[redacted]

UNITED STATES INTERNATIONAL TRADE COMMISSION
WASHINGTON, D.C.

Before the Honorable Monica Bhattacharyya
Administrative Law Judge

In the Matter of **Certain Photovoltaic Connectors and Components Thereof**	Inv. No. 337-TA-1365

RESPONDENTS' POST-HEARING REPLY BRIEF

Shoals Technologies Group, LLC
EXHIBIT 2019
Voltage, LLC v.
Shoals Technologies Group, LLC
IPR2024-00876

[redacted]

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TABLE OF ABBREVIATIONS

ALJ	Administrative Law Judge
’254 Patent	U.S. Patent No. 10,992,254
’153 Patent	U.S. Patent No. 11,689,153
Asserted Patents	Collectively the ’739 Patent, ’254 Patent and ’153 Patent
FH	Prosecution or File History
USPTO	United States Patent and Trademark Office
Shoals or Complainant	Complainant Shoals Technologies Group, LLC
Voltage or Respondents	Respondents Voltage LLC and Ningbo Voltage Smart Production Co.
Staff	Office of Unfair Imports and Investigations
JCCC	Joint Claim Construction Chart
Markman Terms	The up to eight identified terms pursuant to G.R. 6.2
DI	Domestic Industry
CPreHB	Complainant’s Pre-Hearing Brief
RPreHB	Respondents’ Pre-Hearing Brief
SPreHB	Staff’s Pre-Hearing Brief
CPostHB	Complainant’s Post-Hearing Brief
RPostHB	Respondents’ Post-Hearing Brief
SPostHB	Staff’s Post-Hearing Brief

[redacted]

CLAIM LISTING FOR U.S. PATENT NO. 11,689,153

Element	Claim Language
[1.p]	A lead assembly for use in a solar energy installation including:
[1.a]	a drop line terminating at a drop line connector, the drop line connector configured to connect with a central trunk of a wire harness, the central trunk of the wire harness having a plurality of branches that each are configured to electrically connect to a separate solar panel contained in an array of a plurality solar panels;
[1.b]	a feeder cable electrically coupled to the drop line at a *nexus;*
[1.c]	an undermold that fully encases the *nexus*, the undermold further comprising:
[1.c.i]	a first aperture extending completely through the undermold and having a first diameter, wherein the feeder cable extends through the first aperture along a first longitudinal axis; and
[1.c.ii]	a second aperture extending partially through the undermold and having a second diameter different than the first diameter, wherein the drop line extends from the second aperture along a second longitudinal axis;
[1.c.iii]	a third aperture extending partially through the undermold and having a third diameter different than the first diameter, wherein a second drop line extends from the third aperture along a third longitudinal axis; and
[1.d]	an overmold surrounding the undermold and forming an undermold-overmold interface at an outer surface of the undermold.
[11]	11. The lead assembly of claim 1, wherein the drop line includes a fuse
[12]	12. The lead assembly of claim 1, wherein said lead assembly combines power received from the plurality of solar panels and conducts that power directly to an inverter electrically connected to the feeder cable.
[13]	13. The lead assembly of claim 1, wherein the second drop line terminates at a second drop line connector, the second drop line connector configured to connect with a central trunk of a second wire harness, the central trunk of the second wire harness having a plurality of branches the each are configured to electrically connect to a separate solar panel contained in a second array of a plurality of solar panels.
[14]	14. The lead assembly of claim 13, wherein the lead assembly is configured to combine electrical power received from the array of solar panels and the second array of solar panels at the *nexus* and to deliver the combined electrical power to an inverter that is in electrical communication with the feeder cable.
[18]	18. The lead assembly of claim 15, wherein the electrical coupling between the feeder cable, the drop line and the second drop line at the *nexus* is secured with at least one of a compression lug, a solder connection, a splice, and a crimp.
[21.p]	21. A solar power system comprising:
[21.a]	a plurality of solar panels each electrically coupled to one of a plurality of branches of a wire harness to form a first solar array;
[21.b]	a lead assembly comprising:
[21.b.i]	a drop line electrically connected to a central trunk of the wire harness and configured to receive power from the plurality of solar panels;
[21.b.ii]	a second drop line electrically connected to a central trunk of a second wire harness and configured to receive power from a plurality of solar panels in a second solar

	array;
[21.b.iii]	a feeder cable, the feeder cable electrically connected to the drop line and the second drop line at a *nexus*; and
[21.b.iv]	a primary mold that fully encases the *nexus* so as to substantially seal the *nexus* from external environmental conditions, the primary mold further comprising:
[21.b.iv.a]	a first aperture extending completely through the primary mold and having a first diameter, wherein the feeder cable extends through the first aperture;
[21.b.iv.b]	a second aperture extending partially through the primary mold and having a second diameter smaller than the first diameter, wherein the drop line extends into the second aperture and
[21.b.iv.c]	a third aperture extending partially through the primary mold and having a third diameter smaller than the first diameter, wherein the second drop line extends into the third aperture.
[23]	23. The solar power system of claim 21, further comprising a secondary mold surrounding the primary mold and forming an undermold-overmold interface at an outer surface of the primary mold.
[24.p]	A solar power system comprising:
[24.a]	a plurality of solar panels electrically coupled by a wire harness to form a first solar array;
[24.b]	a lead assembly comprising:
[24.b.i]	a first drop line electrically connected to the wire harness and configured to receive power from the plurality of solar panels;
[24.b.ii]	a feeder cable, the feeder cable electrically connected to the drop line at a *nexus;*
[24.b.iii]	a primary mold that fully encases the *nexus* so as to substantially seal the *nexus* from external environmental conditions, the primary mold further comprising:
[24.b.iii.a]	a first aperture extending completely through the primary mold and having a first diameter, wherein the feeder cable extends through the first aperture along a first longitudinal axis;
[24.b.iii.b]	a second aperture extending partially through the primary mold and having a second diameter smaller than the first diameter, wherein the drop line extends into the second aperture along a second longitudinal axis; and
[24.b.iv]	a second drop line electrically connected to a second wire harness that connects to a plurality of solar panels, the second drop line electrically connected to the feeder cable at the *nexus* fully encased by the primary mold, wherein the second drop line extends into a third aperture defined by the primary mold along a third axis.

[redacted]

Pursuant to Ground Rule 13.2, Voltage respectfully submits this Post-Hearing Reply Brief.

I. INTRODUCTION

Shoals' post-hearing brief is demonstrative of its over-reaching, shifting and ultimately untenable positions taken in this Investigation. There is no Section 337 violation.

First, Shoals' post-hearing brief confirms that it sought to prove infringement and technical DI at the evidentiary hearing under an unsupportable application of the *Markman* Order, including the construction of "aperture". Shoals failed to apply this construction with the *Markman* Order's tentative construction on the "partially through" / "completely through" terms, and to the extent Shoals attempted to, it did so inconsistently under a theory that does not meet the asserted claims. Voltage's rebuttal expert, Dr. Kim Cameron, explained this inconsistency. *See* Tr. (Cameron) at 1074:20-1080:8. This is best illustrated by Shoals' own demonstratives of its four-drop BLA:

Shoals' Infringement / Technical DI Theory (red "?" added)	**Mr. Brooks' Opinion (*Applied Consistently*)** (annotated as explained *infra* Section III.A)	**Dr. Cameron's Opinion** (annotated as explained *infra* Section III.A)
[redacted]		
# of inputs = # of apertures (each must extend partially through)	If the nexus bounds the input or "drop line" aperture(s), it similary bounds the feeder cable aperture(s) – each of the four highlighted apertures extend only partially through the mold structure	The highlights above show a mold structure having two apertures, each that extend completely through the mold structure

As explained *infra* Section III.A, and in Voltage's post-hearing brief (RPostHB at 4-6,41-42, 82), Shoals' theory is that every "input" or "branch" [1] necessarily forms an aperture that only

[1] To avoid confusion, Voltage will use "branches" herein to refer to "inputs", "branches" or

[redacted]

extends partially through the mold, because the aperture ends at (or is "bounded by") the nexus. Tr. (Brooks) at 503:8-15; 551:18-553:2; 557:4-12. Thus, in the scenario where a single cable forms two branches that was the focus of the evidentiary hearing, under Shoals' theory, there is a second aperture associated with a first branch on the left and a third aperture associated with a second branch on the right, and each aperture only extends partially through the mold because each aperture ***ends at the nexus***. At the hearing, Dr. Cameron, explained that under this theory, the "first aperture" associated with the feeder cable would also be bounded by the nexus and only extend partially through for the same reason. Tr. (Cameron) at 1075:20-1077:2. Mr. Brooks' opinion, applied consistently to the feeder cable and the four-drop BLA cross-section, is shown above in the middle annotated cross-section. This results in two pairs of apertures (each pair associated with each cable), where each aperture (a total of four) only extends partially through because each aperture no longer exists in the nexus (according to Mr. Brooks). Tr. (Brooks) at 478:16-22; 551:18-553:2; 557:4-12.

Dr. Cameron disagrees with that theory and conclusion, as her analysis and CT scans (and even Mr. Brooks' own cross-sections) show that in the above cross-section, the yellow highlights show two cables that form two apertures that each extend completely through the mold, including through the nexus. *See* Tr. (Cameron) at 1102:8-1104:21; *see also* RPX-0004C; RX-0396C; RX-0397C; RX-0399C. She also explained how Mr. Brooks' theory conflicts with the claims' requirement that the mold structure fully encase the nexus. *See* Tr. (Cameron) at 1076:20-1078:8.

Shoals did not cross-examine Dr. Cameron on these points and no witness from Shoals offered rebuttal testimony. Shoals did not present any alternative theory of infringement or

"drops" given the open dispute as relating to "apertures" and "drop lines". Tr. (Cameron) at 1160:23-1162:17 (explaining how "drop line" is not a term of art, and confusion created depending on if "drop line" refers to a "branch" or "drop" or whether it is tied to where an "aperture" within the mold structure exists).

technical DI at the hearing or in its post-hearing brief, including under any other test for how to determine whether an aperture extends completely or only partially through, as required by every asserted claim. Any new arguments in its reply brief would be untimely and waived and as a result, there can be no infringement or technical DI, and thus, no violation in this Investigation.

Second, Shoals' post-hearing brief acknowledges that the test for how to determine whether an aperture extends completely or only partially through is still an open issue. CPostHB at 15. Neither of Shoals' technical experts offered any testimony at the hearing regarding how the intrinsic record supported their interpretation of "aperture" or how to determine if an aperture extends partially or completely through. In contrast, Dr. Cameron explained her analysis of the intrinsic record, including the evolution of the claims through the file history, and how Figures 29, 33 and 35 may illustrate unclaimed embodiments because there is no disclosure that they include apertures that extend only partially through. Tr. (Cameron) at 1063:17-1064:8. Indeed, without insight into what the details of the mold's structure, including any apertures and whether they extend completely or partially through the mold, Figures 29, 33 and 35 lack sufficient detail to determine whether they are claimed embodiments or not.

But as the *Markman* Order correctly observed when addressing Figures 35-38 with respect to the now terminated '254 patent, "the Federal Circuit has recognized that where required by the intrinsic evidence, there may well be unclaimed embodiments." Order No. 16 at 46, n. 38. Much like Shoals' failed attempt to capture the "zero-connector" assemblies for the '739 Patent with an unsupportable claim construction of the "engaged with" term for that patent, Shoals' wrongly asserts that the '153 Patent claims cover Figures 29, 33 and 35. Despite Shoals' insistence at the closing of the *Markman* hearing that the Court should wait for expert testimony on claim construction (*see* JX-0298 (*Markman* Tr. (Shoals Counsel) at 237:5-19), Shoals offered none at

[redacted]

the evidentiary hearing or in its post-hearing brief.

The *Markman* Order's construction of "aperture" does not require modification, simply clarification, that "[feeder cable / drop line]" refers to the entire cable (no matter whether the cable associated with the "feeder" or the cable (i.e., "line") is associated with one or more "drops"). The claim is directed to a mold structure with apertures formed by structures within the mold. In the alternative, the "tentative" construction should be clarified to be consistent with Dr. Cameron's opinion that "aperture" is a "3-D hole, as in the entire pathway of a cable through the [undermold / primary mold] when viewed as if the entire cable is removed".[2] Tr. (Cameron) at 1089:6-18. This clarification would remove the confusion created by the varying uses and interpretations of "drop line" by fact witnesses, counsel and experts throughout this investigation, as discussed *infra* Section II.D That "drop line" is not a term of art in the field of solar installations is one critical issue Dr. Cameron and Mr. Brooks actually agree on. *See* Tr. (Brooks) at 490:2-8 with 494:25-17; Tr. (Cameron) at 1160:23-1161:19. Notably, when asked about Mr. Macias' testimony that "input leads and drop lines" were the most common ways Shoals refers to "branches", Mr. Brooks was reluctant to endorse that representation. "I think in the literature that I've looked at I haven't seen the word "drop lines" used a lot. Again, one of the problems we have here in, you know, patent language versus real-world language –". Tr. (Brooks) at 490:5-8.

Shoals' strained application of the *Markman* Order is unsupported by the intrinsic record and cannot be correct. As Shoals has offered no other theory of infringement or how its BLA practices the '153 patent, there can be no violation.

[2] Although Mr. Brooks did not offer any testimony at the hearing regarding how the intrinsic record supported Shoals' interpretation of "aperture" or his opinions regarding whether an aperture extends partially or completely through, he agreed that an aperture is a "void" or a "3D opening" within "a particular mold structure". He further expressed his view that the question of where the aperture starts and ends does not make sense. See Tr. (Brooks) at 531:11-533:17.

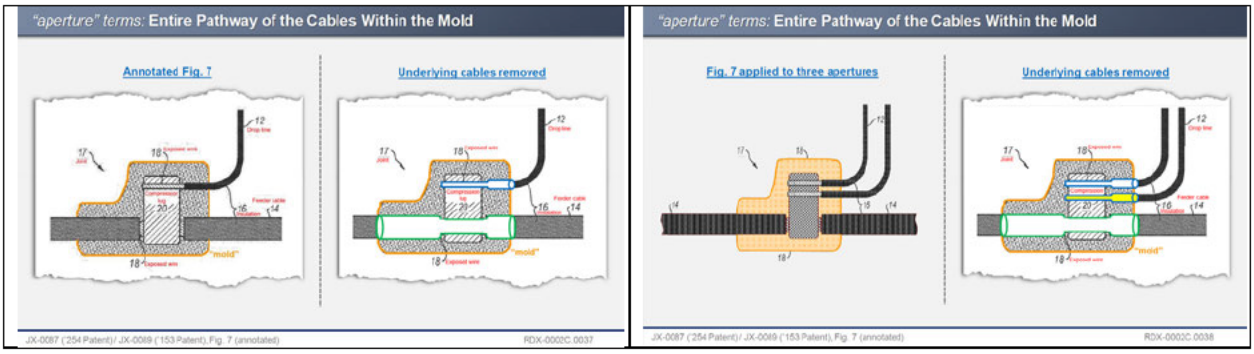
[redacted]

The relevant claim limitations are directed to a specific mold structure that fully encases the nexus, and further comprises three apertures, each of which the *Markman* Order found as "pathways for certain structures" and which Shoals' counsel represented at the *Markman* hearing as "lines" or "cables." *see* JX-0298 (Markman Tr. (Shoals' Counsel) at 156:3-5) ("The **smaller cables** are the – they're **called either drop lines** or sometimes **branch lines** or **branch cables**.") (emphasis added). But Shoals now only wants to consider a ***portion*** of a cable or remove a ***portion*** of a cable, despite the *Markman* Order construing "aperture" to be the **entire** pathway of the "[feeder cable / drop line]" (which Shoals agrees are both "cables") through the mold when viewed as if the "cable" is removed.

