they would now have us read it, those red LEDs
4 would extend all the way around that green sector.
5 Also, could we go to page 45 of the '039 petition? Oh, I'm sorry.
6 We'll come back to that.
7 Go to the '040 petition, please, and go to page 35. This is probably
8 the most damning statement that they made that clearly indicates they
9 thought that this was one-dimensional. At the bottom portion of this page,
10 you see an express statement, not even taken from *Alden*, just the
11 characterization of *Alden* in this petition that says, as shown in figure 5,
12 *Alden*'s lighting elements, right? Not some of *Alden*'s lighting elements.
13 Not *Alden*'s lighting elements in a row. "*Alden*'s lighting elements each
14 direct light into a 15 degree section of the headlight distribution area on the
15 same plane and next to one another." Again, that statement is simply not
16 true if *Alden* is being interpreted as a two-dimensional array because the
17 elements above and the elements below are not each direction directing light
18 into a 15 degree section of the headlight area on the same plane and next to
19 one another. This isn't an interpretation that contemplates a single row of
20 *Alden* and describes some functionality of that row. This is a statement
21 about *Alden*'s entire headlight and what it does and how it does it.
22 With all of this as a backdrop, Your Honor, we understood *Alden* to
23 show a one-dimensional array. We understood the petition to argue that
24 *Alden* was a one-dimensional LED array. We also understood the petition to
25 clearly argue that *Alden* had a two-dimensional switch array and that created

1 the functionality problem. It is even a question of whether or not there's
2 some modification that could have been done to figure 2 -- or, I'm sorry,
3 figure 3 in order to make a two-dimensional switch array work with a one-
4 dimensional LED array because this is an anticipation argument. And you
5 don't get to modify disparate embodiments in an anticipation argument. Not
6 to mention the fact that they didn't even attempt the modification, nor have
7 they attempted to refute this functionality argument.
8 Their sole point of refutation is that we're simply wrong about figure
9 5 and that it has to be two-dimensional. And that's an important point as
10 well, Your Honor. They need to take the position that it has to be two-
11 dimensional because if it's a possibility that it's one-dimensional, then it's
12 ambiguous, and they clearly use it as a one-dimensional array. And so now
13 they're back to a nonfunctional position. Yet despite them needing to take
14 the position that it's actually a one-dimensional array -- could you go to slide
15 19, please? -- I'm sorry, actually a two-dimensional array and exclusively a
16 two-dimensional array, they just say that *Alden* is not limited to a one-
17 dimensional array. Right? They are still hedging that it could be either or
18 both.
19 Your Honor, if the possibility is open, the reference is ambiguous. If
20 the reference is ambiguous, it's unsuitable for anticipation. Not to mention
21 the fact that if the possibility is open, then their petition is clearly relying on
22 it as a one-dimensional array, which means they've impermissibly changed
23 their theory of proof. And now they're impermissibly -- and then they have
24 an inoperative embodiment in their original invention. For a myriad of

1 reasons, Your Honor, the proof is simply bad. And this infects the proofs for
2 every single independent claim in the '1039 and the '1040 petition.
3 Now, Petitioner does present some new evidence, as we see here on
4 slide 20, as they're permitted to do, present some new evidence. But the
5 problem is that it's all evidence. I'm sorry, slide 21, all this evidence is just
6 simply ambiguous, right? They say figures 6 and 7 show a sectional view
7 and a front on view. Well, the problem is that in figures 6 and 7, the
8 inventor figured that there was something that needed to be clarified, so he
9 showed a two-dimensional array, but he didn't seem to show the need for
10 clarity in figure 5, so we just show the one-dimensional view. Right? So
11 you can't use figures 6 and 7 as evidence of what the inventor intended.
12 They're actually evidence that the inventor knew how to show a two-
13 dimensional array when he wanted to show a two-dimensional array, and
14 then he didn't do it for figure 5. Right?
15 The second piece of evidence on slide 21 in the middle there on the
16 left says that *Alden*, the headlight constitutes an array of elements. Well, an
17 array can be a one-dimensional array. It can be a two-dimensional array. It
18 can be a three-dimensional array. There's nothing about the use of the word
19 "array" that inherently applies to second dimension. Right. It is very
20 common. A linear array, which is a thing, is a one-dimensional array. So
21 the fact that he uses the word "array" and the fact that he doesn't say "two-
22 dimensional array" is not dispositive of anything, except for the fact that,
23 once again, *Alden* is being ambiguous.
24 Furthermore, Your Honors, if we could look at the *Alden* patent,
25 figure 1. Figure 1 here. Can you rotate that? Roll plus. Okay. This is a

1 demonstrative output pattern of a headlight embodiment of *Alden*, and he
2 tells us as much in the opening paragraph with a detailed description. I
3 understand that there's light elsewhere in the scene, presumably because
4 headlights and even LEDs don't emit as lasers. Right? But the thing is, he
5 shows you the emission pattern here. And the emission pattern is linear
6 along a plane, right? So if we say 37, which he calls light emission, is the
7 optical axis of a respective set of beams, well, that's an optical axis of a
8 bunch of beams being emitted on a single plane without any one of those
9 beams traveling above that vehicle. Right? So it's clearly within the scope
10 of contemplation that there's a possibility that figure 5 included a one-
11 dimensional LED array. And again, that triggers the ambiguity problem.
12 So could you turn to slide 23, please? Your Honors, Petitioner has
13 also pointed to figure 2 as some evidence that there's the -- this is a two-
14 dimensional light contending that, well, you got to interpret 5 in view of 2
15 and 3 and 4, and 5 is showing two-dimensional light. First of all, figure 2
16 doesn't necessitate two-dimensional light. But a bigger problem is figure 2
17 is utterly ambiguous. And this is confirmed both in the way the Petitioner
18 uses it in corresponding petitions and in the fact that our expert actually told
19 us as much.
20 In the '039 petition, Petitioner argues that, as shown in figure 2, the
21 broader illumination in other areas 65 is a high beam above area 63. Right?
22 Which I assume implies that you're looking this from the side, because it's
23 not entirely clear if that line 65 originates on a plane above other emission or
24 it's a lateral plane of emission, and that's just emission that would be on the
25 other side of the vehicle. And this problem is reinforced when they go over

1 to the '040 petition, and they say that figure 2 depicts common elevation
2 laterally adjacent sectors of light. And that figure 2 discloses high beam and
3 low beam light in different laterally adjacent sectors.
4 I mean, they can't -- the petitions don't even use this figure
5 consistently, and so they treat it as flexible for whatever argument they need.
6 And we were so confused by this that, as you can see on slide 24, we asked
7 our expert about it.
8 So Mr. Turner in deposition asked our expert, okay, is this a top view
9 or a side view of the segmented beam headlight? And this is what he said: I
10 think it's a top view. They could "be a side view as well, but my first
11 thought was, it was a top view." I mean, if that doesn't reveal the clear
12 ambiguity of figure 2, especially in conjunction with your usage of the
13 petition, I'm not sure what would.
14 Go to slide 25, please. Ultimately, Your Honors, the petition itself
15 has the functionality defect, right? It relies on a two-dimensional LED or
16 switch array, which would need some kind of modification impermissible
17 for anticipation and never presented by Petitioner in the first place in order
18 to control a one-dimensional LED array.
19 Furthermore, Petitioner tried to change their argument in an
20 impermissible manner when they got to their reply by contending that figure
21 2 is not limited to a one-dimensional array. But in doing so, they revealed
22 that now figure 5 is being used ambiguously, and that ambiguity is equally
23 impermissible for anticipation. So no matter where the contemplation of
24 their argument falls, it fails to be usable for anticipation in every single
25 instance. It doesn't matter if we use the argument they started with or the

1 argument they ended with. It's a deficient, fatally defective argument either
2 way.
3 All right. Go to slide 27, please. We have a slightly different issue
4 in the '029 petition, because it is an obviousness type argument. So we don't
5 have all the rigorous, necessary rules for anticipation that say you can't use
6 an ambiguous teaching, but in an obviousness-like argument, you still have
7 an obligation to explain. To the extent that this can be interpreted multiple
8 ways, which way are we using it? And this is especially true in an IPR
9 petition, right? So we don't get the benefit of interpreting their argument as
10 what they probably meant or what they should have meant or how they
11 could have done it differently. They're stuck with what they said, and they
12 never said that they're using this in any two-dimensional manner. They
13 didn't say, we think figure 5 is a slice or a cross section. They didn't say, we
14 think figure 5 emits light above and below something. In fact, they make
15 arguments, such as this shown here, that say the three LEDs at the bottom of
16 the array direct light to the left-hand side. Right?
17 Now, that's not a statement that would be untrue, like the other
18 petitions where this is in two dimensions, but it's clearly a statement that
19 treats this as a one-dimensional array. All they ever talk about is the LEDs
20 that you see, and they have ascribe the capability of left-hand illumination,
21 i.e., the field of view to those LEDs. Right? So, again, they never
22 contemplated this as being anything other than one-dimensional. And if
23 they wanted it to be understood as two-dimensional, because it definitely
24 doesn't say that it's two-dimensional, they needed to explain it. Even in an
25 obviousness type argument, they needed to explain it. They do not get the

1 benefit of the doubt that simply because they use a two-dimensional control
2 array, well, then they probably meant to use a two-dimensional LED array as
3 well. It was their job and their burden to say it, and they didn't do it.
4 Your Honor, the only other thing I will address is the claims 9, 20,
5 and 31 of the '029 patent, and that is slide 81. Okay. Your Honors, here we
6 have a similar problem that was addressed in the other IPR proceedings
7 where we have this question of what type of control is being controlled by
8 what type of sensor, right? This is the control which is the control from
9 claim 8, and that is control to reduce glare.
10 Now, Petitioner actually notes this fact in their petition. So there's
11 not a dispute about what type of control is being effectuated by this non-
12 camera sensor. Right? They even say, well, it's the -- yeah, this is the
13 control to reduce glare. The problem is they relied on sensors that aren't
14 used to be controlled to reduce glare. They relied on sensors that are used
15 for curve elimination. So despite the fact that they admit that the type of
16 control we're concerned with is glare, if you go to slide 82, you can see from
17 our Patent Owner response that they cited the steering wheel rotation sensor,
18 the GPS sensor, as the non-camera sensor. And remember, this non-camera
19 sensor has to be used to reduce glare because that is the control that's
20 claimed by claim 9. It's the control to reduce glare, which is reiterated on
21 slide 83.
22 You go to slide 84, please. So as we pointed out in our Patent
23 Owner response, controlling light to illuminate a curve, whether or not *Alden*
24 does it is certainly not controlling light to decrease glare to another vehicle.
25 And whether that's done based on GPS or steering data, it's the only kind of

1 control that's ever ascribed to the data in any of their proofs, right? So
2 whether they're relying on the steering data, or rather they're relying on the
3 GPS data of *Kobayashi*, every single one of their proofs, including the
4 conclusion of this sent -- this section of the petition notes that that
5 information is used to control curve data. At no point did they demonstrate
6 under any plausible sense how that data is used to control glare.
7 So we pointed the problem out and on reply, they entered a new
8 argument, which is an interesting and creative interpretation of how steering
9 wheel data might be used to reduce glare. But it happens to be an
10 impermissible new argument, new theory. And incidentally, it also simply
11 isn't how *Alden* functions.
12 So if we go to claim page 85, please, as Opposing Counsel
13 explained, their new theory is that, you know, were there a vehicle in a curve
14 that was being detected, mind you, so it has to be seen by the camera to set
15 up this initial principle of reduced glare, were there a vehicle in the curve
16 and then were the system to shift light left as the vehicle rotation turns, I
17 guess, presumably, you need to offset the glare reduction area, right, in order
18 to sort of preserve the box of delumination around that vehicle. Well, there
19 are multiple problems with that. The biggest problem of which being that
20 *Alden* absolutely says nothing about this. *Alden* literally has two sentences
21 about steering wheel data, and it says, when you turn the steering wheel and
22 a new moving direction is detected, you shift the light, a corresponding X
23 number of degrees, full stop. There's nothing about an offset calculation or a
24 need for an offset calculation or how such an offset would work.

1 And further, such an offset presupposes that, A, the camera suddenly
2 isn't capable of providing sufficient glare reduction capability on its own as
3 it redetects the position of the vehicle as the vehicles move oppositionally;
4 and it presupposes that nothing moves in space at all, because once these
5 vehicles move, simply offsetting that box by the amount that you've steered
6 the lens to the left, isn't going to accommodate this vehicle because they're
7 moving relationally to each other. You need the camera to understand where
8 the new position of that vehicle is. Everything is moving, and only the
9 camera can be used to detect the position of that vehicle.
10 But again, the problem is this claim says "non-camera sensor data."
11 You can't use the steering wheel data in the manner they propose. You
12 certainly can't use GPS data in the manner they propose. Both of the
13 manners they propose are completely outside the teachings of the prior art
14 and they also don't work.
15 If there are no questions, Your Honor, I'll turn this over to my co-
16 counsel. Thank you, Your Honors.
17 MS. SHAH: We can turn to slide 47, please. So I'll be addressing the
18 first series of arguments with respect to the issue of whether *Alden* teaches
19 identifying a vehicle or classifying objects. Slide 48, please.
20 So, first, we'd like to take a look at claim 8. Here you can clearly see
21 that claim 8 has a series of different -- well, two specific, separate
22 limitations. The first is a camera for obtaining images of the illuminated
23 area functioning as a detector. Then that same camera functions as a
24 detector for sensing at least one of work surfaces, road objects, and at least
25 one vehicles and people. Then you proceed forward down to the second

1 limitation that we're going to focus on today, which is a processor. Right?
2 There's a specific separate processor limitation that says "a processor with
3 stored algorithms and data for identifying at least one of road objects,
4 people, and/or vehicles, which is used by set processor for determining
5 illumination within the illuminated area using at least one of artificial
6 intelligence and pattern recognition."
7 So what's important, the upshot of this is claim 8 explicitly uses the
8 terms "detector for sensing a vehicle" and uses it in a way that is distinct
9 from identifying a vehicle. That's in the claim. The exact same claim has
10 both terminology clearly indicating that detecting is something different than
11 identifying.
12 Next, I'd like to point to the top right portion of slide 48, which
13 provides the unrefuted construction of "identify." This comes from the plain
14 meaning dictionary definition of identified, which is "to show to be a certain
15 person or thing, to fix the identity of; to show to be the same as something or
16 someone assumed, described, or combined -- or claimed." This dictionary
17 definition has been fully supported by the intrinsic evidence, which you can
18 see in the bottom right of slide 48. The intrinsic evidence in '551 makes it
19 clear that '551 patent provides teaching, multiple teachings actually,
20 associated with its ability to identify multiple different kinds of objects.
21 Here it states, "Using real-time image processing methodologies with image
22 and scene recognition technology known in the art room or outdoor area,
23 elements, objects, and people are identified."
24 The same in our briefing in the '1039 Patent Owner response on
25 pages 21-22, we provide numerous other cites that show several other

1 examples in the '551 patents of its ability to identify objects and people
2 based on this plain meaning construction of "identify."
3 So, again, we'd like to go back to claim 8 and confirm. Claim 8
4 again uses the term "identifying the object." And then what it also does is it
5 takes the ability to identify the object, and it uses that to determine the
6 illumination for the illuminated area. This is also explained in the
7 specification, column 63, where '551 patent states the controller being
8 programmed to illuminate people, objects, and surfaces according to best
9 lighting practices or user preferences. So you can determine the appropriate
10 lighting based on the identity of the detect object in a scene.
11 Slide 49, please. So now let's take a look at Petitioner's proofs, again
12 in the context of the unrefuted construction of identify as showing to be a
13 certain person or thing, fixing the identity of that which was assumed as
14 something, in this case, hypothetically, a vehicle. So on your right, you have
15 Petitioner's proofs. Up at the top, you have their proofs in the petition where
16 they are simply pointing to patterns of sense light. An oncoming vehicle is
17 being light that passes through the primary lens. That again, it is this light
18 that falls on the sectors of a photon detector array where it's detected.
19 Continuing on to the sort of middle portion of the excerpt that is
20 provided in slide 49, you see, up at the top, Petitioner points to logic and
21 CPU 71 stored in a memory 72 is a map of sensed light. Once again, over
22 and over again, Petitioner's proofs are simply focused on sensing or
23 detecting and conflating that with identifying a vehicle. This is done despite
24 the fact that, as we pointed out in the last slide, claim 8 itself uses two
25 different words, "identify" and "detect," in different ways. And this is also

1 done despite the very well-settled claim construction principle that, absent a
2 countervailing reason, two different claim terms are to be accorded different
3 meanings.
4 In our briefing, we identify *Kraft Foods* as one of the many cases
5 that supports this principle. And in this case, Petitioner, despite, again, this
6 issue being raised, never provided any evidence to overcome the
7 presumption of claim differentiation, and even today doesn't refute the fact
8 that -- you know, doesn't say anything to refute Patent Owner's construction
9 of "identify".
10 Nonetheless, what Petitioner does do is it provides proofs that
11 absolutely conflate "identify" with "detect". Its proofs conflate detecting a
12 vehicle with identifying a vehicle. And a case that's quite instructive on this
13 point is a case that came about after the conclusion of our briefing, which is
14 the *Apple v. Omni MedSci* case, Case Number 2023-1034, which issued on
15 June 21st, 2024. And it is instructive in this case because it bears to light the
16 criticality of the issue of claim differentiation, and it also has a lot of
17 resemblance to the issues at hand.
18 So as the Federal Circuit held in the *Omni MedSci* case, Petitioner's
19 proofs to detecting an object, the Federal Circuit found those proofs to not
20 be interchangeable with identifying an object. So, once again, the issue was,
21 is detecting an object the same as identifying an object? And there the
22 Federal Circuit found absolutely no, that those detect is different than
23 identify, and that those proofs cannot be interchangeable. The Federal
24 Circuit held the plain meaning of "detect" is to discover or determine the