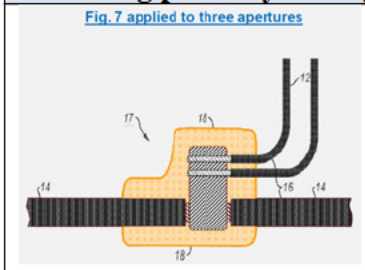
The *Markman* Order is consistent with the intrinsic record, including the evolution of the claims through the file history, and Shoals' Figure 7 mold structure, which is the ***only*** disclosure showing a mold structure having a first aperture extending completely through and a second aperture extending only partially through. As the *Markman* Order reasoned, "the claims differentiate between apertures that "extend continuously through said undermold (*see, e.g.,* 254 patent, cls. 1, 7) and apertures "only partially extending through said undermold" *(see, id.)* indicates that the apertures should be considered as an entire pathway. If taken to be any subset of that pathway, any aperture could be found to "only partially extend[]" through an undermold." Order No. 16 at 40. Dr. Cameron explained at the hearing how the Figure 7 mold structure could have a second drop line and a third aperture extending partially through. Tr. (Cameron) at 1089:19-1090:8 (describing RDX-0002C.0037, .0038 shown below).

Dr. Cameron's RDX-0002C.0037	**Dr. Cameron's RDX-0002C.0038**

[redacted]



Dr. Cameron further observed that Shoals' Mr. Macias testified that Shoals actually produced a BLA with such a configuration (i.e., where two branches or "drop lines" enter the mold structure from the same side. Tr (Macias) at 208:12-21; Tr. (Cameron) at 1063:11-16. Shoals' last fact witness, Mr. Bardos, also discussed [redacted].[3] Tr. (Bardos) at 778:2-782:19 (discussing CDX-0004.0011). Both are shown below next to Dr. Cameron's demonstrative of Figure 7 with a second drop line and third aperture extending partially through. Shoals could have potentially proposed the below as BLA configurations of its DI products in this Investigation, but failed to do so.

Figure 7 with two apertures extending partially through	**Intertek Report (JX-0118C.0053**	**Bardos Demonstrative excerpt (CDX-0004.0011)**
		[redacted]

[3] As explained in Section II.E, these images demonstrate why Shoals' theory cannot be correct. Shoals has argued that a drop line cannot extend past the nexus. CPostHB at 22. But the exposed wire from each of the three "drop lines" shown clearly extend all the way through and beyond the compression lug. No witness from Shoals testified as to where the 3-D hole that is eventually formed in the undermold structure of this BLA configuration extends completely through the undermold structure or, for example, stops short of the outer edge. Regardless, it appears that the entire pathway formed in the mold structure would extend past the nexus and potentially completely through the mold structure.

[redacted]

Shoals' attempt to read its claims on a broader set of configurations that do not have the claim required mold structure with apertures extending partially through would require legal error.

Assuming *arguendo* though that Shoals' argument that the number of inputs equals the number of partially through apertures is accepted though, Shoals would still fail to meet its burden in establishing a domestic industry in this Investigation. Since the outset, Voltage and Staff have raised concerns with Shoals' over-reach in claiming that all of its BLAs are practicing DI products. Shoals tried to mitigate this criticism in its motion for summary determination on economic domestic industry by arguing that its [redacted]. Motion No. 1365-010, EDIS Doc. ID 812232 (Shoals' MSD) at 34. In its pre-hearing brief, Shoals pivoted to simply say its investments in [redacted] were not significant. CPreHB at 220. But at the hearing and now in post-hearing briefing, Shoals has pivoted further with its newly-minted "mold drop" theory. *See e.g.* CPostHB at 7-9, 140-141; Tr. (Macias) at 120: 3-11; 135:25-136:12; 217:21-218:9; Tr. (Bardos) at 658:2-19. Specifically, to reconcile its failure to allocate investments between non-practicing and practicing DI Products or to have Mr. Brooks conduct a representative product analysis, Shoals attempts to recast what it has asserted consistently throughout this Investigation as its "BLA" or "Big Lead Assembly" now as just a "mold drop". *Id.* By doing so, Shoals argues in its post-hearing brief that the "lead assembly", consisting of many "mold drops" is the DI Product, and practices the 153 Patent so long as there is one "mold drop" with two "inputs" (or "drops" or "drop lines") on the assembly. CPostHB at 7-9. This new theory was never presented during discovery, expert reports or Shoals' pre-hearing brief. Tellingly, the term "mold drop" does not even appear once in the 226 pages of its pre-hearing brief. Yet it appears at least 75 times in Shoals' Post-Hearing Brief, with statements like "Shoals calls its individual joints 'mold drops,' not BLAs". CPostHB at 8. Shoals had its witnesses adopt this

[redacted]

terminology at the evidentiary hearing. *See e.g.* Tr. (Macias) at 120: 3-11; 135:25-136:12; 217:21-218:9; Tr. (Bardos) at 658:2-19. That sworn testimony was shown repeatedly to be contradicted by Shoals' own documents. Tr. (Bardos) at 658:2-17; 799:22-800:14 (regarding JX-0118C). To illustrate the contradiction, below are excerpts from Shoals pre-hearing brief describing it BLA compared to Shoals' post-hearing brief describing it as a "mold drop.".

Shoals **Pre**-Hearing Brief: "exemplary BLA" at p. 11	Shoals **Post**-Hearing Brief: "BLA mold drop" at p. 9
The BLA includes a feeder cable, at least a first drop line and second drop line, compression lug, undermold, and overmold. The exemplar BLA shown below has four drop lines, two on the left side of the compression lug, and two on the right side. [redacted]	among other considerations. *Id.* Below is an internal view of a bisected BLA mold drop showing the feeder cable and four drop lines, two on each side: [redacted]

Indeed, in Shoals' pre-hearing brief, it referred to what it now calls its "BLA" as a "BLA Harness." *Compare* CPreHB at 11, 10, 157 to CPostHB at 8. But Shoals' disclaimed that reference at the hearing, with its first witness, Ben Macias, going so far as to say that the BLA is not a harness. Tr. (Macias) at 147:20-21. Shoals' new theory was never disclosed in its pre-hearing brief and waived. GR 9.2.[4] To the extent not waived, it is nevertheless unsupported and contradicted by Shoals' own documents and prior sworn deposition testimony, as discussed *infra* Section X, and should be given little to no weight when evaluating whether Shoals has met its burden on representative DI products or domestic industry.

Finally, while no 337 violation should be found based on Shoals' failure to meet its burden

[4] GR 9.2 is directed to contentions being "abandoned or withdrawn". The situation presented here is worse, as this new theory or contention was never disclosed in the first instance until the evidentiary hearing and post-hearing briefing.

[redacted]

on infringement, technical domestic industry, representative products, and economic domestic industry, the evidence submitted in this Investigation shows that the claims are also invalid. The claims are directed to a specific mold structure that includes an electrical junction between large and small cables—the Shao reference discloses the same structure.

At the *Markman* hearing, Shoals concluded with a plea to defer any findings of indefiniteness because of a lack of evidence—just attorney argument. JX-0298 (Markman Tr. (Shoals' Counsel) at 237:5-21) (emphasis added).

After the hearing, Shoals had an opportunity to present expert testimony from both Mr. Brooks and Mr. Weiner in their expert reports and at the hearing regarding how a POSITA would analyze the intrinsic record and interpret the asserted claims, but declined to proffer any testimony. And after the *Markman* Order issued, Shoals had an opportunity to propose supplemental expert disclosures, but again, chose not to. Order No. 16 at 49-50. Shoals' declination is telling—no actual POSITA could view the intrinsic record and interpret the '153 patent claims as it has sought to do in this Investigation. Indeed, Mr. Brooks admitted that such analysis was not within his area of expertise. Tr. (Brooks) at 485:6-10; 573:19-576:24. And Mr. Weiner was impeached after he testified that he actually reviewed the file history. Tr. (Weiner) at 1290:7-1293:12.

As Shoals' interpretation of the claims for infringement and technical domestic industry are unsupportable, and Dr. Kenny's opinions on indefiniteness stand unrebutted, there is also no violation because the '153 patent claims are invalid. Rather than provide a rebuttal expert opinion on indefiniteness, Shoals tried to exclude Dr. Kenny by arguing that he is not a POSITA. Shoals' attacks on Dr. Kenny, considering the technology at issue in this Investigation, is another example of Shoals' overreach in this Investigation.

Consistent with the Staff's positions set forth in Staff's Post-Hearing Brief, no Section 337

violation should be found.

II. CLAIM CONSTRUCTION

Shoals' post-hearing brief does not present any expert opinions or discussion of how the intrinsic record supports its interpretation of the *Markman* Order presented at the hearing. That is because neither of its experts testified to any meaningful analysis of the intrinsic record and the intrinsic record does not support its overly broad and strained reading of its claims.

A. An aperture in the claimed mold structure is the entire pathway of the cable when viewed as if the cable is removed

Shoals argues that "the intrinsic evidence forecloses Voltage's and Staff's one-wire-per-aperture theory." CPostHB at 16-21 (Section IV.C.1). Shoals' arguments, however, are premised on a misapprehension of claim construction principles and the intrinsic record.

As noted in the *Markman* Order, "the Federal Circuit has recognized that, where required by the intrinsic evidence, there may well be unclaimed embodiments." Order No. 16 at 46, n. 38, *citing Barrday, Inc. v. Lincoln Fabrics Inc*., No. 2022-1903, 2023 WL 7871688, at *6 (Fed. Cir. Nov. 16, 2023) (Federal Circuit precedent "is replete with examples of subject matter that is included in the specification, but is not claimed."); *TIP Sys., LLC v. Phillips & Brooks/Gladwin*, Inc., 529 F.3d 1364, 1373 (Fed. Cir. 2008) (citations omitted) (declining "to construe the claim term to encompass the alternative embodiment" because such a construction "would contradict the language of the claims" and "the [other] intrinsic evidence").

Shoals urged during the *Markman* hearing that it would be error for the Court to construe the "aperture" related terms in a way that would exclude disclosed embodiments. JX-0298 (*Markman* Tr. (Shoals' Counsel) at 236:21-22) ("We can't come up with a construction that would exclude this embodiment."). Shoals was referring to its own demonstratives, Compl. Slides 73-74, in advocating that an "aperture" need only be "part of" the pathway (not the entire pathway):

[redacted]

> I think the fact that you only need to capture a part of what might arguably be the entire pathway to be the second aperture of the claim, it is important, and **that's why it's only partially extending through the mold. There's no requirement that you capture the entire pathway for the second aperture**. I think that's the key difference, and that's the key way to understand why the second aperture is clearly disclosed and understood in this case.
>
> **And we can't come up with a construction that would exclude this embodiment.** I think, as I said earlier, this is, I think, what the Examiner actually had in mind when he proposed his famous 112- or 113-word amendment. He has tried to capture by pointing out that the aperture only partially extends through the mold the fact that, in this embodiment, it's only parallel for part of the pathway. **But that's all that's required to be a second aperture partially extending through the mold and nothing more**.

JX-0298 (*Markman* Tr. (Shoals' Counsel) at 236:13-237:4) (emphasis added).

The *Markman* Order rejected Shoals' arguments that "aperture" should be construed to only correspond to any part of a pathway for a structure through the mold. Order No. 16 at p. 40. The *Markman* Order also noted "the fact that the claims differentiate between apertures that extend "continuously through said undermold" … and apertures "only partially extending through said undermold" in rejecting Shoals' arguments. *Id.*

Shoals cites to no support in the intrinsic record or any extrinsic evidence (*i.e.,* opinions from Mr. Brooks or Mr. Weiner) that any of Figures 29, 31, 33, 35 or 37 show a mold structure having three apertures, where one extends completely through but the other two only extend partially through the mold structure. On the other hand, Dr. Cameron explained how the evolution of the claims throughout the file history show how those figures represent embodiments not claimed by the '153 Patent. Tr. (Cameron) at 1048:4-1066:10; RPostHB at 42-47.

B. Contradictions between Shoals' hearing presentation and its *Markman* arguments further undermine its positions

1. Figure 7 is a working embodiment

Shoals also tried to argue that the Court should look to Figure 35, and not Figure 7, because Figure 7 is just a schematic and not a working embodiment. JX-0298 (*Markman* Tr. (Shoals

[redacted]

Counsel) at 158:9-159:7) ("It's not a blueprint. It's not a manufacturing diagram. It's not how the product or embodiment of the patent actually works in the physical world."). Shoals' representation at the *Markman* hearing was not accurate, and nothing more than unsupported attorney argument. *See Icon Health and Fitness, Inc. v. Strava, Inc.*, 849 F.3d 1034, 1043 (Fed. Cir. 2017) ("Attorney argument is not evidence."). As Dr. Cameron showed during the evidentiary hearing, Shoals' provisional application which included Shoals' own product documentation for its BLA, depicts a nearly identical mold structure as that of Figure 7. Tr (Cameron) 1051:24-1054:21. In addition, Shoals' sworn interrogatory responses in this Investigation relating to conception and reduction to practice cite to a collection of product drawings, including the same mold structure as depicted in Figure 7. RX-0327C.036-037, citing to SHOALS00002333-2354 (RX-0279C.004) (also showing Figure 7 product drawing). As shown above, Shoals' sworn interrogatory response states that "[e]ach asserted claim of the 153 Patent was conceived by the named inventor no later than September 9, 2014 when U.S. Provisional Application No. 62/047,773 was filed. The limited details in the provisional, as discussed by Dr. Cameron and in Voltage's Initial Post-Hearing Brief, reflect Figure 7's mold structure. RPostHB at 42-44; RX-0096 at 023-24. The response cites to SHOALS00002333-2354, which was admitted into evidence at RX-0279C. RX-0279C.004 shows the same Figure 7 mold structure in a Shoals product drawing. Figure 7 and the similar Shoals' product documentation for its BLA are the only evidence showing how an aperture in a mold structure extends partially versus completely through.

2. The exposed wires of the feeder cable and branch cable(s) are not "essentially smashed together"

Shoals' arguments during the *Markman* hearing regarding how the feeder cable and branch cable(s) are electrically connected at the nexus were also inaccurate and unsupported. The Judge asked Shoals' counsel to explain its contention that the "drop line" ends in in the nexus.

[redacted]

> **Judge Bhattacharyya**: So it's somehow joined to the feeder cable and it ends because then it's just the feeder cable.
>
> **Mr. Barquist**: Right. Well, I mean, yes, as you can see where the compression lug clamps down around it, so that the two wires are essentially smashed together. The compression lug, as the words suggest, when it's put over the connection, then a machine comes in and clamps it down so that it can't – the connect is secure.
>
> JX-0298 (*Markman* Tr. at 159:24-160:7).

The above is not a singular statement taken out of context. To be sure, the Judge asked Shoals' counsel later and again about this theory and how to reconcile it with Staff's cable test.