1 existence, presence, or fact of an object, which is different than "identify,"
2 which is to recognize or establish an object as being a particular thing.
3 Notably, the Federal Circuit held in that case, the two terms require
4 different interpretations, even though the claims never do anything with that
5 identification. In our case, the claim differentiation argument is even
6 stronger because, as we pointed out, claim 8 specifically requires a
7 determination of the identity of a sensed object, and then it takes that
8 confirmation that the detected object is, in fact, a vehicle and uses that
9 determination to then determine the exact way that it wants to illuminate the
10 scene in front of it. So under the Federal Circuit precedents in *Apple v.*
11 *Omni MedSci*, Petitioner's conflated proofs absolutely fail.
12 Second, Petitioner's proofs misrepresent *Alden*'s teachings. As you
13 can see in the middle here of, again, slide 49, the middle excerpt that's been
14 provided, Petitioner also states that, "CPU 71 then compares these maps and
15 assesses whether they appear to be vehicles, including based on the
16 'intensity' and 'distance' of the light patterns." It goes on to state, "If the light
17 patterns are determined to be a vehicle, then CPU 71 will adjust the
18 illumination of the light and the sectors containing those patterns." The
19 problem is, *Alden* doesn't do any of that.
20 What *Alden* does is it simply looks for a pair of lights that are above
21 a threshold, and then it creates a map of whatever. It creates a map that
22 maps out the detected lights. It compares those if they're above a threshold
23 intensity, and it calculates dim zones. It does not -- it's not as Petitioner
24 alleges, assess whether they appear to be vehicles. It does not determine if

1 the light patterns are a vehicle. Those are not things that *Alden* -- those are
2 not capabilities that are ascribed to *Alden*.
3 Finally, if we look at the quote on the right, this is also instructive
4 because Petitioner has repeatedly relied on this sort of notion that if *Alden*
5 could at times theoretically identify a non-vehicle as a vehicle, it means that
6 that's sufficient to establish identification of a vehicle. Yet here, once again,
7 if you look at the unrefuted construction of "identify," it has to at least once
8 be capable of fixing the identity of the detected light as a vehicle, and *Alden*
9 has no such capability. As we've established, it's simply (inaudible) light,
10 looking for threshold light above an intensity, and effectively looking for a
11 pair that they can then use to trigger a dimming. There is no such other
12 capability to identify light as per the unrefuted construction of that term.
13 Next slide, please.
14 Petitioner, if we take a look at the -- so sorry, hold on one second.
15 We can go back a minute. If we can turn to slide 51 actually. Sorry, slide
16 50 -- yeah, 51. The Petitioner points to here *Alden*'s comparison of left to
17 right sensor mappings of a pair of detected light above threshold intensity to
18 satisfy the identifying a vehicle limitation of claim 8. Once again, as we've
19 established, generating a left and right sensor map above a certain threshold
20 intensity, comparing the two sensor maps, and then drawing a bounding box
21 81a that is larger than the detected spots because you are assuming the space
22 is occupied by a driver is insufficient to identify a vehicle. Stated
23 differently, the use of sensor maps and any supposed pattern recognition is
24 insufficient to identify a vehicle.

1 *Alden*'s teachings are simply insufficient to establish that the detected
2 light, which is assumed to be a vehicle, is, in fact, a vehicle, and thus
3 Petitioner's proofs fail. This is actually confirmed in the right-hand excerpt
4 by Petitioner's expert when he's talking in the context of road reflectors, that
5 he states that *Alden* would generate the same image using the same logic for
6 road reflectors as vehicles, and thus once again confirming that *Alden* has no
7 ability to identify anything. Petitioner's attempt to modify this testimony
8 today is impermissible as a belated new theory, and further one that is
9 absolutely unsupported by *Alden* itself.
10 In its argument Petitioner pointed to paragraph 36, again, today in an
11 effort to revise its expert's testimony. But that paragraph provides no
12 support for use of a different modified logic. *Alden* lacks the ability to
13 establish that the detected light is, in fact, a vehicle. As has been discussed
14 numerous times, *Alden* relies on one simple set of logic that is described in
15 figure 4, which provides no mechanism for differentiating between different
16 light sources of detected light. By contrast, in the '551 patent, as we've
17 discussed, the ability to differentiate between light sources, which is part of
18 what is claimed in the identifying step, is achieved in one example, through
19 image processing. As per our briefing, *Alden* has no ability to effectuate
20 image processing or any other means to identify an object.
21 Finally, if we turn to slide 49, this notion that whether *Alden* could
22 theoretically at times establish -- could potentially theoretically at times
23 establish or identify a non-vehicle as a vehicle is a red herring. *Alden* isn't
24 capable of occasionally identifying a vehicle. *Alden* can never actually
25 identify a vehicle, and thus it can never satisfy claim 8. Petitioner's reliance

1 on the *Fitbit* case is thus incorrect, as the facts don't support that particular
2 case.
3 JUDGE MELVIN: Ms. Shah, I have a question about your
4 construction. So that word "certain," it seems like you want the construction
5 to require certainty that some detected object is, in fact, a vehicle. Is that
6 right?
7 MS. SHAH: We're simply applying the plain meaning dictionary
8 definition that is supported by the patent, not any other (inaudible).
9 JUDGE MELVIN: And I don't think that's quite a responsive answer,
10 though. I'm asking about the word "certain" in your proposed construction
11 and what work that word does.
12 MS. SHAH: So with respect to the word "certain," what it does is it
13 does fix the identity of whatever you're trying to establish as a certain
14 something. Right? In this case, it's talking about a certain person. If you're
15 talking about fixing the identity of an object such as a vehicle, then the proof
16 for identifying has to fix the identity of the detected light as a vehicle. And
17 that's what's missing.
18 JUDGE MELVIN: But when you say "fix the identity," you're saying
19 it has to be accurate.
20 MS. SHAH: I'm saying it has to -- if you continue on and you take a
21 look at the rest of this, it literally establishes that if you assume something is,
22 in this case, a vehicle, you have to be able to establish, you have to be able
23 to show and confirm that it is, in fact, a vehicle. Right? It is something
24 (inaudible).

1 JUDGE MELVIN: In fact a vehicle. So I guess what I'm wondering
2 is if a system made an erroneous identification, and that it said, okay, you
3 know, this looks like a car, and it does whatever image processing that you
4 think the claim requires, and it decides that the detected light is, in fact, a
5 car, but the system is incorrect about that and has misidentified a car, that
6 would be outside the claim scope?
7 MS. SHAH: It's outside the claim scope when the reference is
8 incapable of ever identifying the stated object, in this case a vehicle.
9 JUDGE MELVIN: But you know that wasn't my question. Right?
10 MS. SHAH: I understand, but the question -- this isn't about
11 sometimes. Again, I understand that Petitioner is pointing to law that
12 indicates that if something is capable sometimes of achieving infringement,
13 that it's also, you know, that that's sufficient for infringement or validity in
14 this case. Here we're talking about, there's a very specific, plain meaning
15 definition of "identify". That definition -- again, the same issue came up in
16 the context of this Federal Circuit case, *Apple v. Omni MedSci,* which clearly
17 distinguished "identify" from "detect". As we mentioned, notwithstanding
18 the fact that the claim itself has these two different words, Petitioner never
19 bothered to explain why it's appropriate for them to just conflate the
20 meaning of these terms. We proffered a plain meaning definition, which is
21 unrefuted. And that plain meaning, different definition is the exact same
22 definition that the Federal Circuit upheld in the context of "detect" versus
23 "identify". Applying that plain meaning in this instance means that *Alden* is
24 incapable of ever affixing the identity of a detected object as a vehicle, and
25 hence the proof fails.

1 JUDGE MELVIN: I'm still not sure why you say that. I think it's
2 because of *Alden*'s use of the word "assume". Is that right? And that's
3 because that's in a different part of your dictionary definition? I mean, *Alden*
4 does detect two spots of light, does it not?
5 MS. SHAH: It does, yes.
6 JUDGE MELVIN: Okay. And once *Alden* has detected two spots of
7 light, it assumes that those spots are a vehicle, does it not?
8 MS. SHAH: That's correct. Which is, again, sort of -- by definition,
9 it means it has not identified it. It just means that it's made an assumption,
10 and then it's taking a series of actions based on an assumption. This
11 definition absolutely confirms that assuming something to be an object does
12 not identify that object as -- you know, you cannot fix the identity of that
13 object based on an assumption, which is precisely what *Alden* does, because
14 it doesn't matter for *Alden*. *Alden*'s teachings are not predicated on
15 identifying anything. It doesn't determine illumination based on the
16 identification it has. It's a one trick pony. Its one trick is it figures out if it
17 over includes a detected vehicle. It doesn't matter for *Alden*. Right? It
18 doesn't have the ability actually to identify people, signs, objects, road
19 reflectors, and then differentially illuminate based on what's in front of it.
20 JUDGE MELVIN: Well, why does your claim require that? Even if
21 your claim required somehow, let's say, identifying a vehicle versus some
22 other object, there's no differential illumination that your claim requires, is
23 it, based on the classification? It's just that the illumination does depend on
24 the classification. It's not that those illumination levels have to be different
25 from one another.