> **Judge Bhattacharyya**: Right. So that's how Mr. Shin was looking at partially versus continuous. He was saying let's look at the cable, does the cable stop in the middle or does it go all the way through. That seemed to be his test.
>
> **Mr. Barquist**: Right. I think in an embodiment, Your Honor, ***the cable***, when it's at the compression lug, ***it essentially ends*** because it's crimped against the feeder cable. So there is really ***no longer a physical pathway*** at that point because of the crimping or compression that's required. And so at that point it, ***effectively, as a physical matter, effectively is no longer a pathway***.
>
> **Judge Bhattacharyya:** all right. So you're not –
>
> **Mr. Barquist**: ***that's a distinction between the feeder cable, which clearly goes all the way through***, ***and the drop lines***, which are crimped up against it or compressed up against it and ***effectively no longer exist as a physical pathway***.
> Judge Bhattacharyya: Okay. Do they exist as a physical cable or not?
> Mr. Barquist: Well, again, that depends on the embodiment, I mean, either whether it's two wires coming in and meeting more or less in the same area or not or whether it's one wire that's compressed. Either way, again, in reality, ***that wire no longer has a physical pathway***. It is compressed right up against the feeder cable to make the connection.
>
> JX-0298 (*Markman* Tr. (Shoals Counsel) at 209:1-210:3) (emphasis added).

As explained consistently in Voltage's pre-and post- hearing brief, and at the hearing by Dr. Cameron and Ms. Ge, this explanation finds no support in the intrinsic record and does not comport with any of the products at issue in this Investigation. *See* RPreHB at 150-153, 204; RPostHB at 76-81; Tr. (Cameron) at 1095:2-1098:13; 1102:8-1107:13; Tr. (Ge) at 911:20-912:17.

3. Shoals' flip-flopped its position on "directionality" of the drop line

[redacted]

At the *Markman,* Shoals also argued that the drop line begins in the nexus and terminates outside of the mold. *Markman* Tr. (Shoals' Counsel) at 160:10-161:22 ("we say that it begins at the nexus and terminates or ends at the connector, and that's what's supported by the patent."). The Judge asked Shoals to explain why it was important and Shoals explained that its explanation was driven by its infringement read for parallelism for the 254 patent. JX-0298 (*Markman* Tr. (Shoals' Counsel) at 161:23-162:13).

But now with the 254 Patent terminated, Shoals presents the opposite position in its post-hearing brief. CPostHB at 21 ("Each drop line has its own connector that connects it to its own solar array. Current from the array flows *from* that connector *to* the nexus… [t]hat flow of current *from* a connector *to* the nexus individuates the drop line."); at 90-91 ("The drop lines that forge a pathway through the undermold or primary mold do so to reach the feeder cable, and the UL 9703 tests confirm their success in that journey. The apertures formed by the drop lines can only extend partially through the undermold or primary mold, because they terminate in the nexus."); Tr. (Weiner) at 1318:10-13 ("…when the drop line meets the nexus, it has done its job. I think that's what I recall his testimony. And I think I agree with that, yeah, I agree with that.").

Both Dr. Cameron and Dr. Kenny explained why Shoals' arguments regarding the directionality of current in a solar installation created further ambiguity. Tr. (Cameron) at 1078:9 - 1079:18; Tr. (Kenny) at 1176:10-1177:20 (explaining how the cable junctions are equally capable of gathering current together onto the larger wires from small wires or distributing current from large wires back out to small wires depending on whether the junctions are on the positive or negative sites of the installation). Indeed, the claim is directed a specific mold structure and the issues of infringement and technical domestic industry are focused on whether the relevant products have the mold structure with specific aperture structures that meet the claim language.

[redacted]

Shoals' contradictory positions taken between the *Markman* hearing and the evidentiary hearing and post-hearing brief are demonstrative though of their overreach in this investigation. These new arguments should be given little to no weight.

C. Shoals' new, undisclosed theory in its post-hearing brief is unsupported the intrinsic record and waived

Likely recognizing that Mr. Brooks presented a theory at the evidentiary hearing that did not follow the *Markman* Order and contradicted its own evidence, Shoals post-hearing brief appears to present a new argument for the first time at the conclusion of its section on indefiniteness: "So long as each drop line ends within the nexus, the aperture associated with each drop line likewise extend no farther than its drop line, and neither aperture will extend completely through the undermold." CPostHB at 22.

First, Shoals never presented this argument in its pre-hearing brief or during the evidentiary hearing, and thus, is waived. Ground Rule 9.2. (Any contention not set forth in detail in the pre-hearing brief is abandoned); *See e.g.*, *Certain Outdoor and Semi-Outdoor Electronic Displays, Products Containing Same, And Components Thereof*, Inv. No. 337-TA-1331, Initial Determination at 96 n.30, EDIS Doc. ID 809756 (Nov. 13, 2023) (ALJ Bhattacharyya, Monica) ("The Undersigned agrees that MRI has waived this argument under Ground Rule 9.2 by failing to present it in its pre-hearing brief."); *Certain Integrated Circuits, Components Thereof, and Products Containing the Same*, Inv. No. 337-TA-1350, Initial Determination at 214, EDIS Doc. ID 813409 (Jan. 19, 2024) (concluding that argument was waived under Ground Rule because it was not argued in the pre-hearing brief); *Certain Wet Dry Surface Cleaning Devices*, Inv. No. 337-TA-1304, Initial Determination at 124, EDIS Doc. ID 793726 (Mar. 24, 2023) (same).

Notwithstanding waiver, to the extent the Court addresses Shoals' new argument, *e.g.,* for completeness, it similarly should be rejected.

[redacted]

First, Shoals offered no explanation or testimony at the hearing for where an aperture associated with a drop line ends within the nexus. Rather, Mr. Brooks testified the opposite: the aperture ends right at the nexus. Tr. (Brooks) at 546:22-547:25. Thus, Shoals' new theory is based solely on unsupported attorney argument, which is not evidence. *See Icon Health and Fitness, Inc.*, 849 F.3d at 1043 ("Attorney argument is not evidence.").

Shoals' post-hearing brief suggests that it will rely on Dr. Cameron's deposition testimony when she asked where drop line 1 and drop line 2 end in the demonstrative below. CPostHB at 22. But Shoals' post-hearing brief cites to portions of Dr. Cameron's testimony separated from the context of the question she was asked at her deposition and then at the hearing. Dr. Cameron did not testify that two branches ("drop line 1 and drop line 2") formed by a single cable form two separate apertures within a mold structure. Dr. Cameron did not testify that an aperture begins in the middle of the nexus and exits the undermold. Nor did she testify that an aperture that starts from the outer surface of the undermold ends in the middle of the nexus.

Rather, as she explained at the hearing, when she was asked about "drop line 1" and "drop line 2" during her deposition, she understood "drop line" to refer to the "input" or "branch" or "drop"—not the physical structure (i.e., cable) that forms the 3-D hole within the mold. Tr. (Cameron) at 1160:23-1162:4. She also explained earlier in her direct testimony her interpretation of "drop line" at the time she issued her expert report and deposition—both which occurred ***before*** the *Markman* Order issued:

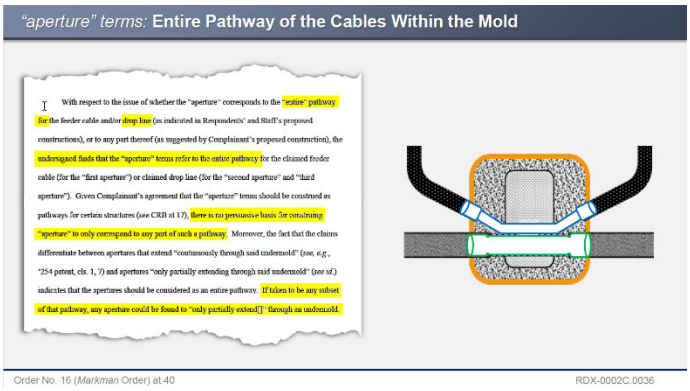
> …So I did kind of go to review that to see how am I going to understand drop line. And it was a tough call, actually, because it's not that clear in the patent what exactly we should be calling a drop line, whether its just the branch of whether it's all the way through, for example, but I decided that, for the purposes of my report and for my deposition testimony, I was using – I just used drop line to basically be the branch. So I did that partially based on my – it was pretty close call in terms of reviewing the specification, which wasn't really clear, but at the time I was doing that I also had reviewed kind of contention from the parties, and it seemed to be

[redacted]

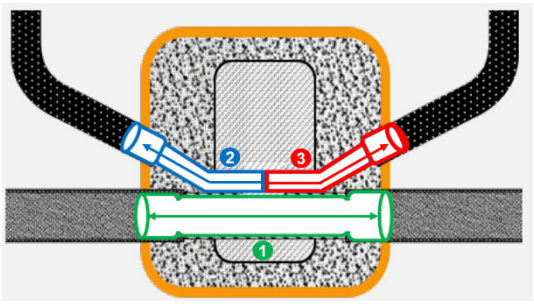
> that that was the way that drop line was being used. So I wouldn't say it's consistent because it's not crystal clear from the spec, so in my analysis I have been using drop line to be a branch.
>
> Tr. (Cameron) at 1085:20-1086:16:

Dr. Cameron further explained the confusion caused when tying "aperture" to "drop line" because of how "drop line" is inconsistently used in the specification. Tr. (Cameron) at 1086:17-1087:16. Indeed, Mr. Brooks admitted on cross-examination that "drop line" was not a term of art in the field of photovoltaic systems. Tr. (Brooks) at 494:25-495:17. Outside of solar though, Mr. Brooks was very familiar with the term. Tr. (Brooks) at 495:18-496:16 (admitting that "drop line" as used in a "service drop line" or relating to an extension cord refers to the "wire or cable or something that's basically carrying electric current.").

Ultimately, Shoals' new and waived theory can be summarized by annotations to Dr. Cameron's demonstrative from the hearing, CDX-0002C.0036, reproduced below. For context, Dr. Cameron used CDX-0002.0036 to explain how she interpreted the *Markman* Order and that an "aperture" within a mold structure was the entire pathway of a cable within the mold. Tr. (Cameron) at 1088:4-1089:18.

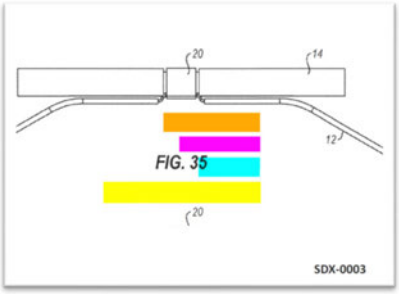


Under Shoals' new theory, the above demonstrative of a mold structure with one big cable and one small cable that form apertures within the mold structure could have three apertures: two of which only extend partially through the mold (shown in **blue** and **red**) and one that extends completely through the mold (show in **green**), as illustrated in one example below.

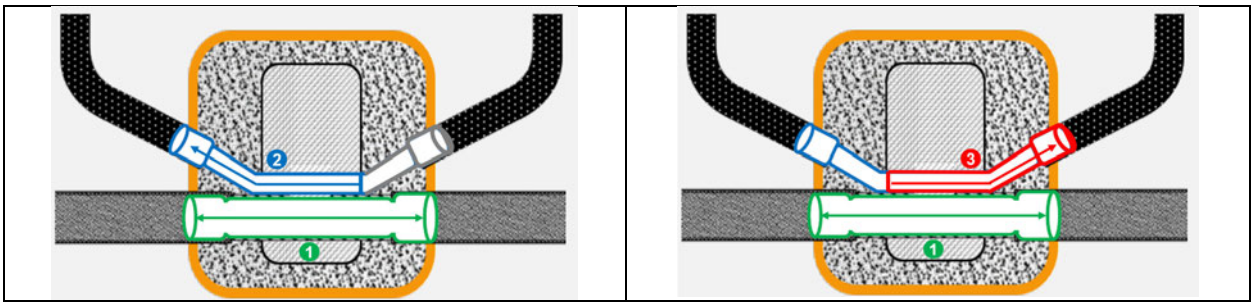


[redacted]

The above demonstrative assumes that each "drop line" and associated aperture ends in the middle of the nexus, something no expert testified to at the hearing. Rather, neither Mr. Brooks or Mr. Weiner could say where each "drop line" ends in the nexus. And under examination from Staff, Dr. Kenny observed that under different interpretations put forward during the hearing, the "second aperture" could extend along any of the highlighted lengths shown below. Tr. (Kenny) at 1237:12-1241:23 (creating SDX-0003). The above does not even attempt to show or explain the potential overlap in apertures if the drop line extends to the outside edge of the nexus (as shown in **orange** above in SDX-0003).



The below further illustrates this problem, where the same structure (i.e., the 3-D hole in the nexus) is part of both the purported second and third apertures:



The claims require an undermold or primary mold that fully encases the nexus, and further comprises three separate apertures that either extend completely through or partially through the mold. Shoals has not presented any expert testimony or arguments that the claim required apertures can overlap or that the aperture requirements are met under the doctrine of equivalents. Any such arguments in its reply brief or on petition for Commission review of the Initial Determination would be new, untimely and are waived. G.R. 9.2.

At bottom, Shoals' claim interpretation strains credibility and finds no support anywhere in the intrinsic record. As Dr. Cameron explained, if every aperture associated with an input

[redacted]

necessarily only extended partially through the mold, this limitation added by the Examiner during prosecution of the '254 Patent and carried forward by Shoals in the '153 Patent would not have meaning. Tr. (Cameron) at 1070:4-24. The *Markman* Order has already recognized the claims differentiate between apertures that extend completely through and partially through. The partial apertures or 3-D holes **(2)** and **(3)** in the above demonstrative are part of the same aperture (i.e., the entire pathway of the "drop line" (i.e., cable) through the mold when viewed as if the "drop line" (i.e., cable) is removed) that extends completely through the mold structure.

D. Shoals' inconsistent and contradictory presentation of "drop" versus "drop line" further undermines its position

At the hearing, Shoals prepared its witnesses to consistently use "drop line" to describes "inputs" or "branches" in support of its "number of drop lines = number of apertures" only extending partially through theory. The inconsistent testimony and contradictions with Shoals' own documents show that their adopted nomenclature should be given little to no weight. *Certain Outdoor and Semi-Outdoor Electronic Displays,* , Inv. 337-TA-1331, Initial Determination at 96 (Discussing expert's opinion as not credible because it was contradicted by the specification); *Certain Flocked Swabs, Products Containing Flocked Swabs, and Methods of Using Same*, Inv. 337-TA-1279, Initial Determination at 80 n. 45, EDIS Doc. ID 787166 (Oct. 28, 2022) (finding that expert's changing position diminished credibility of expert's testimony on an issue).

On cross-examination, Mr. Brooks admitted that "drop line" was not a term of art in the field of photovoltaic systems. He further admitted that "in the literature that I've looked at I haven't seen the word "drop lines" used a lot. Again, one of the problems we have here in, you know patent language versus real-world language---" Tr. (Brooks) at 490:2-8. Mr. Brooks was then asked if he had seen "drop line" used in Shoals' own product documentation. At first, he refused to answer the question, and was then instructed by the Judge to answer "yes" or "no.", to

which he answered "I don't recall." Tr. (Brooks) at 491:9-492:10.