1 MS. SHAH: Can we go to slide 48, please? As we pointed out here,
2 the claim specifically, this is claim 8, right, we're speaking about the identify
3 vehicle aspect of the arguments. So, with respect to identify a vehicle and
4 claim 8, you have two distinct claim limitations. One is clearly using the
5 term "detector" and using it in the context of detecting for purposes of
6 sensing a vehicle. That's the first limitation. And it uses a camera to do that.
7 You then move over to the processor limitation, which, again, has a
8 completely separate set of requirements, using stored algorithms and data to
9 identify vehicles, which are then used to determine the illumination within
10 the illuminated area.
11 This is, again, if you look at the entire series, the whole group of
12 limitations in claim 8, it's because claim 8 is contemplating multiple
13 different kinds of identification and sensing capability. It's work surfaces,
14 it's road objects, it's vehicles, and it's people. And then what it does, when it
15 proceeds down to actually using the pattern recognition is determine the
16 illumination based on what identification? What is it that's in front of you?
17 Is it a road object? Is it a person? Is it a vehicle? And then the processor
18 will determine illumination within the illuminated area using that pattern
19 recognition data.
20 And so again, this is, it's a complete claim that provides you this
21 ability to have multiple different kinds of identification, and then differently
22 -- then illuminate in reference to that which is identified.
23 JUDGE MELVIN: It could still be choosing from two different levels
24 of illumination.
25 MS. SHAH: I'm sorry, could you repeat that?

1 JUDGE MELVIN: The claim would read on a system that chooses
2 from two different levels of illumination: one for any identified object
3 among the class of possible identified objects and one for other areas.
4 MS. SHAH: Again, we would respectfully disagree with that
5 interpretation because that interpretation does not account for the unrefuted
6 construction of "identify". That construction does not address the issue that
7 identify requires you to be able to fix the identity, to establish, to confirm
8 that that which you detected is, in fact, a vehicle. And that's -- therein lies
9 the issue.
10 If there aren't any other questions, then I'll move on to the classify
11 the object argument. If we can turn to slide 52, please.
12 So now we're looking at yet another different claim limitation. This
13 is presented in claim 48, specifically limitation 48(i). This Petitioner has
14 annotated them. I'd like to point your attention to the very last limitation of
15 48(i), which is the first light determined based, at least in part, on classifying
16 the object based, at least in part, on the data. So, taking a look at this again,
17 you have this issue of classifying the object.
18 Once again, we have the same sort of set of proofs that Petitioner has
19 provided, which you can see on the right-hand side, where Petitioner is
20 chosen to, which they actually further acknowledged today, replicate all of
21 its proofs for identify a vehicle, and essentially present them in the context
22 of classifying the object, conflating the fact that there are different terms,
23 never explaining why there's -- you know, they're never trying to even rebut
24 the presumption of claim differentiation, that these different terms are
25 entitled to a different meaning under the law. They just simply, you know,

1 sort of regurgitate the exact same proofs they have for identify a vehicle, for
2 classify the object, without any explanation as to why that's acceptable here.
3 And so again, as a matter of law, under the case laws, which we discussed
4 both with respect to *Omni MedSci* and other cases that are in our briefs, that
5 failure to rebut the presumption of claim differentiation is, per se, as a matter
6 of law.
7 Moreover, during its argument today, Petitioner even confirmed that
8 there is not much of a difference between classifying an object and
9 identifying a vehicle. Once again, underscoring, the Petitioner absolutely
10 thinks that it's appropriate for it to conflate its proofs. As we mentioned,
11 there's strong presumption that different claim terms have different
12 meanings in the *Kraft* case and in *Omni MedSci*. And it is impermissible for
13 a Petitioner to just go about conflating the proofs without providing the
14 requisites, without establishing a rationale, and rebutting that presumption
15 that these different terms should in fact have the exact same meaning. We
16 can turn to the next slide, please.
17 So here we have now three different terms that are effectively all
18 being used same by Petitioner. Right? We have detect, we have identify,
19 and we have classify. According to Petitioner, these -- despite the fact that
20 the '551 claims use each of these terms in different ways, sometimes in the
21 exact same claims, sometimes across different claims, according to the
22 Petitioner, they're all the same. You know, it doesn't matter that, you know,
23 even though there's an undefeated construction of identify a vehicle, it's still
24 the same as classify an object, and they don't really provide any explanation
25 otherwise.

1 Once again, as we pointed out, "The ordinary meaning of 'detect' is
2 to discover the presence or existence of something, which is a binary
3 determination." That, you know, that's very different than actually
4 identifying something that is assumed to be an object as, you know, again,
5 clarifying and fixing the identity of something that's assumed as, in fact,
6 being what is the specific object in question.
7 Separately, then, we have the issue of classifying. Classifying here,
8 as you can see, is it's not detecting light above a threshold, and then
9 assuming that that light is, in fact, classifying an object. Classifying, as we
10 have provided a construction here, is specifically related to the issue of
11 "assigning an object a classification among multiple classes or types of
12 objects." While Petitioner does not accept that construction, it also doesn't
13 do anything to, once again, rebut the construction or rebut the presumption
14 that classifying an object is something other than identifying a vehicle. Next
15 slide please.
16 We'd like to turn to the intrinsic evidence record within the '551
17 patent that is set establishes that this dictionary definition that we proffered
18 for classifying object, which is, again, requiring arranging or grouping an
19 object into one of multiple object classes according to some system or
20 principle. And that is, in fact, fully supported by the '551 patent. It's not just
21 the plain dictionary meaning. It is, again, one that is fully supported by the
22 record. If we can look at the right-hand side excerpt, you can see in the '551
23 patent, it specifically talks about the detector pixels 197 being used to obtain
24 images of the room which the controller 195 can assess is furniture,
25 equipment, or occupants. So here you have the example of one room, which

1 is the scene, having the ability to classify room objects into three different
2 classifications: furniture, equipment, or occupants.
3 This is again explained as you continue down that excerpt as being
4 that capability arises from pattern recognition capability that allows the
5 ability for the controller to, number one, identify what object is in front of it,
6 and then classify those objects into these three groupings for this specific
7 example. Notably, this is not the only example in the '551 patent. Our
8 briefing has a couple different other examples in the context of stage lighting
9 and also in the context of outdoor elements.
10 I'd also like to note the quote on the bottom right of slide 54, which
11 further establishes unequivocally that classify is not the same as identify or
12 even locate. Right? The patent, the specification makes it clear, it uses
13 these terms in the specification as different terms, not just in the claims, but
14 also in the specification. So when something here by -- when they're talking
15 about appropriate computational means employing trained pattern
16 recognition technologies, again to classify, identify, or locate the contents,
17 different terms, different usage in the specification, as well as the claims.
18 We can turn to the next slide please.
19 So, once again, here we have the *Phillips* case that lays out, you
20 know, fundamental claim construction principles that the ordinary meaning
21 of "classify" is what we provided here. And that's the plain dictionary
22 meaning which is supported by the specification. Once again, as we pointed
23 out, the specification not only supports this definition, but it also supports
24 the -- and confirms that "classify" something other than "identify" based on

1 the quote on the right -- on the left, sorry, and also the one that we looked at
2 earlier.
3 Finally, I'd like to again point out that this is further underscored by
4 the specification, which has multiple specific examples of the '551 patents
5 ability to classify objects. If we can turn to the next slide, please.
6 So this is slide 56 --
7 JUDGE MELVIN: Before you go on, I just have a question. I mean,
8 let's say that we agree with Petitioner that *Alden* can classify detected light
9 as a vehicle because, you know, let's say it's a pair of lights and it's --
10 sufficiently, you know, bright. Is your position on identify that that is not
11 also identifying a vehicle because it's not a specific vehicle, a certain
12 vehicle?
13 MS. SHAH: I'm sorry, I'm not clear. Are you asking me about the
14 classify? If you can maybe either repeat the question --
15 JUDGE MELVIN: Well, it seems to me that "classify" is sort of a
16 broader term that would include putting a detected object into a particular
17 class, such as vehicle. Right? But identify, I think, as you are proposing we
18 construe that term would require correlating a detected object with a certain
19 thing. So it seems like your view would be that even if *Alden* can classify
20 detected light as a vehicle, that would not identify a specific vehicle. I'm
21 trying to understand sort of how you think the difference actually works
22 between these two terms.
23 MS. SHAH: Right. So if we can go back up to the -- maybe it's the
24 last slide, to slide 54. Yeah. So again, we've provided constructions. There
25 are plain meaning constructions that, in our opinion, are fully supported by

1 the intrinsic record of '551 patent. As we briefed, it's our position that to
2 classify an object, you first have to be able to confirm the identity of the
3 object as being that which it is. So again, in our briefing, we've made it
4 clear that, you know, there's kind of a -- it requires the ability to understand
5 what is, in fact, in front of you and then classify.
6 So whether it's narrow or broader, again, maybe that's subject to
7 interpretation, but we don't see that identify is necessarily something broader
8 than classify. If anything, perhaps it's the opposite, because classifying
9 almost inherently requires the ability to fix the identity of that which is in
10 front of it. So then it can continue on to arrange those objects, once
11 identified, into a specific group of classes, which is exactly what's shown in
12 the '551 patent example that's provided here.
13 JUDGE MELVIN: So then how are we supposed to understand with
14 certain -- I'm sorry, do you have your proposed construction for "identify"
15 handy? Because --
16 MS. SHAH: Yeah, right there.
17 JUDGE MELVIN: A certain thing, right? You say that you need to
18 show to be a certain thing. I think we're not talking about persons, we're
19 talking about vehicles, so I think we can skip the person part.
20 MS. SHAH: Well --
21 JUDGE MELVIN: So what does "certain" mean? Certain meaning a
22 particular vehicle like brand and model, meaning a particular vehicle like
23 that. VIN number of vehicle? Or it's a vehicle, it's not a bird. Or does it
24 mean it's a car, not a motorcycle? What does "certain" mean?