Mr. Brooks was then asked if—aside from in Shoals' patent application and patent documents—he had seen "input" referred to as "drop line"? Mr. Brooks admitted: "**I haven't seen it and** I think it's irrelevant." Tr. (Brooks) at 493:5-9. Mr. Brooks acknowledged that in Voltage's documents, he had seen the terms "input" or "branch" used and that "branches, drops, leads, strings, taps" were all terms he had heard used in the solar industry. Tr. (Brooks) at 493:10-24. He agreed though that "drop line" was not a term of art in the field. Tr. (Brooks) at 494:25-17.

On re-direct the next day, Shoals' counsel tried to rehabilitate Mr. Brooks' testimony. Tr. (Brooks) at 611:6-13. Shoals then tried to elicit testimony suggesting that Shoals' documentation used the term "drop line" interchangeably with "drop" or "input". Tr. (Brooks) at 611:14-612:7. On re-cross, Mr. Brooks tried to say that JX-0117C equated "drop line to drop". Tr. (Brooks) at 627:18-20. But after being shown JX-0117C, Mr. Brook avoided agreeing that the document did not say "drop line" or that "drop and drop line" are the same thing. Tr. (Brooks) at 628:2-9 ("On that page, completely out of context, completely out of context. It does not have the word line.").

Remarkably though, when probed as to why he thought Shoals' counsel did not try to refresh his recollection with a document from Shoals that "said drop line or used the term drop line for its strings and inputs" if such a document existed, Mr. Brooks testified that he believed there would be Shoals' internal documentation (and not including related to the patents) that used the term "drop line." "There's no doubt in mind my about that." Tr. (Brooks) at 628:21-630:2.

Yet at no point through the evidentiary hearing did Shoals proffer any evidence of Shoals actually using the term "drop line" in its internal product documentation or evidence that Shoals referred to its "inputs" or "branches" as "drop lines" as Mr. Macias testified to under oath. Nor did Shoals identify any its post-hearing brief.

[redacted]

In reality, no such documents exist because as Mr. Brooks and Dr. Cameron agreed, "drop line" is not a term of art in solar installations. *See infra* at p. 4 (table identifying hearing testimony (Tr. (Brooks) at 490:2-8; 494:25-495:17; Tr. (Cameron) at 1160:23-1161:19)). As the testimony at the hearing showed, "drop line" is a term used inconsistently in the '153 Patent[5], but at the *Markman* hearing, Shoals identified it as the "line" or "cable" but argued that the single "line" or "cable" that forms two inputs effectively becomes two "drop lines" because it gets smashed into the feeder cable. As the evidence from the hearing showed, this explanation was not credible, unsupported, and confuses the issues when the claim required apertures in the mold structure are tied to the term "drop line" as opposed to the physical structure (i.e., the cable) that forms the aperture within the mold.

III. NON-INFRINGEMENT AND NO TECHNICAL DOMESTIC INDUSTRY

A. Shoals' inconsistent theory of infringement and technical DI is unsupported and cannot be correct

As illustrated by Shoals' own annotated demonstratives of a cross-section of its four-drop BLA, Shoals cannot reconcile its theory with its own products.

CPostHB at 81 ("second/third apertures"	CPostHB at 80 ("first aperture")
[redacted] *See also* Tr. (Brooks) at 475:20–478:22. As with Voltage's LYNX products, the second and third apertures of the BLA mold drops extend only *partially* through the undermold because they are bounded at one end by the outermold and at the other by the nexus. Tr. at 476:19–477:12, 478:7–22.	As illustrated in the picture of the lengthwise cross-section of CPX-0036.1C below, the BLA mold drop has a first aperture (bounded by blue lines) extending completely through the undermold and having a first diameter (yellow), wherein the feeder cable extends through the first aperture along a first longitudinal axis (green): [redacted]

For each of the second and third apertures, Shoals argues that they "extend only *partially*

[5] *See, e.g.,* Tr. (Cameron) at 1144:4-1146:24 (examination of Cameron by Staff regarding the identification of the entire wire as drop line 12 in Figs. 35, 37); Tr. (Brooks) at 590:7-596:18 (cross examination of Brooks admitting that Figs. 11,12 and 29 depict a dual **drop** lead assembly while element 12 of Fig.7 is identified as **drop line**)

through the undermold because they are **bounded … at the other [end] by the nexus**." CPostHB at 81 (emphasis added). In other words, each aperture ends because an aperture cannot extend into the nexus. As Mr. Brooks' testified at the hearing, in the nexus, "there is no aperture where the undermold is surrounding the drop line." Tr. (Brooks) at 478:16-22; 551:18-553:2; 557:4-12. Yet on the right, with respect to the first aperture, Shoals argues that the first aperture extends completely through the undermold. CPostHB at 80. Shoals presented no expert testimony, or even any attorney argument, as to how the second and third apertures are bounded by the nexus, but the first aperture is not. There is no reasonable explanation.[6]

Indeed, in addressing the nexus limitation, Shoals' post-hearing brief identifies

CPostHB at 79 (undermold outlined in yellow).

CPostHB at 78, 79 ("nexus")

Brooks testified, the feeder cable and drop line are electrically coupled at the nexus.

Taking Mr. Brooks' opinion that the second and third aperture only extend partially

[6] Shoals attempted to provide an explanation at the *Markman* hearing, but Mr. Brooks' hearing testimony provided a different one. *See* JX-0298 (*Markman* Tr. (Shoals Counsel) at 159:24-16:7; 209:1-210:3); Tr. (Brooks) at 550:3-5; 551:10-13; 551:18-553:2. This is not surprising since Shoals' fact witnesses consistently testifie *See, e.g.*, Tr. (Macias) at 206:2-15; 203:9-15; Tr. (Tolnar) 326:4-12. As Shoals' cross-sections show,

[redacted]

through because they are "bounded by the nexus", the same would be true for the "first aperture". Dr. Cameron explained this inconsistency during her direct testimony, and it was unrebutted at the hearing, and unaddressed by Shoals in their post-hearing brief. Tr. (Cameron) at 1075:20-1077:2. All Shoals did was misleadingly cite to only a portion of Dr. Cameron's testimony on this issue. CPostHB at 37-39. But Dr. Cameron's opinion was that the first aperture extends completely through in the same way that the second aperture [redacted] extends completely through. That is, there are two apertures that extend completely through, as shown by the further annotated version of Shoals' cross-section of its four-drop BLA below on the left. But if one were to accept Mr. Brooks' opinion that the second aperture is bounded by the nexus and thus, only extends partially through, applying that opinion consistently to the first aperture would show four apertures (each extending only partially through), as shown below:

CPostHB at 81 (four-drop BLA cross-section)	
(annotated by Voltage showing first and second apertures each extending completely through the mold with yellow highlighting and green arrows, including through the nexus (red))	(annotated by Voltage showing two pairs of apertures each extending partially through the mold and bounded by the nexus (red) with yellow highlighting and green arrows (total of four apertures each extending partially
[redacted]	

Under this interpretation, there is no infringement or technical DI either, as the claims require that the first aperture extend completely through the undermold / primary mold.

[redacted]

To summarize, Shoals' infringement theory (on the left) clearly shows an inconsistent application between the first and second aperture, where one ends because it "bounded by the nexus" while the other extends through the nexus. Telling, Shoals never elicited testimony from Mr. Brooks to reconcile this inconsistency. Dr. Cameron explained why Shoals' theory cannot stand (illustration on right). *See* Tr. (Cameron) at 1074:20-1080:8.

[redacted]

Similarly, Shoals fails to explain how its theory can be reconciled with the claim requirement that the undermold or primary mold fully encase the nexus. As Dr. Cameron explained during her direct testimony, Mr. Brooks' opinion that the second and third apertures are bounded by the nexus (and thus necessarily only extend partially through) is inconsistent with the claim requirement that the nexus is fully encased by the mold structure. *See* Tr. (Cameron) at 1076:20-1078:8. Mr. Brooks admits that drop line extends into the nexus, but opined that the mold structure is no longer surrounding the drop line when it is in the nexus (such that the aperture does not extend into the nexus with the drop line). Tr. (Brooks) at 551:18-553:2 As Dr. Cameron explained, this makes no sense because the claim requires that the mold structure fully encase the nexus, which includes the portion of the drop line. Tr. (Cameron) at 1076:20-1078:8; *see also* '153 patent, cl. 2 ("the lead assembly of claim 1 wherein the drop line includes a section of exposed wire at the nexus); cl. 3 ("the lead assembly of claim 2 wherein the feeder cable includes a section of exposed wire at the nexus"). Shoals did not cross-examine Dr. Cameron on this point during the hearing and it stands unrebutted in Shoals' post-hearing brief. Shoals simply ignores it because it has no explanation for its inconsistent and incorrect application of the aperture terms. The second and

[redacted]

third apertures extend into the nexus, per the claims, the patent specification and file history.

IV. VOLTAGE'S AD TRUNK BUS SHOULD BE ADJUDICATED AND DOES NOT INFRINGE FOR ADDITIONAL REASONS

A. Voltage has met its burden when considering each of the *Milk* factors

In its Post Hearing Brief, Shoals does not dispute the first *Milk* factor but argues that Voltage has not met its burden on the other three factors. CPostHB at 65.

1. Factor 3: The AD Trunk Bus is sufficiently fixed in design

a. There is no "mismatch between the physical products and engineering drawings

Shoals argues that Voltage's AD Trunk Bus is not sufficiently fixed in design because there is a "mismatch between the physical products and engineering drawings." *See* CPostHB at 65-71. However, this "mismatch" argument relies on Shoals' misleading statement [redacted] CPostHB at 66-67. Shoals' attorney argument interpretation of an engineering drawing is not evidence. *Icon Health*, 849 F.3d at 1043 ("Attorney argument is not evidence.").

[redacted]

[redacted]

b. Voltage's mid-production product samples, together with the technical drawings, CT scans and complete product samples, provide a proper basis for adjudicating the alternative design

[redacted]

The facts here are not analogous to those in the *Unmanned Aerial Vehicles* investigation. In *Unmanned Aerial Vehicles*, the "incomplete product" was a rotor, and just one component

[redacted]

without a clear connection to the complete or accused UAV product. *See Certain Unmanned Aerial Vehicles & Components Thereof,* Comm'n Opinion, Inv. No. 337-TA-1133 (Sept. 8, 2020) at 23. However, in this Investigation, the so-called "incomplete product" is the accused product before the outermold is added. Its purpose is to aid the fact finder in viewing the inner mold structure without having to cut open a completed product (as Mr. Brooks did to view one 2-D cross section) or take a 360 degree CT-scan (as Dr. Cameron did to fully analyze the product from all cross-sections). The mid-production product samples, together with the technical drawings, the CT-Scans and the complete product samples, show the alternative design has been sufficiently fixed

[redacted]

Shoals' post-hearing brief further accuses Voltage of "manipulation of the mid-production samples." *See* CPostHB at 69-71; Tr. (Brooks) at 452:8-453:2. However, Mr. Brooks admitted that this was conjecture. *See* Tr. (Brooks) at 452:8-453:2. Notably, Shoals had the opportunity to ask Voltage about the mid-production samples during Ms. Ge's deposition and again at the hearing. Shoals chose not to, presumably recognizing that Mr. Brooks' conjecture is ultimately irrelevant to whether the AD Trunk Bus design is fixed.

[redacted]

[redacted]

2. Factor 2: The AD Trunk Bus has been imported

Shoals argues that Voltage could not credibly certify that any given shipment of AD Trunk Bus products conformed to the design depicted on paper. CPostHB at 71. However, as discussed above in Section IV.A.1 and as supported by both Mr. Brooks' own cross-sections and Dr. Cameron's CT scans, all samples of Voltage's AD Trunk Bus produced in this Investigation conform to the alternative design [redacted]

3. Factor 4: The fixed design of the AD Trunk Bus has been sufficiently disclosed by Voltage during discovery

Shoals argues that Voltage failed to meet its burden on the fourth *Milk* factor because of "variability in Voltage's finished-product samples, the evidence of manipulation of the mid-production samples, and the lack of correspondence between drawings and products." CPostHB at 71. [redacted]

[redacted]

B. **Voltage's AD Trunk Bus**[redacted]

1. [redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

V. SHOALS' REPRESENTATIVE PRODUCT ARGUMENTS ARE UNAVAILAING AND CONFIRM ITS OVEREACH IN THIS INVESTIGATION

As Order No. 28 held, Mr. Brooks was precluded from offering a representative product opinion at the evidentiary hearing for Shoals' BLA products. To salvage this deficiency, Shoals attempts to cobble together evidence from the hearing to demonstrate representativeness. CPostHB at 83-93. But its citations to fact witness testimony and the Intertek Report amount to a simple, over-reaching position: that any BLA with at least two branches necessarily practices the '153 Patent. CPostHB at 92. Tthis overly broad view of the '153 patent is unsupported by the intrinsic record and cannot be reconciled with the lengthy file history that led to claims that required a specific mold structure: one that fully encases the nexus and further comprises three apertures, each with its own structural limitations. Tr. (Cameron) at 1048:4-1066:10.

Shoals' arguments on representativeness present two purported facts that it contends have been met by a preponderance of the evidence: "(1) the very purpose of the BLA is to serve as a many-to-one harness in utility-scale PV installations (*see* Tr. (Tolnar) at 275:10–13), which means

[redacted]

it is in actual use in that capacity and functions for that purpose, and (2) BLA is certified to UL 9703 by Intertek, which means its molds safely and effectively conduct electricity."). But both of these facts would presumably be true for a BLA that had, for example, three apertures that each extended completely through the mold structure (as opposed to a BLA with two apertures that only extended partially through). Indeed, the entirety of Shoals' discussion about the Intertek report is agnostic to the claim required mold structure and its aperture requirements.

By way of example, Shoals' image from the Intertek report shows three cables passing through a compression lug that ultimately has a mold formed over it. CPostHB at 88. Dr. Cameron's CT scan of Shoals' BLA showed three apertures or three pathways of three cables that extended completely through the mold structure, including the *nexus* within the mold structure. RPostHB at 103 citing RDX-0002C.0047; RPX-0004.4C (video demonstrative from CT scan); Tr. (Cameron) at 1095:2-1099:2.