1 MS. SHAH: Well, in this case, it certainly means that it has to be able
2 to fix the identity of the detected light as a vehicle, whether, you know,
3 perhaps in some other instance, they may want to be able to separately
4 identify a truck from a car, from a motorcycle, perhaps that's -- you know,
5 there's a myriad of different things that one can try to identify. Here the
6 dispute relates to the ability with respect to the claims to identify a vehicle.
7 In this instance, as we've mentioned, because *Alden* has no ability except
8 identifying a pair of detected light that's above a threshold intensity and then
9 taking steps to dim, that's the extent of what *Alden* is capable of doing. It
10 doesn't have -- figure 4 doesn't have any mechanism that allows it to confirm
11 that that which it detected is, in fact, a vehicle. It simply takes the paired --
12 once there's a pair of detected spots that are above a threshold, it then
13 proceeds to go ahead and calculate dim zones. There's no other step in there
14 because it honestly doesn't matter for all them, right?
15 So that's why their expert specifically indicated when they're talking
16 about in the context of road reflectors -- once again, there's only one single
17 logic that exists in *Alden*. It's in figure 4 and it simply says, you go through,
18 you identify - you create those maps, you compare the maps, you figure out
19 what the dim zones are, and you dim. There is no other separate step of
20 trying to figure out what is, in fact, the identity of the detected light, which is
21 a prerequisite to meeting the identify a vehicle limitation, and also a
22 prerequisite then to meeting the classify an object, because if you don't know
23 what's in front of you, you cannot classify it for the plain meaning of that
24 term.

1 So if we can continue on to -- let me see if there's -- yeah, if we can
2 go to the -- back to slide 56, please. Here we have Petitioner's new
3 arguments on reply. Again, these were not arguments that were presented in
4 the petition. Specifically, Petitioner argues that references to -- if we look at
5 the right-hand side, the quotes that are provided here, Petitioner argues that
6 *Alden* discloses classifying objects as it arranges the objects into groups of
7 something, light sources in classes, both vehicles and non-vehicles, "based
8 on a system or principle, whether the intensity of detected light is above a
9 threshold or distance."
10 However, *Alden* does not have that capability. *Alden* never classifies
11 the light sources into vehicle and non-vehicle classes. It only senses light
12 and dims light in response. This coded response is not proof of
13 classification. *Alden* does not express a system or principle of classification.
14 It never uses the words "classify." It simply uses a threshold, and it never
15 describes what it's doing with the non-threshold data. It certainly doesn't
16 treat the non-threshold data as non-vehicles. And, in fact, if it does anything
17 at all with the non-threshold data, it probably discards it.
18 With respect to the bottom quote here, which is the final argument
19 that Petitioners make, it points to the fact that perhaps it's just very bad at
20 classifying, that that somehow excuses the proofs. This is not an issue of
21 accuracy or degrees of accuracy or that the claim requires perfect accuracy.
22 *Alden* is incapable of classifying an object because it can never identify an
23 object in the first place and then classify it into any particular group, and
24 hence the proof fails. It is not because it's imperfectly accurate. It's because

1 it fundamentally isn't capable of identifying and classifying an object. Next
2 slide, please.
3 So now we're going to turn to the identify road curvature proofs that
4 relate to the claims that are identified here in slide 57. Once again, you have
5 effectively the same issue, which is you're talking about identifying a road
6 curvature. Petitioner relies on *Alden* alone to challenge these claims based
7 on an anticipation ground one that is limited to anticipation only. If we can
8 turn to slide 59, please.
9 So here, Petitioner points to *Alden* and specifically this language on
10 the left-hand side associated with figure 11 that says, "Figure 11 illustrates
11 the art of the present invention being used to concentrate light to look around
12 corners in response to road conditions. An equipped vehicle 153 senses that
13 the road turns by receiving light from reflectors." It then also, of course,
14 points to figure 11. Next slide, please.
15 As we've pointed out, as we've established in the context of the last
16 series of limitations with respect to identify, the issue here is that *Alden* is
17 incapable of identifying, as we described, anything. It cannot identify a
18 vehicle. It cannot identify road curvature. It doesn't have the ability to fix
19 the identity of that which it receives, the detected light it receives as a
20 specific, in this case, object, right, a vehicle versus a road reflector. This is
21 absolutely confirmed by Petitioner's own expert, again, in the context and in
22 testimony related to trying to understand how *Alden* would go about actually
23 determining a road reflector versus a vehicle.
24 In that context, with respect to the step position excerpt on the right-
25 hand side of slide 60, their expert, Petitioner's expert, states with respect to

1 road reflectors, it uses "the same logic" that's described in figures 3, 4, and 5.
2 That logic that creates -- again, the dots that are in figure 3, they're going to
3 be the reflectors. Those reflectors are going to correspond with -- they're
4 going to have, quote, "the same appearance on the image like the
5 headlights." And thus, using the same logic, creating the same appearance
6 on the image like the headlights, *Alden* has no ability to distinguish between
7 headlights versus road reflectors in this instance. And thus, again,
8 Petitioner's own expert, absolutely clarifies that *Alden* is incapable of
9 identifying a road curvature.
10 Now Petitioner, on reply, has pivoted and provided a completely new
11 argument. As you can see on the left, Petitioner now argues impermissibly
12 that to distinguish between different objects, the threshold, intensity, or
13 distance would simply be adjusted based on the object type. It, however,
14 cannot point to anything that supports this, because figure 4 doesn't provide
15 multiple thresholds. The *Alden* reference as a whole provides absolutely
16 nothing to support the existence of multiple thresholds. And all of their
17 proofs point simply to their own argument and parroted argument by their
18 expert. Next slide, please.
19 If we could go to slide 75, I'd like to move to the final argument that
20 I'll be making, which is with respect to the active optics issue and
21 specifically claims 21 and 32. Next slide, please.
22 So here we have the issue of how to go about interpreting claim 21.
23 We'd like to very specifically point to the language of claim 21, which is
24 highlighted what we think is the most relevant language of claim 21, which
25 is "wherein the instructions include instructions that, when executed by the

1 one or more processors, enable the one or more processors to utilize one or
2 more control -- sorry, one or more optical control elements included in the
3 motor vehicle to control light." In the Petitioner's discussion, there was an
4 overemphasis on simply focusing in on "utilize". We think that it's more
5 appropriate to look at the entire claim to glean the meaning of this -- the
6 meaning of claim 21. And in that regard, we would specifically look at the
7 fact that claim 21 is talking about instructions that, when executed by the
8 processor, enable the processor to utilize optical control elements to control
9 light, which effectively require actively using the optical control elements to
10 control light.
11 Claim 32 includes similar limitations in base claim 32, which you
12 can see here on the right, requires that the method be performed by a
13 computer, i.e., a computer implemented method per claim 23. That is that
14 computer implemented method that then uses optical control elements in
15 claim 32 to control light.
16 Petitioner's arguments are based on ignoring all of these
17 computer/process control limitations and simply myopically focusing on the
18 word "utilize". This interpretation would render meaningless much of what
19 is highlighted here in yellow. With respect to claims 21 and 32, there's an
20 enormous amount of case law, but we're just going to identify two cases that
21 the Federal Circuit has provided with respect to the claim construction
22 principle, that it is highly disfavored to construe terms in a way that renders
23 them void, meaningless, or superfluous. For that proposition, we cite
24 *Wasica Financial v. Continental Automotive Systems* and *Vicon v. Strohman*
25 (phonetic). In both of those instances, the Federal Circuit refused to

1 construe terms in a way that made other limitations meaningless, which is
2 precisely what Petitioner's application of claim 21 would render. It would
3 render the highlighted language to be meaningless.
4 We also think it's absolutely critical that we turn to the -- if we can
5 turn to the record cites associated with clinical claim 19 -- actually claim 12
6 first. So Petitioner's argument that claim 19 should be interpreted in a way
7 that is limited to passive optics, completely ignores that it is a dependent
8 claim that depends off of claim 12. Claim 12 -- I'm sorry. Let's do one thing
9 quickly.
10 What Petitioner does in its proofs, and so if we can take a quick look
11 at that so we can set up the context of this, we can turn to slide 78 first. So
12 this is Petitioner's argument, and it's important to understand the scope of
13 their argument before we go to the way the claims are structured. Petitioner
14 argues, "When the processor controls the LEDs to emit light, it utilizes the
15 lens element 121 to direct the light." So again, it's really important to
16 recognize the focus of Petitioner's argument is the fact that the processor
17 controls the LEDs is sufficient then that if there happens to be a passive
18 element down the line that light transmits through, that's sufficient because
19 the processor's controlling the LEDs to emit light. Now, if we can go to the
20 record cite, please.
21 So if you look at claim 12 here, you have the issue that claim 12
22 actually already does what Petitioner is assuming and reading into claim 19.
23 It has the instructions that control the plurality of light sources. Claim 12
24 has that, as does the intervening claim, yeah, claim 19, which also provides
25 the exact same ability to control the plurality of light sources based on a set

1 of instructions. So obviously, if one was to continue forward with
2 Petitioner's analysis, that claim 21 does nothing more than simply control the
3 LEDs and then allow for the ability to -- for light to transmit through a
4 passive static lens 121, it completely conflates with the reading of the
5 specific language of the claims that claim 21 depends from.
6 So claim 19 and 12 both already include instructions to control an
7 LED. Reading claim 21 in the exact same way is superfluous and hence
8 inappropriate under the doctrine of claim differentiation, specifically the
9 doctrine that you're not supposed to be interpreting claims in a way that
10 renders the claim scope redundant. And for that, we cite the following case,
11 Federal Circuit *SRI International v. Matsushita Electric Corp.* It is well
12 settled law that when a patent claim does not contain a certain limitation and
13 another claim does, that limitation cannot be read into the former claim in
14 determining either validity or infringement. Petitioner's reading once again
15 conflates claim scope of claims 19 and 21, and in so doing renders the
16 additional instructions and their impact on how the processor engages the
17 optical control elements meaningless, and thus Petitioner's interpretation and
18 this conflation of proofs, which cuts against Federal Circuit precedent, is
19 impermissible.
20 Moreover, they point to claim 22, which is the only other argument
21 they make. If we can turn to claim 22, please. In its argument, Petitioner
22 pointed to claim 22 as somehow being relevant to the issue of how to
23 interpret claim 21. As you can see here, claim 22 is a "wherein the optical
24 control elements include" clause. That clause does not have any bearing on
25 how to read claim 21. It is not a "consisting of" clause. It simply is adding

1 another feature, and hence it doesn't do anything to modify the interpretation
2 of claim 21 as requiring passive elements.
3 And if there's no other questions, then I will pass on -- have my co-
4 counsel proceed with his arguments.
5 MR. TURNER: Good afternoon, Your Honors. I'm going to discuss -
6 - go back to the predictive curve limitations and discuss increased
7 elimination, so we can go back to slide 61, please. All right, 62, please.
8 All right. So, shown on slide 62, we have on the left side
9 representative claim 27, which requires "changing illumination in at least a
10 direction of the road curvature." On the right side of the screen we have
11 representative claim 1 of the '029 patent, and that requires increase -- an
12 increase of "light in a direction of the road curvature ahead of the motor
13 vehicle."
14 Now for the' 551 patent, as we've discussed previously, Petitioner is
15 relying on *Alden* alone for challenging these claims, and that's its
16 anticipation ground. For the '029 patent, Petitioner relies on *Alden* or *Alden*
17 combined with *Kobayashi* for challenging the '029 claims. And the petition
18 is clear that Petitioner is only relying on *Kobayashi* for the map data
19 limitation as Patent Owner discussed in the Patent Owner response at pages
20 21 to 22. Go to slide 63, please.
21 Now, *Alden* discloses segmented beam headlight embodiments that
22 are always at high beam unless specifically dimmed. For example, on slide
23 63, we have some excerpts from the *Alden* patent application. On the top
24 left we have from paragraph 28 where *Alden* discloses that zones which are
25 not dimmed remain on high beam. On the bottom left from paragraph 30,

1 the sentence here, the distribution of light is dim where a car is sensed and
2 "on high beam elsewhere." On the top right from paragraph 35, light from
3 other segments are in high beam "where no vehicle is sensed." And then on
4 the bottom right, we have an excerpt from the abstract where *Alden* discloses
5 that, "All embodiments maximize the areas receiving high beams."
6 So accordingly, *Alden* does not disclose changing illumination or
7 increasing light in a direction of the road curvature because all beam
8 segments remain at high intensity. If we go to slide 64, please.
9 Now, Petitioner argues that "*Alden*'s system does not default all
10 LEDs to high beam state unless otherwise dimmed 'in all embodiments.'" So
11 now we can turn back to slide 63. Again, *Alden* discloses in his abstract
12 that, yes, "All embodiments maximize the areas receiving high beams." Go
13 back to slide 64.
14 Petitioner further argues that "*Alden* explains that its system can be
15 used for many applications." And now for this, if we can pull up the *Alden*
16 reference, paragraph 61, please. So paragraph 61 at the end of the *Alden*
17 reference, we're getting there, but it's a -- we refer to it as a boilerplate
18 paragraph at the end of *Alden* that includes a couple sections that Petitioner
19 likes to cite often.
20 For example, as we saw in this slide, their argument that *Alden* can
21 be used for many applications. However, if we look at what *Alden* actually
22 discloses in paragraph 61, the sentence is, "The segmented distribution light
23 can be used for many applications other than motor vehicles." So this isn't
24 even talking about the headlamp embodiments that we're discussing today.

1 This is for other applications, non-motor vehicle applications, so it's not
2 relevant to our discussion.
3 Now, there's some other language in paragraph 61 that they cite often
4 that has to do with different types of modifications to methods. It's buried in
5 there somewhere. But there's a sentence in there about combining different
6 methods. And again, combining methods would be inappropriate for
7 Petitioner's anticipation grounds like those we were discussing with
8 reference to '551 patent. So we can go to slide 65, please.
9 Now, Patent Owner argues, for example, in their slide 31, which is
10 not shown here, that *Alden* systems shift light to the left in the direction of
11 the curve. However, if we look at some of their testimony from Petitioner's
12 expert, which is reproduced on the slide here on the top right, Petitioner's
13 expert admitted that *Alden*'s figure 5 embodiment would illuminate the full
14 pattern shown in figure 5 under normal driving conditions. Now, on the
15 bottom right, Petitioner's expert also clarified that he's not proposing adding
16 LEDs to the figure 5 embodiment to provide this curve illumination. So
17 since *Alden*'s figure 5 embodiment illuminates the full light pattern during
18 normal driving conditions and Petitioner's not proposing adding any
19 additional LEDs for curve illumination, *Alden* does not disclose shifting
20 light or changing illumination or increasing light in the direction of the road
21 curvature because there are no additional LEDs to illuminate. We can go to
22 slide 66, please.
23 All right. Slide 66, Petitioner argues that, "As the steering wheel
24 'rotates X degrees,' the system calculates the new planned direction of the
25 vehicle and changes the direction." Now, as explained by Patent Owner's

1 expert on the right side of the screen, *Alden*'s figure 10 embodiment includes
2 refractive elements 147 that may be controlled "to change the direction of
3 the light beam segments." However, *Alden*'s figure 5 embodiment, which is
4 shown here in the center middle of the screen, does not include these
5 refractive elements to steer or change the direction of light. Accordingly,
6 *Alden* does not disclose changing or increasing light in the direction of the
7 road curvature because the figure 5 embodiment lacks the optical steering
8 capability. Go to slide 67, please.
9 Now, *Alden* discloses three distinct embodiments and summarizes
10 their differences in the abstract and the claims. And this -- these summaries
11 are consistent with *Alden*'s disclosure, for example, in paragraph 29 which
12 co-counsel discussed at lengthen. Now, *Alden* does not disclose that the
13 figure 5 embodiment includes light-directing elements that can redirect light
14 beams or change the direction of light. Now we can skip ahead to slide 69.
15 Now, regarding the third embodiment of *Alden*, which is shown in
16 figure 10, *Alden* discloses these individually controlled variable refractive
17 segments. And in the abstract of *Alden*, which is shown on the top left,
18 *Alden* discloses that these elements "are individually controlled to redirect
19 beam portions such that the high beam and dim beam areas are created
20 concurrently." And then in claim 5, which is directed to the same
21 embodiment, *Alden* discloses "at least two light directing elements, each of
22 said elements being individually controllable with regard to the output
23 direction of light permitted to pass there through."
24 So *Alden*'s disclosure in paragraph 36 regarding the figure 11
25 embodiments, specifically the last sentence that, "The directing of light can