[redacted]	
CPostHB at 88: Shoals' Evidence from Intertek Report	**RPostHB at 103: Voltage's Evidence from Dr. Cameron's CT Scans**

Yet Shoals' strained interpretation is that this mold structure has **one big aperture** that extends completely through the mold structure (for the feeder cable) and **four separate small apertures**, each associated with each drop, and each which only extend partially through the mold structure. The below demonstrative illustrate Shoals' position:

[redacted]

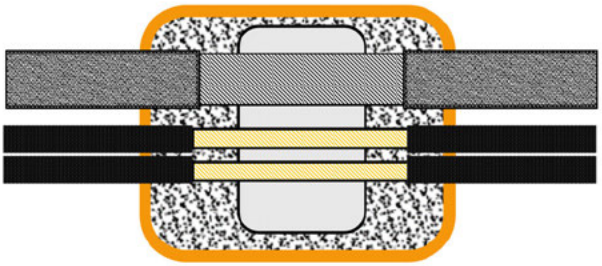
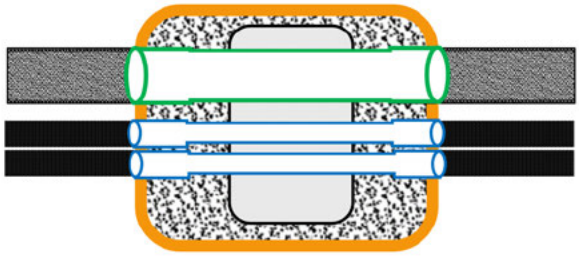
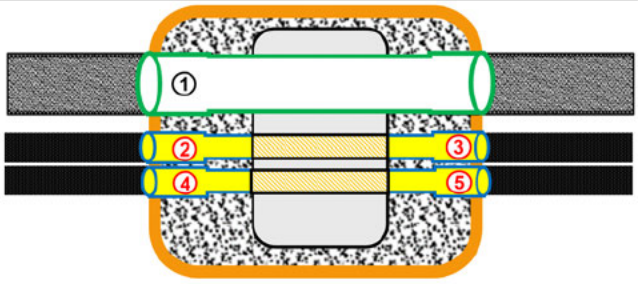


Figure 7-type schematic of Shoals Four-Drop BLA



Cables removed showing mold structure with three apertures each extending complete through

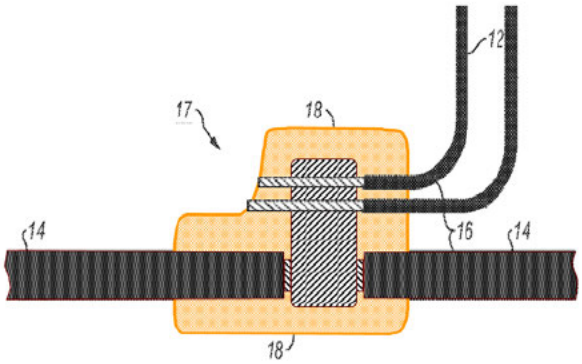


Shoals' untenable litigation theory of a mold structure and its apertures

Shoals' theory—including for representatives—becomes even less credible when considering the demonstrative from Mr. Bardos' testimony and his admission that Shoals has made [redacted]. As Shoals' own picture shows, each drop line, [redacted], as illustrated below.

[redacted]

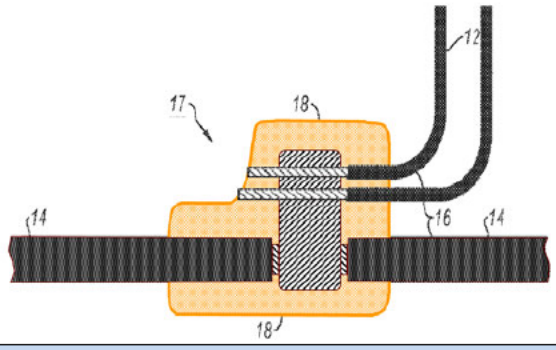
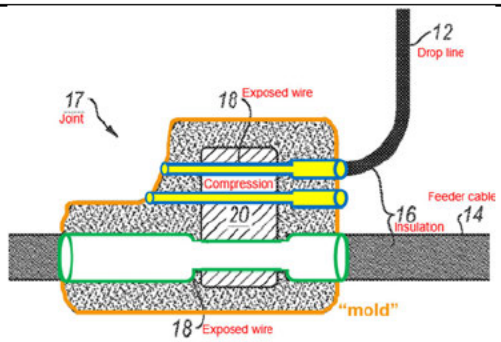
Bardos Demonstrative excerpt (CDX-0004.0011)



Applied to Figure 7 with a second drop line where the drop lines extend past the compression lug

Assuming the drop lines extended to the outer edge of the undermold (no evidence or

testimony was provided by Shoals indicating whether that occurred in this mold configuration or not), the demonstrative below shows one possibility of the mold structure and its apertures when the cables (including the "drop lines") are removed.

	
Bardos Demonstrative CDX-0004 applied to Figure 7 with a second drop line where the drop lines extend past the compression lug	**Underlying cables / drop lines removed from mold structure**

Yet under Shoals' theory, the above demonstrative would be a mold structure with a first aperture (**green**) that extends completely through the mold structure and two apertures (**blue**) that only extend partially through the mold structure.

As the above example illustrates, Shoals' theory makes no sense when looking at the claim required mold structure. Clearly a mold structure can have a drop line such that it forms an aperture in the mold structure that extends complete through the mold. And Shoals may have even produced BLAs with such configuration. But under their overly broad theory in this Investigation, including their belated representative product argument, they never provided such evidence or accounted for these different mold structure configurations.

Like with its theory of infringement and technical DI, Shoals cannot meet its burden on a representative product analysis and the evidence shows that one BLA configuration is not necessarily representative of the rest.

VI. LEVEL OF SKILL OF A PERSON OF ORDINARY SKILL IN THE ART

A. Shoals fails to argue or provide any evidence that one of ordinary skill in the art requires the specific experience it seeks to require, and thus waives any such argument

As detailed in Voltage's Post-Hearing Brief, the *Markman* Order initially adopted a provisional level of ordinary skill that appeared to combine the requisite subject matter experience proffered by the parties during claim construction.[8] However, in view of Shoals' motion to exclude Dr. Kenny's opinion for purporting to fall short of the skill required of one of ordinary skill in the art, this Court determined that "a more detailed consideration of the definition of a POSA is warranted." Order No. 26, at 3. The Court accordingly directed that the "parties should address this issue in post-hearing briefs, with citations to relevant record evidence." *Id.* But contrary to this direction, Shoals' Post-Hearing Brief does not provide any argument about what the appropriate level of skill of a POSA should be, let alone any new supporting evidence.[9] Instead, all Shoals does is beat a straw man argument by arguing that Dr. Kenny does not meet that provisional level of skill of a POSA that this Court expressly found required more detailed consideration. Whether inadvertent or strategically aimed to deprive Respondents of an opportunity to respond in its reply brief, Shoals has in either case waived its right to argue for any particular level of skill of a POSA.

In contrast, Voltage's Post-Hearing Brief set forth and discussed a non-exhaustive list of factors Courts have used to determine the level of ordinary skill in the art: "(1) the educational level of the inventor; (2) type of problems encountered in the art; (3) prior art solutions to those

[8] Which required experience in both "photovoltaic systems and electrical wiring." RPostHB at 23.
[9] The closest Shoals comes to argument is, oddly, to construe the Court's POSA definition. CPostHB at 13 ("Shoals understands 'electrical wiring' in the phrase, 'photovoltaic systems and electrical wiring,' to refer to electrical wiring in the context of photovoltaic systems, rather than electrical wiring more generally. Based on this understanding, Shoals does not propose any modifications to the definition"). This argument too, is completely new, and should be deemed precluded as waived.

[redacted]

problems; (4) rapidity with which innovations are made; (5) sophistication of the technology; and (6) educational level of active workers in the field," and noted that for a given case, not every factor may be present, "and one or more of them may predominate." RPostHB at 23 (citing *Best Med. Int'l, Inc. v. Elekta Inc.*, 46 F.4th 1346, 1353 (Fed. Cir. 2022)). As a predominant factor, Respondents demonstrated through the experts' and witnesses' testimony and the '153 patent's intrinsic record that the relevant technology of the '153 patent is indisputably unsophisticated: it is nothing more than electrical junctions and molding, and has essentially nothing to do with photovoltaic-specific technology. RPostHB at 23-24, 13-14. Shoals' own expert witness characterized the technology as "simple." Tr. (Weiner) at 1301:9-16. The sole inventor of the '153 patent explained that [redacted]" JX-0217C (Solon Tr.) at 105:4-21. Although Shoals makes much ado about differentiating a lead assembly from a wire harness, Shoals' provisional application to which the '153 patent claims priority explains that Shoals' commercial embodiment (the "big lead assembly" or "BLA") is just a wire harness "on a much larger scale"—the lead assembly simply combines the wire harnesses in the same way the wire harnesses combine strings. RPostHB at 13-14. Using electrical junctions in this way to combine current cannot be considered sophisticated, and such electrical connections were already well-known well before the '153 patent. Tr. (Kenny) at 1169:21-1174:23.

Shoals has also attempted to frame the problem addressed by the '153 patent as wanting to remove the combiner box, but remains glaringly silent on the fact that the combiner box itself is little more than a box in which wires are connected. Tr. (Weiner) at1266:1-3. Combining electrical connections in a combiner box in this way introduced several practical problems: "they are clumsy, prone to damage and malfunctioning, must be periodically maintained, and require extensive planning and skill for installation." JX-0089 ('153 patent) at 1:47-50. But this only

[redacted]

reinforces that the problem being addressed by the '153 patent is how to combine currents with electrical junctions:

> Unfortunately, however, a combiner box is still a necessary component in known solar power installations **because the energy coming from solar arrays must be combined** prior to going into the inverter.

JX-0089 at 1:44-47. It should be undisputed that the '153 patent's problem is as unsophisticated as the technology itself: how to use electrical junctions to combine energy.

As to considering other factors relevant to the level of skill of a POSA, there should also be no dispute regarding the education level of the inventor or the active workers in the field, given that Dr. Kenny's educational level exceeds those of Shoals' own experts. Tr. (Brooks) at 382:13-22 (Mr. Brooks having a Master of Science degree in mechanical engineering); Tr. (Weiner) at 1257:15-19 (Mr. Weiner having a bachelor's degree in astrophysics astronomy and a minor in physics); Tr. (Kenny) at 1165:9-20 (Dr. Kenny having a Ph.D. in Physics, and serving as a professor of mechanical engineering for 30 years). And as to prior art, Respondents have also shown at least one combination of (and the '153 patent family's file history reflects many more) prior art references that disclose combining current using electrical junctions in a variety of useful configurations. Finally, little, if any, evidence was elicited regarding any rapid or slow development in innovation, except to say that electrical junctions and molding have been well-known long before the '153 patent (Tr. (Kenny) at 1169:21-1174:23), and it is unclear what new innovation there may really be in electrical junctions—which is technology not unique or limited to assemblies for photovoltaic devices. It is not a new field.

Shoals glaringly makes no argument in its Post-Hearing Brief to suggest that any factor should result in a level of skill for a POSA requiring "two years of experience working with photovoltaic systems, who has an understanding of EBOS for industrial solar power installations—allowing that additional specialized education could compensate for less experience," as it had

originally contended during the *Markman* process. Shoals thus fails to provide any argument or support for any appropriate level of skill of a POSA as the Court requested in Order No. 16. Shoals thus waives any argument as to any particular level of skill of a POSA. In view of the record, the Court should instead find that the requisite subject matter experience of a POSA is in electrical wiring and connectors, and that Dr. Kenny qualifies as a POSA. *See* RPostHB at 21-28.

B. Shoals' arguments that Dr. Kenny fails to meet the preliminary level of skill of a POSA are factually inaccurate and unavailing

As an initial matter, and as noted above at n. 9, Shoals proffers a newfound understanding that the preliminary level of skill of a POSA (that the Court has identified as requiring "more detailed consideration") requires "two years experience working with photovoltaic systems and electrical wiring," where it now understands that 'electrical wiring' "refer[s] to electrical wiring in the context of photovoltaic systems, rather than electrical wiring more generally." CPostHB at 13. This "understanding" is a completely new argument and should be precluded as waived.

But even if not deemed waived, or the preliminary level of skill of a POSA applied at *Markman* is found to be the appropriate level of skill of a POSA, Dr. Kenny falls within this definition, as explained in Respondents' Initial Post-Hearing Brief. *See* RPostHB at 21-25, n.1. With the recognition that more education could substitute for experience, Dr. Kenny's extensive education and background in the fundamental sciences (i.e., physics, mechanical engineering) that undergird the relevant technology in this case, as well as his practical experience from working with his students in hands-on engineering courses (which includes electrical wiring), more than make up for any purported lack of experience with photovoltaic systems and electrical wiring—particularly so for the unsophisticated technology of the '153 patent invention. RPostHB at n.1. Accordingly, Dr. Kenny falls well within the level of skill of a POSA.

Shoals nonetheless argues that Dr. Kenny does not qualify as one of ordinary skill in the

art. CPostHB, at 94-100.[10] As referenced *supra*, Shoals for the first time construes the Court's construction with its new "understanding" that 'electrical wiring' "refer[s] to electrical wiring in the context of photovoltaic systems, rather than electrical wiring more generally." CPostHB at 13; *supra* n. 2. Much as Mr. Brooks purports to apply the Court's construction but nonetheless apparently applies Shoals' rejected "all or part" concept from its proposed claim construction, Shoals here inappropriately uses a newfound "understanding" of the Court's preliminary level of a POSA to apply a level of skill akin to Shoals' own proposed level of skill. And as explained below, Shoals now unabashedly buttresses its straw man arguments with mischaracterizations about Dr. Kenny's experience and education, and ultimately rests all its arguments on the unsupported, unreasoned premise that the level of a POSA must have years of experience with utility-scale solar installations to understand a patent that is about electrical junctions and molding.

Dr. Kenny acknowledged that he did not spend two years of his life dedicated to working on industrial solar power installations, Tr. (Kenny) at 1185:3-12, but this does not mean Dr. Kenny has "no experience" with photovoltaic systems as Shoals claims with its out-of-context references to hearing testimony. CPostHB at 96-97. As part of his education in physics, Dr. Kenny took courses and used solar and other related semiconductor devices in which electrons flow through band structures and where energy can be applied, either through photons or other means, to excite carriers over energy barriers and make them available for extraction as a source of energy. Tr. (Kenny) at 1186:23-1187-23. For the same reason, it is also incorrect that Dr. Kenny is not able to substitute additional education for any lack of experience "because he has no education, formal or otherwise, related to PV systems and electrical wiring of PV systems as it relates to the '153

[10] Shoals' reliance on *HVLPO2, LLC v. Oxygen Frog, LLC*, 949 F.3d 685, 688–89 (Fed. Cir. 2020) is inapposite because the challenged testimony on obviousness in *HVLPO2* was offered by a fact witness who was not disclosed as an expert witness. Dr. Kenny is an expert witness who timely offered obviousness opinions in an expert report.

[redacted]

patent." CPostHB at 97. The whole of Dr. Kenny's testimony was clear that he has the requisite relevant education related to PV systems and electrical wiring of PV systems as it relates to the '153 patent, because apart from the literal requirement that the claimed invention be used in the context of a solar energy installation, the '153 patent claims are about wiring and molding, not photovoltaics—nothing about the claimed EBOS system requires specialized experience or understanding of utility scale PV installations. In fact, limitations relating to "utility scale" were specifically rejected by the examiner during prosecution as rendering the claims indefinite for insufficient description that the claimed invention would be "inherently suitable for utility-scale installations." JX-0085.0286-87; *see also* Tr. (Kenny) at 1249:14-1250:15 (explaining that the EBOS system could be applied to non-solar applications).

Shoals' own arguments criticizing Dr. Kenny's purported "lack" of relevant experience reflect a confusing, misleading narrative with no reasoned basis or common thread of logic to conclude that Dr. Kenny should be excluded as a POSA. On one hand, Shoals demands experience with PV systems—which Dr. Kenny has. *See* Tr. (Kenny) at 1186:23-1187-23. On the other hand, Shoals disparages Dr. Kenny's education and experience with PV systems and their underlying semiconductor physics as unrelated to the EBOS aspect of PV systems. CPostHB at 97. But the term EBOS simply describes the family of components that connects solar panels to inverters: electrical wiring and junctions, with which Dr. Kenny has ample experience. Tr. (Macias) at 104:22-105:1, 107:18-23; Tr. (Weiner) at 1262:8-13; Tr. (Brooks) at 384:13-19, 499:25-500:9; Tr. (Kenny) at 1165:9-1167:25; 1169:18-1175:12; 1175:24-1176:9; 1185:14-1186:2; 1186:23-1187:23, 1220:22-1221:2; Tr. (Tolnar) at 292:14-293:6. And Shoals has identified nothing about the claims or technology that would be outside the understanding of an individual with Dr. Kenny's background. Dr. Kenny's testimony was clear and consistent: he *does* have knowledge of

photovoltaic devices from his studies in semiconductor physics (which governs photovoltaic devices), but the '153 patent relates to EBOS, which is simply electrical wiring and connectors, and with which Dr. Kenny has ample experience.

Shoals' additional arguments are similarly lacking in substance, support, and reason. Shoals argues that Dr. Kenny improperly uses an understanding of aperture from the field of optics which shows Dr. Kenny's lack of skill in the art because it was not informed by experience in solar. But this rings particularly hallow given that Shoals' own expert, with 30 years experience in the industry, admits that "aperture" is not a term used in the context of an EBOS solution, and Shoal's own president admitted he had never heard the term "aperture" in relation to Shoals' BLA or BLA technology. Tr. (Brooks) at 497:5-7, 497:15-18; Tr. (Tolnar) at 320:6-22. Shoals' magic phrase arguments, claiming that the word "solar" does not appear anywhere in Dr. Kenny's CV or that Dr. Kenny has no certifications or accreditations or working knowledge of the codes or standards that relate to solar all reduce the test of "knowledge" of one of ordinary skill in the art to a keyword search that aims to ignore the weight of knowledge that Dr. Kenny has as a 30-year professor, teaching the very subjects that undergird the operation of *all* of our tangible world: physics and mechanical engineering. Shoals' pejorative casting of Dr. Kenny's knowledge as "the ken of [an] all-purpose or ivory tower 'electrical wiring and connectors' dilettante[]," is simply wrong. CPreHB at 20. Dr. Kenny has, for 30 years, been a professor that has taught and helped future physicists and engineers implement and build their crazy robots and projects in his courses, and worked on start-up companies with technologies that range from liquid cooling for microprocessors, to treatment of kidney stones, to micromechanical silicon-based timing references for consumer electronics. Tr. (Kenny) at 1165:21-1167:25. Far from a "dilettante," Dr. Kenny's education and experience reflects a comprehensive understanding of physics and

[redacted]

mechanical engineering, including electrical junctions and wiring, that more than satisfies the level of skill of a POSA regarding a patent that concerns itself with electrical connections and molding.[11]

Even ignoring Shoals' inaccurate characterizations of Dr. Kenny's background, all of Shoals arguments ultimately suffer from a fundamental, critical flaw: there is no reasoned basis that any of what Dr. Kenny purportedly does not have (e.g., certification, accreditation, knowledge of the National Electric Code, experience with utility-scale solar installations) is even necessary to understand the '153 patent invention. Shoals fails to present any such argument, except to point out that Dr. Kenny's opinion is different from their own experts' opinions, who have experience installing solar power installations. Shoals' arguments are not only bereft of any real substance, all of Shoals' arguments are ultimately premised upon the false, unsupported notion that the technology of the '153 patent is so specifically sophisticated that only those with years of experience in *photovoltaic systems, who have an understanding of EBOS for industrial solar power installations* could hope to understand the technology. But the '153 patent claims are clear that this is a simple technology: it is just wires and molding. Tr. (Weiner) 1301:9-16.

VII. INVALIDITY OF THE '153 PATENT

A. Shoals does not meaningfully dispute Dr. Kenny's opinion that the claims are invalid under 35 U.S.C. § 112

Shoals' only arguments in its post-hearing brief relating to 35 U.S.C. § 112 are that Mr.

[11] Shoals also attempts to contrast the experience of Mr. Weiner with Dr. Kenny. Not only is Mr. Weiner's experience not relevant at all to whether Dr. Kenny is a POSA (and only supports that Shoals' POSA arguments are ultimately just an ends-oriented attempt to exclude or discredit Dr. Kenny's opinion in favor of Mr. Weiner's, rather than real arguments with merit), his academic background in astrophysics and astronomy (the study of heavenly bodies, such as the planets) is not even close to relevant to the operation of EBOS systems. Moreover, his inability to respond to questions about, or explain his understanding of, the patent claim term aperture—other than to say he agreed with Shoals' other expert and parrot Mr. Brooks' unenlightening phrasing "when the drop line meets the nexus, it has done its job"—brings Mr. Weiner's credibility into question, both in understanding the claimed technology, and potential biases favoring Mr. Brooks' testimony. *See* SPostHB at 29-30.

[redacted]

Brooks opined on where the drop line ends.[12] CPostHB at 22. More precisely, Shoals argues that that Mr. Brooks' testimony "does not render the claims indefinite because it does not create any uncertainty about what the claims leave open to the public."[13] CPostHB at 22. But the test is whether one of ordinary skill in the art would, in view of the specification, have reasonable certainty as to the scope of the claimed invention—and not whether an expert retained for litigation may *ex post facto* provide limits to the scope of the invention. Shoals does not argue that anything in the record informs whether an aperture extends partially or completely through a primary mold or undermold, because there is no such record. RPostHB at 128-130. Shoals also does not offer any substantive rebuttal to Dr. Kenny's opinion that between the several tests offered by the parties in this Investigation as to whether an aperture extends partially or completely through a primary mold or undermold, there is no support that would provide one of ordinary skill in the art any reasonable certainty as to which test is correct. RPostHB at 131-139. Staff agrees that adoption of Shoals' interpretation of the *Markman* Order's construction of aperture is unsupported by the intrinsic evidence and would otherwise raise questions of enablement and indefiniteness. SPostHB at 64-65. Shoals' failure to rebut indefiniteness and the additional concerns raised by Staff's brief all underscore that the claims of the '153 patent should be found invalid under 35 U.S.C. § 112.

B. Shoals' effort to preclude consideration of "electrical cables" art does not comport with the intrinsic record

Shoals argues that Shao is in a different field of endeavor from the '153 patent conflicts with Shoals' own prosecution of the '153 patent and is plainly at odds with the substance of the '153 patent. Given the inconsistency with Shoals' own acts and substance, Shoals' arguments

[12] Shoals mischaracterizes Dr. Cameron's opinions as broadly agreeing that the first and second drop line each end in the middle of the *nexus*; this is misleading, as explained Section II.D.
[13] This argument is also in conflict with Shoals' own expert's opinions: Tr. (Brooks) at 551:10-13 (Q: "Is there a specific point within the nexus that you identified as to where, in your opinion, the second drop line ends? Yes or no? A. No.").

[redacted]

appear to be little more than a ends-oriented arguments that inappropriately seek to exclude invalidating prior art from consideration.

1. Shoals' arguments are incongruous with the prosecution history of the '153 patent

Fundamentally, Shoals cannot escape the fact that the '153 patent is a patent about electrical junctions and wiring. During the prosecution of the '153 patent and its parent '254 patent (to which the '153 patent is a continuation), the subject matter of both patents were classified under the Cooperative Patent Classification system as pertaining to the H01R class,[14] *inter alia*, which corresponds to "Electrically-Conductive Connections; Structural Associations of a Plurality of Mutually-Insulated Electrical Connecting Elements; Coupling Devices; Current Collectors," subclass 9/03, which corresponds to "Connectors arranged to contact a plurality of the conductors of a multiconductor cable." JX-0089 at 1. Unsurprisingly, over the course of the numerous rejections in the '153 and '254 patent prosecutions, the examiner searched a variety of H01R

[14] In a footnote, Shoals argues that the classification categories used by the examiner should not be considered, but Shoals' argument is misdirected, and its cited cases only serve to undermine its own argument. CPostHB at 102, FN. 23. Shoals argues that "just because a reference is categorized in a non-solar classification does not necessarily mean it has no relation to solar." *Id.* This is logically irrelevant. The pertinent point is that the '153 patent was categorized with respect to non-solar classifications, which reflects the breadth of analogous art to the '153 patent that goes beyond mere application to solar installations. Shoals' citation to *In re Ellis* to caution against relying on classification of prior art as a basis for assessing analogous art is unavailing. 476 F.2d 1370 (C.C.P.A. 1973). Consideration of the relevant similarities and differences of the disclosed inventions (that "carries far greater weight") is shown *infra* to support that Shao is analogous art. Moreover, the *In re Ellis* court found both that divergent classifications to be some evidence of non-analogy, and cross-reference in the search notes to be some evidence of analogy. *Id.* Here, Shoals does not and cannot argue divergent classifications. Further, all of Shoals' cited cases support only that a fact finder should be cautious of using divergent classifications to narrow the scope of analogous art to exclude consideration of that art. *See In re Huene*, 243 F.3d 556 (Fed. Cir. 2000) ("As far as the matter of analogous prior art is concerned, evidence of classification of prior art in different categories by the PTO 'is inherently weak ... because considerations in forming a classification system differ from those relating to a person of ordinary skill seeking solution for a particular problem.'") (citing *In re Mlot-Fijalkowski*, 676 F.2d 666, 670 n. 5, 213 USPQ 713, 716 n. 5 (CCPA 1982)). Contrary to Shoals' intended purpose, in each of its cited cases, the court rejected narrowing a broad scope of analogous art. Shoals' citation to MPEP 2141.01(a) simply quotes *In re Ellis*, and details that in *In re Ellis*, the structural similarities and functional overlap between the claimed inventions overcame evidence from the classifications that the art was non-analogous. *See* MPEP 2141.01(a).

[redacted]

classifications and ultimately cited multiple prior art references that cover electrical junctions and wiring—that make no reference to solar at all. *Id.* In contradistinction to Shoals arguments, the examiner considered all of this art relevant to the novelty of the subject matter of the '153 patent. JX-0085; *see also* RDX-0003C.069-71. And Shoals' prosecuting counsel—also Shoals' litigation counsel—did not object to consideration of any references as non-analogous, thus also implicitly acknowledging the propriety of considering this analogous art.[15]

Yamawaki in combination with Vander Ploog formed the basis to the last rejection before amendment and issuance of the '153 patent. RPostHB at 112-113. Vander Ploog is classified under H02G, corresponding to "Installation of Electric Cables or Lines, or of Combined Optical and Electric Cables or Lines." RX-0053. Vander Ploog makes no mention of any of the bases upon which Shoals or Mr. Weiner attempt to distinguish the '153 patent from Shao: nothing about solar, current distribution, current collection, AC, or DC. RX-0053. By Shoals and Mr. Weiner's logic, the Yamawaki-Vander Ploog combination should have been rejected for the same arguments it makes now. Yet Shoals' prosecution attorneys did not even object to Vander Ploog as non-analogous art, and instead acquiesced and amended the then-pending claims with the examiner's identification of allowable subject matter (a second drop line and a corresponding third aperture—which is exactly what is disclosed by Shao that Shoals hopes to preclude from consideration). RPostHB at 112-113. Shoals' litigation counsel now seeks to preclude review of electrical junction prior art by carving as narrow a scope for a "field of endeavor" and "reasonably pertinent" as possible, both in conflict with Shoals' actions during prosecution, and the clearly broad subject matter of the '153 patent.

[15] Each of U.S. Pre-Grant Publ. 2009/0088032 to Keeven, U.S. Pat. No. 6,265,665 to Zahnen, and U.S. Pat. No. 3,852,516 to Vander Ploog ("Vander Ploog") (RX-0053), were cited by the examiner and used to reject the then-pending claims; none make mention of solar or photovoltaic technology.

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2. Shao shares the same field of endeavor as the '153 Patent

Shoals argues that because the field of endeavor of the '153 patent is applied to the solar technology field, that Shao cannot be analogous art because it does not make mention of solar.[16] CPOstHB, at 100-15.[17] But as explained in Respondents' Post-Hearing Brief, apart from the literal requirement that the claimed invention be used in the context of a solar energy installation, the '153 patent claims are about wiring and molding, and there is nothing about the claimed technology that is uniquely specific to solar power installations. RPostHB at 108-109. And as detailed above, the prosecution history shows that both the examiner and prosecuting attorneys understood electrical junctions and wiring references unrelated to solar are analogous art to the '153 patent. Even Dean Solon, the sole named inventor of the '153 patent, explained, his invention was simply "combin[ing] all those strings on to one common cable and went from a 64-channel combiner box to a 16-channel combiner box." JX-0217C (Dep. Tr. (Solon)) 104:20-105:21; Tr. (Solon Dep. Video Clip); *see also* RPostHB at 13-21. Shoals criticizes Dr. Kenny's testimony for only noting that Shao "concerns 'power distribution in electrical wiring systems' and thus would be 'interesting to consider . . . in the case of the '153.'" CPostHB at 101-102. But this is exactly the point that demonstrates that Shao and the '153 patent are analogous art: they are both directed to electrical junctions and wiring systems, and as a result, are analogous.

[16] Contrary to its assertions, Shoals' cited passages from the hearing reflect that Dr. Kenny opined that the '254 and '153 patents describe methods and apparatuses for a lead assembly for use in a solar energy installation—Dr. Kenny did not, as Shoals asserts, admit to any legal conclusion regarding the field of endeavor. CPostHB, at 101 (citing Tr. (Kenny) at 1230:1-24).

[17] Shoals relies on *Airbus S.A.S. v. Firepass Corp.*, 941 F.3d 1374, where the court found that prior art does not qualify as analogous prior art because the prior art reference failed to mention the word 'fire' even a single time. CPostHB, at 102-03. As an initial matter, this finding was only under the "field of endeavor test," and the court concluded that the PTAB erred by failing to determine whether that reference is analogous art under the "reasonably pertinent" test in view of other background references considered during prosecution. *Airbus S.A.S. v. Firepass Corp.*, 941 F.3d 1374, 1382-83. Notwithstanding, as detailed in Respondent's Post-Hearing Brief, the field of endeavor is at best limited to "solar" in name, not in substance. RPostHB at 108-109.

[redacted]

The distinctions that Mr. Weiner draws between Shao and the '153 patent are trivial and without meaningful difference. Mr. Weiner notes that Shao discloses a device for AC power distribution while the '153 patent discloses DC power consolidation. CPostHB at 102-103 (citing Tr. (Weiner) at 1282:22-1283:10, 1284:2-22). This is inaccurate. Figure 5 and Figure 6 of the '153 patent depict a "positive lead assembly" and "negative lead assembly," which, as Shoals' expert Mr. Brooks admits, "are sold in pairs, because you have to have a circuit;" "they are part of the same circuit," and that circuit creates a loop. Tr. (Brooks) at 511:14-512:16. Mr. Brooks was unwilling or unable to explain whether "power flow" may be different between collection and distribution, and also did not want to speak about current (for fear of being "tied up in knots about which way electrons are flowing"). Tr. (Brooks) at 512:17-513:3 ("not going there" despite (or perhaps *because*) knowing that "we have a few electrical engineers in the room . . ."). In contrast to Mr. Brooks' shirking of the role of an expert to "help the trier of fact to understand the evidence or to determine a fact in issue," Dr. Kenny embraced this role. Fed. R. Evid. R. 26. Dr. Kenny explained that current runs through the entire circuit, through the positive and negative lead assemblies, and after bringing power from a solar installation to an inverter, the current continues in the loop back to the panels to complete the circuit. Tr. (Kenny) at 1176:10-1178:12, 1181:4-1183:4. Thus, in drawing such a distinction between collecting and distributing power, Mr. Weiner ignores that the system he describes distributes the current consolidated from the solar panels back to the panels in the return path.[18] Dr. Kenny expressly laid this out, explaining that the negative lead assemblies serve as the "complementary harness that distributes current back to the individual panels and individual cells of the solar array." Tr. (Kenny) at 1174:9-1175:12. Ultimately, "[electrons] . . . don't particularly care whether they are being combined or distributed" and the

[18] Mr. Weiner also ignores that after collecting the current from solar panels, the positive lead assemblies may also be said to distribute the power to the inverter.