1 be achieved with the segmented sensing elements and segmented light
2 distribution elements described herein," is consistent with *Alden*'s disclosure
3 regarding the figure 10 embodiment regarding directing light and light
4 directing elements. So since *Alden* does not disclose that the figure 5
5 embodiment includes light directing elements that can redirect light, a
6 person of ordinary skill in the art would not have understood the figure 10
7 embodiment can provide the figure 11 functionality without some type of
8 modification. And again, as we've discussed for the '551 patent, Petitioner's
9 arguments are limited to anticipation for these claims.
10 Now, regarding the '029 patent, Petitioner relies on *Alden* combined
11 with *Kobayashi*, and Petitioner's relying on *Kobayashi* for only the map data
12 limitations, as we explained in our response at pages 21 to 22. But now in
13 Petitioner's argument earlier today with respect to slides 60 through 61, you
14 could pull up their demonstratives, please, their -- Petitioner's argument with
15 respect to slides 60 through 61 suggests that they are relying on *Kobayashi*
16 for some of these same increasing limitations.
17 However, if we go to their slide 57, please. Slide 57 includes an
18 excerpt from Petitioner's petition, and if you look specifically at the sentence
19 that's not highlighted in the middle of this, Petitioner states that, "*Alden*
20 would continue to perform the same determination of change light patterns
21 to accommodate upcoming curves or changes in road shape, only now would
22 make the determination based on received map data indicating the road
23 curve." So based on this disclosure, and they have -- this would indicate that
24 Petitioner is by using -- continuing to perform the same determination, the
25 same determination of *Alden*, again, this confirms that they're only relying

1 on *Kobayashi* for the map data and not for any control strategy or hardware
2 that's in *Kobayashi*.
3 And Petitioner includes a similar statement like this for the next
4 claim limitation, the petition which is not shown on the screen here, but
5 that's on the petition at page 30 regarding the next control limitation. So
6 again, Petitioner did not rely on *Kobayashi* for satisfying the increasing light
7 in a direction of the road curvature in its petition. And to the extent they're
8 now relying on some combination of *Kobayashi*, Petitioner did not explain
9 how or why a person of ordinary skill in the art would have combined
10 *Kobayashi*'s hardware controls with *Alden*'s figure 5 embodiment to meet
11 these claim limitations. So now if we can go ahead to slide 89, please.
12 All right. So now we're going to discuss claim 51. If we can go to
13 slide 90. And actually, I think the heading has a typo here, '029 patent. That
14 should be the '551 patent. But anyway, claim 51 of the '551 patent, this
15 requires, this limitation is highlighted, a change of at least one -- "the control
16 of the light emitted from the first cluster includes a change of at least one
17 LED of the cluster to a non-emitting state." So now if we can turn to slide
18 91.
19 As we argued in our Patent Owner response, *Alden* disclosed two like
20 modes, high and low, but not a non-emitting state. So here on reply,
21 Petitioner tried to modify their ground to bring in other references, such as
22 *Beam*, for this limitation. Now, on the right side of the screen, we see their
23 petition, and on pages 4 through 5, Petitioner, we could stay here, so on the
24 petition, in pages 4 through 5, Petitioner, in their precise relief requested,
25 identified claim 51 in their ground 1 based on *Alden*. And then also on page

1 65 of their petition, when they're going through their analysis, first sentence
2 here is *Alden* anticipates and renders obvious claims 51. Now, if we can go -
3 - if we could go to Petitioner's slides, start with slide 54.
4 We see here on slide 54, Petitioner included the same paragraph
5 from their petition, but they cropped out the top line, which states that *Alden*
6 anticipates and renders obvious claims 51. And then if we could go back to
7 our slides, our slide 4, please.
8 Okay. So our slide 4 here from the Institution Decision, it was the
9 Board's understanding in the Institution Decision that claim 51, you see in
10 the top sentence here, is included in ground 1, also. So it's our position it
11 would be improper to allow a Petitioner to rewrite its grounds in its post
12 Institution and basically give them a mulligan to fix their claim on grounds.
13 And with that, save the rest. If there's no questions, we'll save our
14 time for rebuttal.
15 JUDGE MELVIN: Okay. Got about 30 minutes remaining for your
16 surrebuttal.
17 MR. TURNER: Okay. Thank you.
18 MR. HUGHES: Thank you, Your Honors. I can begin whenever
19 you're ready.
20 JUDGE MELVIN: We are ready when you are, Mr. Hughes.
21 MR. HUGHES: Thank you. If we can bring up -- can Patent Owner
22 please put down their demonstratives? Thank you. If we can please bring
23 up slide 14.
24 Now, you heard Patent Owner argue that supposedly there's a new
25 theory and that these figures are ambiguous, and that figure 5 is ambiguous.

1 But Petitioner has been consistent throughout, from the petition through its
2 replies. And even today, Petitioner has consistently relied upon the
3 disclosures of *Alden*, including figures 3, 4, and 5 taken together, in all of its
4 arguments. It's never shifted or changed its positions. It's referred to these
5 same paragraphs and discussed these same figures throughout. We're not
6 modifying any theories of proof here. We're rather responding to the
7 arguments the Patent Owner raised that are clearly not about what the
8 reference itself says. It's not about whether *Alden* and what it specifically
9 discloses is what the claims say. Patent Owner raised multitudes of
10 arguments here about modifications, if there's, you know, sufficiently
11 enabled disclosures, whether something's ambiguous. And Petitioner is
12 replying to those in its replies, which it is entirely permitted to do. If we can
13 go to slide 18, please.
14 Now, you heard a lot from Petitioner, this is with respect to the
15 argument that *Alden* is supposedly only a single row of LEDs. And as we
16 see here, you know, they were pointing to things in the reply, for example,
17 where Petitioner correctly stated that in figure 2, it is showing sectors at a
18 common elevation. If we can also go to slide 23.
19 Now, here we see the same thing. And Patent Owner was trying to
20 suggest that because in the petition and in the replies the Petitioner indicated
21 that figure 2 may show common elevation areas that are laterally adjacent
22 with differing illumination, supposedly this somehow means it must be a
23 single row. That's simply not the case. What the petition did and what the
24 replies did were compare *Alden* correctly to the claim language. The claim

1 language has nothing to do with any number of rows of LEDs, number of
2 lighting elements, or anything else.
3 What were these claims talking about? Common elevation, laterally
4 adjacent areas. So what did the Petitioner do? It indicated where this is
5 taught in *Alden*. Now, whether *Alden* in this same figure may have light at
6 common elevation and laterally adjacent sectors that differ and also have
7 light above or below, of course the petition didn't address that because it's
8 not required by claim 48.
9 Now, when we do get to claim 32, which does address the limitation
10 of having differing light above, the petition clearly addressed this. So there's
11 no ambiguous usage of *Alden* or these figures. What the petition clearly
12 does is look at the claim language, what the claim says and requires, and
13 point out exactly where and how that's shown in *Alden*. And again, it's clear
14 when you read the petition, including at pages 40 to 42, when we get to
15 claim 32, when we finally do need something above, the petition explained
16 how *Alden* has that.
17 In addition, I just like to note on the switch arrays, if we can go to
18 their slide 8. Now, we've heard Patent Owner try and argue that figure 5 has
19 its own switch array. But as we can see here, that switch array is just a box
20 labeled switch array. There's no details to it. The details of the switch array
21 and what it's going to look like and how figure 5 is going to use it come
22 from figure 3, just like *Alden* says. When you read paragraphs, you know,
23 26, 27, 28, 29 together, it's clear they're building on one another. And 115 is
24 just a box representation of the switch array, like figure 3, that's clearly

1 being used with the logic of figure 4 to control the certain lighting elements
2 that you're going to need to get the desired illumination pattern.
3 And how do we know that, you know, 115 and these switch arrays
4 are just kind of representative now? Well, figure 6 even says it. If you look
5 at paragraph 30 of *Alden*, when it gets to figure 6, it says that it's going to
6 have a switch array similar to 115, the switch array from figure 5. So again,
7 you know, *Alden* moves from figure 3, which is its concept and the logic and
8 how it's going to be used, into figures 5, 6, and 7, where it's now just
9 representing, you know, here's your switch array, but I've already talked
10 about it.
11 I'd next like to turn to slide 48, if we could. And we're back to the
12 identifying, which I know we spent a lot of time on in the '503, but here
13 again. And one thing I'd just like to point out is we've heard Patent Owner
14 numerous times indicate that they somehow have an unrefuted construction
15 as this -- as if this has been entirely accepted by all of the parties. But that's
16 clearly not the case. If we look at Petitioner's reply in the '1039 at page 12,
17 footnote 6, Petitioner expressly stated, "Patent Owner proposes construing
18 'identify' based on a portion of a dictionary definition." There is no basis to
19 limit the claims in this way. But even under this definition, *Alden* still
20 discloses identifying vehicles as it shows that something, in this case a light
21 source, is a certain thing, in this case, an oncoming vehicle, based on the
22 intensity of the detected light.
23 So, first, this was never an unrefuted construction. And two, even
24 under that construction, as we've explained, *Alden* clearly does this.