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disclosed wire harnesses and lead assemblies of the ’153 patent are “equally capable of gathering current together onto the larger wires from small wires or distributing current from large wires back out to small wires.” Tr. (Kenny) at 1174:9-1175:12; Tr. (Cameron) at 1051:24-1053:8.

For the same reason, Mr. Weiner’s distinction that “AC components generally have no applicability to design decisions within a DC power system” (CPostHB at 103), is also a distinction without a difference where the component in question is simply a wire. CPostHB at 103; Tr. (Cameron) 1051:10-23, 1051:24-1053:8 (“not only does it not matter if you’re using it for AC or DC, but the direction also doesn’t matter”).

Mr. Weiner’s final distinction is that the invention of Shao is intended to be used in a building “in sharp contrast to solar components which are intended for outdoor use and subject to extreme environmental factors.” CPostHB at 103. The extent of Mr. Weiner’s cited testimony was sparse and conclusory. Tr. (Weiner) 1283:22-25 (“**Q**. Does Shao -- where is Shao intended to be used? I think you mentioned -- where is it intended to be used? **A**. Inside of a building, indoors. **Q**. Okay. **A**. Yeah.”). Even setting aside the fact that this testimony is neither particularly helpful to a trier of fact nor within the realm of expert testimony—it is common sense that even within the home, electrical wiring may be subject to environmental factors that can be even more extreme than those found outside: kitchen appliances such as stoves may operate beyond outdoor temperatures, and indoor flooding may just as well expose wiring to water for even longer than what might occur outdoors. And as with all of the distinctions Shoals identifies, they make not a whit of difference to the ’153 patent, which is not limited to operating inside or outside, or environmental effects only found outside a building. Shao is directed to electrical junctions and wiring just as the ’153 patent is, and constitutes analogous art.

3. The electrical junctions of Shao are reasonably pertinent to the problem with which the inventor is involved

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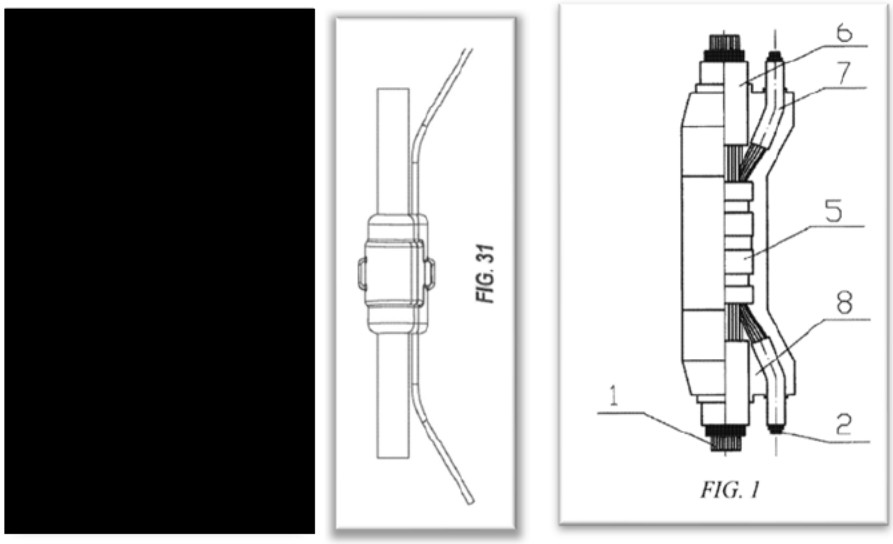

From left to right: (1) Shoals BLA; (2) Fig. 31 of the '153 patent as taken from Shoals' Post Hearing Brief; and (3) Fig. 1 of Shao.

Depicted above are Shoals' DI product, Fig. 31 of the '153 patent, and Fig. 1 of Shao. One of ordinary skill would have recognized the similarities in structure and function of these three electrical junctions. *See In re Ellis*, 476 F.2d 1370, 1372 (C.C.P.A. 1973) (finding "similarities and differences in structure and function of the inventions disclosed in the references to carry far greater weight" than classification of references). Shoals would have one believe that the electrical junction of Shao is not reasonably pertinent to the problem solved by Shoals' BLA and Figure 31 of the '153 patent. Even setting aside the obvious visual likeness between the three, the '153 patent's specification also lays out the problem addressed by the inventor of the '153 patent. JX-0089, at 1:44-47 ("a combiner box is still a necessary component in known solar power installations **because the energy coming from solar arrays must be combined**" (emphasis added). Again, it should be undisputed that the '153 patent's problem is simply how to combine energy coming from several sources—in this case, solar arrays. This is exactly what electrical junctions and wiring do. If Shoals has trouble identifying why Dr. Kenny believes Shao is reasonably pertinent to the problem of the '153 patent, it is because Shao is directed to an electrical

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junction, and it is absolutely trivial that electrical junctions combine energy from multiple sources. Dr. Kenny's opinions go beyond the trivial nature of this inquiry and show how the purported disadvantages stated in the '153 patent—"they are clumsy, prone to damage and malfunctioning, must be periodically maintained, and require extensive planning and skill for installation" (JX-0089 at 1:47-50)—are addressed by Shao in a way that preempts the '153 patent invention.

Shoals' arguments simply try to reduce the scope of every prior art reference to the narrowest possible application of the patent. But the threshold for analogous art is low: a reference—even outside of the field of endeavor—is reasonably pertinent if a person of ordinary skill would have consulted it and applied its teachings when faced with the problem that the inventor was trying to solve. *Airbus S.A.S. v. Firepass Corp.,* 941 F.3d 1374at 1380-82 (Fed. Cir. 2019). But as Shoals' litigation counsel would have it, one of ordinary skill in the art would instead put on blinders to the cornucopia of different ways to combine wires in the prior art by suggesting that trying to get rid of combiner boxes would somehow exclude entire swaths of electrical junction prior art. This not how either the patent examiner or Shoals' patent prosecution counsel viewed the problem of the '153 patent during prosecution, because it is utterly illogical. One of ordinary skill in the art would have instead looked to the copious ways that electrical junctions have been formed—including Shao—to address how to best combine the current and eliminate the need for a combiner box.[19] There should be no reasonable dispute that Shao is analogous art.

C. Shoals fails to rebut that a POSA would be motivated to combine Yamawaki and Shao

Contrary to Shoals' assertion that Dr. Kenny offered no viable rationale for combining Yamawaki and Shao, Dr. Kenny's testimony is clear. A POSA would have recognized that

[19] The combiner box itself is little more than a box in which wires are connected. Tr. (Weiner) 1266:1-3.

[redacted]

Yamawaki and Shao are from the same field, and share many of the same goals in providing a wiring system. Tr. (Kenny) at 1207:1-1208:12. Dr. Kenny notes that the disclosures in Yamawaki provide a limited description of the interior structure of the cable junction. Tr. (Kenny) at 1208:13-1209:12.[20] As a result, the more detailed disclosures of Shao would be considered by a POSA in considering how to fill in the details left open in Yamawaki. Tr. (Kenny) at 1208:13-1209:12; RPostHB at 110. As explained in Respondents' Post-Hearing Brief and *supra*, Shao comes from the same field of endeavor, uses known techniques to improve similar devices in the same way, and is simply a choice among a finite number of identified predicable solutions that would have been known to a POSA and obvious to try. RPostHB at 110-111. And as Dr. Kenny points out, during prosecution, the examiner similarly found the then-pending claims of the '153 patent invalid based upon the combination of Yamawaki and Vander Ploog. Tr. (Kenny) at 1209:13-1210:14. There, the examiner explained that:

> The Supreme Court decided that a claim can be proved obvious merely by showing that the combination of known elements was obvious to try. In this regard, the Supreme Court explained that, "[w]hen there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill in the art has a good reason to pursue the known options within his or her technical grasp." An obviousness determination is not the result of a rigid formula disassociated from the consideration of the facts of the case. Indeed, the common sense of those skilled in the art demonstrates why some combinations would have been obvious where others would not. Therefore, choosing from a finite number of identified, predictable solutions, with a reasonable expectation for success, is likely to be obvious to a person if ordinary skill in the art. *See KSR International Co. v. Teleflex Inc.*, 550 U.S. 398, 415-421, USPQ2d 1385, 1395 — 97 (2007) (see MPEP § 2143, E.).

JX-0088.0080-0081. Just like Vander Ploog, Shao teaches a similar lead assembly with a similar undermold with a feeder cable and drop line, where the mold comprises a first aperture extending completely through the undermold, such that the feeder cable extends through the first aperture,

[20] Shoals appears to acknowledge this in its Pre-Hearing Brief. CPreHB at 196.

and a second aperture extending partially through the undermold, such that the drop line extends into the second aperture. JX-0088.0080-81. Under Mr. Weiner's reasoning (which is illogical and unsupported), the Yamawaki-Vander Ploog combination should have been rejected for a lack of motivation to combine—but that is not what happened. Instead, Shoals' prosecution attorneys recognized and acquiesced to the combination and amended the pending claims to add a second drop line and corresponding aperture to overcome the disclosures of Vander Ploog. RPostHB at 112-113. As Dr. Kenny notes, had the Examiner known of Shao, he likely would have similarly considered Shao, which, unlike Vander Ploog, discloses a second drop line through a third aperture. Tr. (Kenny) at 1210:15-1211:11.

Shoals argues that Dr. Kenny's consideration that Yamawaki and Shao are also analogous art to one another, being from the same field of endeavor, and attempting to achieve similar benefits and advantages, somehow detracts from the motivation to combine analysis. CPostHB at 107-108. But these facts undoubtably buttress that a POSA would have had good reason to look at these two references together and combine the teachings of Shao with those of Yamawaki as a simple choice among a finite number of identified predicable solutions that were known to a POSA, particularly where Yamawaki's disclosures were less than detailed. And as to Shoals' criticism that there would be no motivation to combine Yamawaki with Shao to result in a second and third aperture that have different diameters from the first aperture, Dr. Kenny actually explains exactly why a POSA would be so motivated:

> Yamawaki itself doesn't describe the diameters of the cables, but as I explained in my report, one of ordinary skill would understand that it's often convenient to have the branch cables be smaller than the trunk cables just because of the increase in the current that's carried in the trunk relative to the branch.

Tr. (Kenny) at 1205:4-17; *see also* Tr. (Kenny) at 1180:15-1181:3. It would thus be clear to a POSA that as current is collected, a larger wire is necessary to accommodate the

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increased current, and so would have been obvious to achieve this benefit by incorporating this feature of Shao into Yamawaki.[21]

D. Shoals' assertions that it would not be technically viable to combine Yamawaki with Shao are incorrect

Shoals argues that the Yamawaki-Shao combination is not technically viable because premanufacturing the wire harnesses of Yamawaki, using different aperture sizes for the branch and trunk cables of Yamawaki, and/or adding an additional aperture to Yamawaki "would eliminate the purpose and technical viability of Yamawaki." *See* CPostHB, at 110-116. This is incorrect. Shoals' argument is based on Mr. Weiner's testimony, and it appears clear that the basis for Mr. Weiner's testimony are embodiments that Dr. Kenny does not rely upon for his opinion that the Yamawaki and Shao combination render the asserted claims of the '153 patent invalid.

In support of Mr. Weiner's proposition that Yamawaki's disclosures are linked to the utility of a "flexible and adaptable nature of the wire harnesses," Shoals cites to a portion of the Yamawaki specification that suggests that "the lengths of the trunk and branch cables can be adjusted" and "the photovoltaic modules can be increased for extension or rearranged with ease." This is incredibly misleading–not only does this passage pertain to different embodiments that are not relied upon by Dr. Kenny,[22] it also is preceded by an explanation about the use of "connectors for ***connecting auxiliary cables, the connectors being attached individually to the respective ends of the trunk cable and the branch cables***," or a junction cable used for changing the respective lengths of the trunk and branch cables. RX-0052 (Yamawaki) at 3:50-54, 4:14-30. Yamawaki explains that, "[d]epending on the use of the auxiliary cables or the number of auxiliary cables

[21] Shoals also takes issue with Dr. Kenny's choice of words that a POSA "would *notice* that it *might* be possible to have multiple drop lines from a single [branch junction] and that Shao brings some ideas about how to accomplish that" (CPostHB at 109), but this simply reflects that Shoals acknowledges that a POSA would be aware of these known, finite, predicable solutions that would be obvious to try, and accordingly, motivated to combine.

[22] *See infra*, Section V2

[redacted]

used, therefore, the respective lengths of the trunk and branch cables can be changed." '153 patent at 3:62-67. Contrary to what is suggested by Mr. Weiner, nothing about the flexibility of completely different embodiments that rely on additional junction or auxiliary cables external to the electrical junction at issue would affect the technical viability of the modification within the junction proposed by Dr. Kenny.

For the same reason, all of Shoals' arguments that prefabrication (CPostHB at 111-112), wire crimping (CPostHB at 113-114), molding (*id.*), and introducing a second drop line and/or third aperture to the branch junction (CPostHB at 115-116) would inhibit the "flexibility and adaptability" of Shao are inapt: they all rely upon a different embodiment that relies on additional auxiliary cables external to the electrical junction at issue and would not affect the technical viability of the modification within the junction proposed by Dr. Kenny. CPostHB at 111-116.

The logic behind Shoals' argument that having different wire sizes would not be technically viable is not entirely clear, but Shoals appears to suggest that a residential solar installation is at odds with using a larger wire size because it would make the wire harder to bend and increase the size of the holes inside the house. CPostHB at 114-115. This argument presupposes that the wire sizes used by Yamawaki are at their maximum gauge for viable use in a residential setting, and any larger would be non-viable. Even accepting this premise as accurate (for which there appears to be no support), nothing precludes just making the branch wires smaller in relation to the trunk wire, which even Shoals tacitly admits is possible: "a POSA would not look to Shao to increase **(or decrease)** the wire size and, consequently, the aperture size of either the drunk cables or the branch cables in Yamawaki." CPostHB at 114 (emphasis added).

E. Shoals fails to show that Yamawaki-Shao combination does not teach many elements of the asserted claims in the '153 Patent.

Shoals presents arguments that Yamawaki does not teach certain limitations of the claims

[redacted]

of the ’153 patent that do not appear in either its Pre-Hearing Brief or expert reports, and should be deemed waived. But even if considered, Shoals’ arguments are without merit.