1 Now, we've also heard Patent Owner make some arguments here that
2 because the claim uses the word "detect" or "detector," that's somehow
3 different than identifying, and *Alden* can't do both. But if we look at claim 8
4 and we look at *Alden*, they're actually entirely the same. Claim 8 says that
5 there is a camera which is used as a detector for sensing the road object.
6 *Alden* has the exact same thing. *Alden* has two camera sensors that detect or
7 sense the light from incoming headlights. So *Alden*'s camera sensor, just
8 like the claim here says, has detected that light.
9 Now, *Alden*, just like the claim says, also has a processor. And that
10 processor identifies that detected incoming light as an oncoming vehicle.
11 And it does it when certain conditions or pattern recognition is met. When
12 you have the detected light sources above a threshold at certain locations,
13 then and only then does the processor say, ah, that detected light is now
14 identified as a vehicle. So *Alden* does not only just detect with nothing
15 further. It detects the light using a camera, like the claim says, and further
16 classifies -- or, sorry, further identifies. And it also classifies.
17 I mean, according to Patent Owner, supposedly, because they've used
18 different terms in the claim, the same disclosure in *Alden* allegedly can't
19 render both unpatentable. But that ignores the fact that even if these claim
20 terms have some different scope, the same disclosure of *Alden* can meet the
21 scope of both of them. And as we've explained, *Alden* is clear that it can
22 identify something to be a vehicle. When that detected light, the two dots
23 that we see in the figures, is above the threshold, its processor identifies it as
24 a vehicle, assumes there's a driver above the two detected lots -- light
25 sources because it has identified it as a vehicle, and reacts accordingly.

1 Now, similarly, with respect to classify, again, like we talked about,
2 *Alden* gets all the sensed light. It checks, are we above or below the
3 threshold? If we're above the threshold, it classifies as a vehicle. If it's
4 below the threshold, it says, nope, not -- I'm not going to classify that as a
5 vehicle.
6 And finally, if we can go to slide, slide 76, please. Now, this is with
7 respect to their argument that these claims somehow require active optics.
8 Now, if we see this, though, what the claims require, and if we look at claim
9 21, for example, you know, where we see control, these optical control
10 elements included in the motor vehicle control light from at least the first
11 plurality. So the claim never says that the processor controls the optical
12 element. What does the claim say? The processor utilizes optical element to
13 control light from the light sources.
14 So where Patent Owner pointed to claim -- you know, I think they
15 pointed to claim 19 and claim 12 and said, look, claim 12 already has control
16 of light sources, so this has to be something different. Well, this claim, as
17 we can see in 21 right at the bottom, also indicates that what we're
18 controlling is controlling light from the light sources. So all this adds in is
19 that we're the now is saying the processor is going to use an optical element
20 when it's controlling these light sources. As we've explained, *Alden* does
21 this. First, it has the lens, and without that lens, the processor cannot, in fact,
22 control the light from the LEDs to do what it wants. The processor is
23 entirely set up and programmed, and we see it in *Alden*. It's set up so that
24 the processor knows which LEDs are directing light into which sector
25 because that light -- or because that lens is there. The processor is using that

1 lens to control the light sources and the light from those light sources in
2 order to achieve what it wants. And in addition, as I stated, we also have the
3 alternative, where in the alternative it would have at least been obvious to
4 use the variable refractive elements.
5 If there's no further questions, that's all Petitioner has.
6 JUDGE MELVIN: Okay.
7 MR. HUGHES: All right. Thank you for your time, Your Honors.
8 JUDGE MELVIN: Thank you.
9 MR. TOMSA: Oh, I apologize, Your Honors. I left our clock
10 running. How much time do we have left?
11 JUDGE MELVIN: You have 30 minutes left.
12 MR. TOMSA: Yes. Can you bring up our slides, please? Your
13 Honors, I'm just going to go on re-rebuttal here through everything that
14 Petitioner just went through. Let's go to slide 14 of our slides first, please.
15 So this was in response to our contention that they can't modify their
16 theory of proof, and Petitioner attempted to rebut that by saying, hey, we've
17 consistently relied upon figures 3, 4, and 5. We relied on them before, we're
18 relying on them now. The problem is, Your Honor, they didn't rely on them
19 for the same teaching, right? In the petition, as we showed through all that
20 intrinsic record evidence, they relied on figure 5 as showing a one-
21 dimensional array by making statements that would only be true if it were
22 actually a one-dimensional array. Now, on reply, they modified their theory
23 of proof by relying on figure 5 as showing something else. So whether or
24 not they relied on figures 3, 4, and 5 is not the end of the question. It's how
25 they relied on those figures. Go to slide 18, please.

1 On slide 18, Petitioner stated that Patent Owner's argued that *Alden*
2 is limited to a single row. That's not what we said, Your Honors. We said,
3 now, based on how they're interpreting figure 5, it's rendered ambiguous. It
4 might be one row, it might be two rows, but more importantly, they used it
5 as a single row. That's where we said it was limited to a single row. It's
6 their proof and to their proof, they are bound. They created the petition.
7 They created the proof, and they have the burden of proving it using that
8 proof that they originally created. So they're the ones who limit it to a single
9 row by making those intrinsic statements that we previously presented.
10 Would you go to slide 23, please?
11 Your Honors, our point about slide 23 here was not about the claim
12 language, but rather their ambiguous interpretations of this figure. You
13 cannot, if you do not know if figure 2 is a side view or a top view, you
14 cannot figure out whether or not claims (inaudible) 65, whether element 65
15 goes above that vehicle or this is some sort of planar spread where that goes
16 to the left of that vehicle.
17 And in order to resolve this ambiguity, as we show on slide 24, we
18 asked their expert the question quite plainly, is this a top view or is it a side
19 view? He didn't know. And if he doesn't know, there's no possible way he
20 can conclude where in the scene element 65 is going. And then when they
21 give two conflating proofs where they talk about laterally adjacent sectors,
22 as opposed to some of these sectors being above and below other sectors, it's
23 clear that they just use it in an ambiguous manner.
24 So once again, this isn't about how they map it to the language of the
25 claims. It's a fact that they're using this obviously ambiguous figure to prove

1 whatever they needed to prove and to show whatever they needed to show in
2 the moment. Slide 48, please.
3 With respect to claim 48, as my co-counsel pointed out, we're
4 entitled to a presumption that when we use different terms, they have
5 different meanings. We proposed a construction. Opposing Counsel said
6 that construction is not unrefuted. We refuted it. The problem is they just
7 said we don't agree. They didn't propose an alternative construction. So it's
8 unrefuted in the sense that they just want it to be something else. But it's not
9 entirely clear that they have any idea what they want it to be. They just don't
10 want it to be the actual construction that we proposed. In the absence of
11 them proposing an alternative, the construction is still unrefuted. And slide
12 76, please.
13 With regards to the active optics, first, we would point out that
14 despite what Opposing Counsel said, claim 21 does actually require that the
15 processor utilize the optic to control light. But more importantly, and most
16 importantly, their proposed interpretation of this is that when the processor
17 turns on an LED, it is de facto utilizing the lens in order to control light.
18 Problematically for them, those instructions, instructions for telling the
19 processor to control that LED, already exist in claim 12 and they already
20 exist in claim 19.
21 So to interpret, not to read, but to interpret claim 21 as meeting the
22 utilizing the optical control element under an instruction that instructs that
23 processor to control light is to read all meaning out of this claim. It simply
24 would be the same instruction that we already talked about in 12 and/or the
25 same instruction that we already talked about in 19. This has to be an

1 instruction that causes the processor to do something else. Right? We're
2 entitled to that presumption, that it's something else other than what we
3 talked about in 12 and 19. Instead of rebutting that presumption, they just
4 leaned into the exact control that's discussed with respects to claim 12 and
5 19 and said that's sufficient to prove utilized. That is impermissible
6 interpretation of claim 21.
7 If the Board has no questions, I close.
8 JUDGE MELVIN: No questions.
9 MR. TOMSA: Thank you, Your Honor.
10 JUDGE MELVIN: Okay. Thank you, both parties, for your
11 presentations today. We appreciate it. All three cases are submitted. I think
12 we'd like everybody to stay on the line in case the court reporter has any
13 questions about spellings.
14 MR. HUGHES: Thank you, Your Honors.
15 MR. TOMSA: Yeah, I apologize, Your Honors, to the court reporter,
16 we didn't identify ourselves as we were speaking out, but (inaudible) that
17 was clear who was speaking when.
18 JUDGE MELVIN: Okay. Thank you, everyone.
19 (Whereupon, the proceedings at 1:28 p.m. were concluded.)

IPR2023-01034 (Patent 11,208,029)
IPR2023-01039 (Patent 11,208,029)
IPR2023-01040 (Patent 9,955,551)

PETITIONER:

Celine Crowson
Joe Raffetto
Scott Hughes
Ryan Stephenson
HOGAN LOVELLS US LLP
celine.crowson@hoganlovells.com
joseph.raffetto@hoganlovells.com
scott.hughes@hoganlovells.com
ryan.stephenson@hoganlovells.com

PATENT OWNER:

Sangeeta Shah
David Bir
Andrew Turner
BROOKS KUSHMAN P.C.
sshah@brookskushman.com
dbir@brookskushman.com
aturner@brookskushman.com