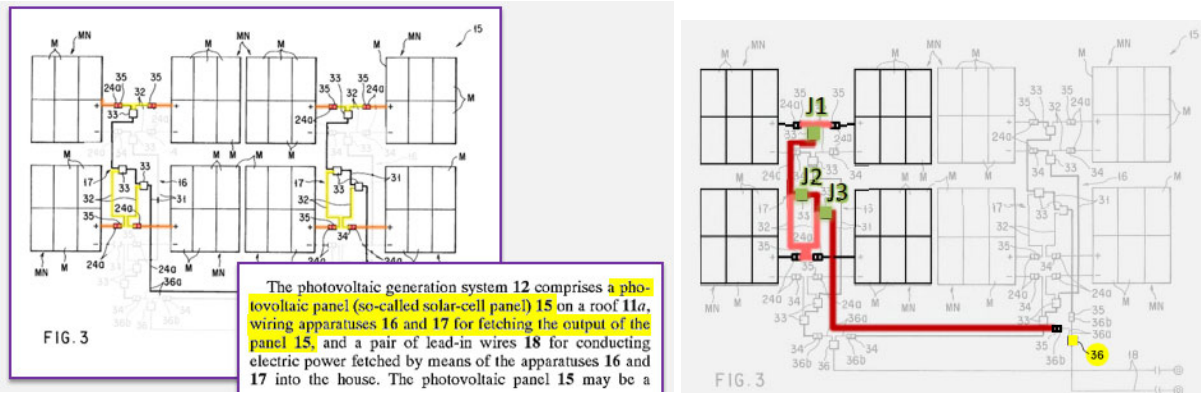
1. Shoals presents a new, abandoned theory that “Yamawaki teaches a wire harness, not a lead assembly.”

Shoals argues that Yamawaki teaches a wire harness, but not a lead assembly. *See* CPostHB, at 117-20. Shoals never disclosed this argument in its pre-hearing brief or in Mr. Weiner’s expert report, and Shoals’ argument is thereby waived. GR. 9.2, 11.6.3. To the extent not waived, it is nevertheless unsupported and contradicted by Shoals’ own documents and testimonies of its own witnesses, and should be given no weight when evaluating whether Voltage has met its burden of establishing invalidity.

First, Shoals’ interpretation of Yamawaki is erroneous – Yamawaki does teach a wire harness and a lead assembly as required by the asserted claims of the ’153 patent. *See* RPostHB, at 115-16. The ’153 patent defines that the wire harnesses 34 connect multiple solar panels 30 in an array 32, and a plurality of wire harnesses are coupled to a lead assembly that connects to an inverter.[23] *See* RPostHB, at 115-16 (citing JX-0089, at 1:37-39, 2:28-30; Tr. (Weiner), at 1265:4-7). The wire harness “has multiple branches where each branch is configured to electrically connect to a separate solar panel.” *See* CPostHB, at 117. Yamawaki’s cables directly connected to solar panels in Fig. 3 of Yamawaki (annotated in orange (left)) meet this definition of wire harness as they connect multiple solar panels in an array. *See* RPostHB, at 115-16. Multiple branches configured to connect to a separate solar panel are omitted from Fig. 3 but are shown as connecting wires 24 in Fig. 4. RX-0052, at 9:3-5. The branch cables 32 connected to those wire

[23] Mr. Weiner emphasized that the “strict” definitions of a solar module, solar panel, and solar array in the NEC are consistent with how the ’153 patent uses the terms. CPostHB, at 117. The definitions of these terms in the NEC are irrelevant in understanding the scope of a wire harness and a lead assembly in the ’153 patent.

harnesses via a connector 35 meet the definition of the drop line of a lead assembly of the '153 patent. RPostHB, at 115; JX-0089 at 2:9-11 ("The terminal end of each drop line includes a drop line connector for fast and easy connection to the wire harness that interconnects the solar panels of a solar array"). Thus, Yamawaki teaches wire harnesses (annotated in orange (left)) and lead assembly (annotated in pink and red (right)). RPostHB, at 115-16. *But see* CPostHB, at 118-19.



Compare RDX-0003.0060 (RX-0052 at 7:54-8:20, Fig. 3) (left) *with* CDX-0016.16 (right).

Shoals argues that the alleged wire harness in Yamawaki, which actually constitutes a lead assembly (annotated in pink and red (right)), is equivalent to the prior art wire harness with a combiner box described in Fig. 2 of the '153 patent. CPostHB, at 119. This argument is also waived as it was not disclosed in Shoals' pre-hearing brief or in Mr. Weiner's expert report. GR. 9.2, 11.6.3. To the extent not waived, Shoals' mapping is erroneous since Yamawaki does not even disclose a combiner box connected to the wire harness as described in Fig. 2 of the '153 patent. Yamawaki only discloses a branch junction 36, not a combiner box. RX-0052, at 11:35-40. Shoals also ignores the cables (annotated in orange (left)) connected between the alleged wire harness (annotated in pink and red (right)) and solar arrays. RPostHB, at 116.

Second, to the extent the Court finds that Yamawaki teaches a wire harness, but not a lead assembly, there is little or no difference between a wire harness and a lead assembly: the wire

[redacted]

harness and the lead assembly operate in exactly the same manner, but only at a different scale, and no such scale is ever defined or claimed. Tr. (Kenny) at 1180:15-1181:3. A POSITA viewing prior art disclosing a wire harness would have viewed a wire harness at any scale, including at a larger scale, which would comprise the claimed lead assembly. *Arendi v. Apple*, 832 F.3d 1355, 1361 (Fed. Cir. 2016) (finding that common sense can be used to support a missing limitation). Shoals' own documents support, and Shoals' own witnesses confirmed, that the lead assembly is a wire harness that works at a larger scale. *See* RX-0096, at 22 (provisional application of the '153 patent describing Shoals BLA as a harness that works on a much larger scale); *see* Tr. (Tolnar) at 315:7-8 ("The BLA is a larger harness, so it is a larger harness."); *see also* Tr. (Tolnar) at 371:3-21 (agreeing that Shoals refers to the BLA as a harness); Tr. (Macias) at 155:13-21 (agreeing that both wire harness and the BLA combines current together).

Accordingly, to the extent such an argument is not waived, Shoals fails to rebut that Yamawaki teaches a lead assembly.

2. Shoals presents a new, abandoned theory that "Yamawaki does not teach any apertures or an undermold/overmold."

First, Shoals argues that Yamawaki does not teach apertures or an undermold/overmold. CPostHB, at 121, 124. Shoals argues that "[a]pertures cannot be created by the branch cables and trunk cables because there is no undermold/primary mold with which to create the apertures." CPostHB, at 124. This argument is waived as Shoals never disclosed this argument in its pre-hearing brief or in Mr. Weiner's expert report. GR. 9.2, 11.6.3. At best, Shoals only argued that Yamawaki does not teach apertures of different diameters for branch and trunk cables of different thicknesses and that Yamawaki does not teach that its outer member 33f is molded over the nexus between the cables. CPreHB, at 196. Shoals did not challenge Yamawaki's teaching of apertures in its pre-hearing brief and even described "the diameter of *corresponding* apertures" in

[redacted]

Yamawaki, which *supports* that Shoals understood that Yamawaki disclosed apertures. CPreHB, at 196 (emphasis added). Moreover, Shoals did not challenge Yamawaki's disclosure of an undermold (molded body 33e) in its pre-hearing brief, instead only challenging the overmold (mapped to Yamawaki's outer member 33f). CPreHB, at 197. Shoals now argues in its post-hearing brief that Yamawaki does not teach apertures or an undermold/overmold *at all*. CPostHB, at 121, 124. Notwithstanding waiver, to the extent the Court addresses Shoals' new argument, it should be rejected. Yamawaki teaches apertures and undermold/overmold. RPostHB, at 118, 122. To the extent Shoals argues that Yamawaki's disclosure is not detailed enough to allow a POSITA to understand how the apertures are formed within the mold, Yamawaki's description of apertures in its FIGs. 9A, 9B is not different from the description of apertures in the 61 figures of the '153 patent, to the extent aperture is not found invalid under 35 U.S.C. § 112 for lack of written description or lacking reasonable certainty as to scope.

Second, Shoals argues that "Yamawaki is chiefly related to an adjustable wire harness," where each of the cables can be cut to a desired length. CPostHB, at 121-22. This argument is waived as Shoals never disclosed this argument in its pre-hearing brief or in Mr. Weiner's expert report. GR. 9.2, 11.6.3. Shoals' argument that "Yamawaki proposes 'bringing the branch junction to the solar panels by adjusting branch and trunk cable length, not the solar panels to the branch junction,'" (CPostHB, at 122), is also new and unsupported.

To the extent not waived, Shoals argument is premised on disclosures of ***the fifth and sixth embodiments*** in Yamawaki that Voltage did not rely on to distinguish Yamawaki from the '153 patent. These separate embodiments relates to a separate teaching of cables with adjustable length. RX-0052, 18:6-9, 19:30-35, 19:45-49, 20:44-48. Voltage relies on only the first embodiment of Yamawaki, which does not relate to an adjustable wire harness, which Mr. Weiner correctly

recognized. JX-0323C, ¶ 153. Moreover, Yamawaki expressly states that the fifth and the sixth embodiments are distinguishable from the first embodiment described in Figs. 9A, 9B in that junction cables 85 or auxiliary cables 95, 96 are used for adjusting respective lengths of the trunk and branch cables are attached. RX-0052, at 18:7-9, 19:30-35, 19:45-49, 20:44-48. Mr. Weiner even acknowledged the difference between Yamawaki's first embodiment and the fifth embodiment. JX-0323C, ¶¶ 157-58. Shoals' argument that Yamawaki does not teach the claims of the '153 patent because it relates to an adjustable wire harness is without merit.

Third, Shoals argues that Yamawaki's trunk cable "cannot be one continuous cable." CPostHB, at 123. Again, this argument is waived as Shoals never disclosed this argument in its pre-hearing brief or in Mr. Weiner's expert report. G.R. 9.2, 11.6.3. To the extent not waived, it is also unsupported by Yamawaki. Voltage cited to the disclosures of Yamawaki that support that the trunk cable is a single continuous cable, which is incorporated by reference. RPostHB, at 118-21. In contrast, Shoals failed to point to any disclosure in Yamawaki that clearly describes that the trunk cable 31 cannot be one continuous cable. CPostHB, at 123. Shoals points to the disclosure that "[t]he trunk cable 31 is inserted in each of the trunk cable connecting portions 33a and 33b" (CDX-0016.17 (citing RX-0052, at 10:27-30)) as evidence showing that "Yamawaki teaches inserting the cables from the outside, from both directions, two separate cables." CPostHB, at 123. But based on the various disclosures on the trunk cable in Yamawaki, it is clear that this disclosure simply references two connecting portions 33a and 33b of one continuous trunk cable 31. *See* RPostHB, at 118-21. Accordingly, to the extent not waived, Shoals fails to rebut that Yamawaki discloses this claim element.

VIII. THE PRODUCTS AT ISSUE

A. Shoals waived its new definition of the BLA.

[redacted]

In its post-hearing brief, Shoals alleges that the domestic industry product is "*not* individual joints; rather, the products are complete assemblies (*i.e.*, the "A" in BLA stands for "Assembly") that include a feeder cable with multiple joints." CPostHB at 7-8. This position stands in stark contrast to its pre-hearing brief where Shoals described its '153 DI Product as the BLA, which "acts as an electrical junction between the drop lines and feeder cable that carries the combined DC current to the inverter." CPreHB at 10. Shoals then showed a cross-section of an "exemplar BLA" with four drop lines. *Id.* at 10-11. Throughout its technical DI section, Shoals repeatedly referred to "Shoals BLA Products" with cross-sections of the individual joints that it now disclaims as its DI products. *Id.* at 176-83. Shoals' motivation for this untimely pivot is clear: it must characterize the entire assembly as the DI Products, because it has not proven representativeness for the DI Products, and it has not allocated out investments in non-practicing products. Shoals' new theory is untimely under Ground Rule 9.2.

Ground Rule 9.2 requires parties to "set forth in detail" their contentions on each issue. Order No. 2 at 17 (herein "Ground Rule 2"). Any argument that is omitted from a pre-hearing brief is waived and cannot be reclaimed. *Id. see e.g.*, *Certain Outdoor & Semi-Outdoor Electronic Displays, Products Containing Same, & Components Thereof*, Inv. No. 337-TA-1331, ID at 96 n.30, EDIS Doc. ID 809756 (Nov. 13, 2023) (ALJ Bhattacharyya, Monica) ("The undersigned agrees that MRI has waived this argument under Ground Rule 9.2 by failing to present it in its pre-hearing brief."), *unreviewed by Comm'n*, Notice, EDIS Doc. ID 815865 (Mar. 15, 2024); *Certain Integrated Circuits, Components Thereof, and Products Containing the Same*, Inv. No. 337-TA-1350, ID at 214, EDIS Doc. ID 813409 (Jan. 19, 2024) (concluding argument was waived under Ground Rule because it was not in the party's pre-hearing brief); *Certain Wet Dry Surface Cleaning Devices*, Inv. No. 337-TA-1304, ID at 124, EDIS Doc. ID 793726 (Mar. 24, 2023)

[redacted]

(same), *unreviewed in relevant part by Comm'n*, *id.*, Notice, EDIS Doc. ID 801369 (Aug. 1, 2023); *Certain Printing & Imaging Devices & Components Thereof*, Inv. No. 337-TA-690, ID at 314, EDIS Doc. ID 436124 (Sep. 23, 2010) ("I find that Oki Data's first argument regarding the specification only describing copying or faxing operations has been waived pursuant to Ground Rule 8.2 because Oki Data does not address this issue in its pre-hearing brief.") ("*Printing*"), *unreviewed in relevant part by Comm'n*, *id.*, Notice, EDIS Doc. ID 438452 (Nov. 22, 2010).

The Commission has found waiver and no economic DI in almost identical circumstances. *See Certain Subsea Telecomm. Sys. & Components Thereof*, Inv. No. 337-TA-1098, Comm'n Op. at 38-48, EDIS Doc. ID 691678 (Oct. 21, 2019) ("*Subsea Telecomm.*") (*cited in* Hr'g Tr. (Opening) at 50:25-51:13). Like Shoals, the Complainant in *Subsea Telecommc'n* asserted a DI under subsections (A) and (B). *Id.* at 39. The Commission found that Complainant "lumped together" investments in indisputably unprotected systems with investments in the allegedly patent-practicing system, *i.e.*, the NuWave Optima systems with the AC400 module – just as Shoals has lumped together investments in the indisputably unprotected 1-drop BLA and EV-BLA with investments in 2- through 8-drop BLAs, including BLAs with odd-numbered drops that are not represented by the BLAs Mr. Brooks analyzed. *Id.* at 42. Like Shoals, the Complainant in *Subsea Telecommc'n* "padd[ed] its domestic industry numbers by counting investments in articles that are not protected by the '403 patent." *Id.* at 44.

Also like Shoals, the Complainant in *Subsea Telecommc'n* recognized that its economic DI was in peril and pivoted in its post-trial brief, adopting a new economic DI theory. *See id.* at 47; *id.* ID at 76, EDIS Doc. ID 675837 (April 26, 2019). The Chief ALJ found this theory waived:

> This argument, however, appears nowhere in the nearly 1500 pages of [Complainant's] prehearing brief, and is therefore deemed abandoned in accordance with Ground Rule 11.2. *See* CPB at 1301-1317; Order No. 11 (Amending Ground Rules). I will not credit an argument made for the first time

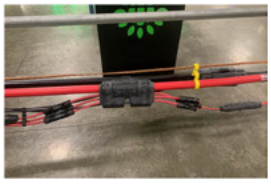
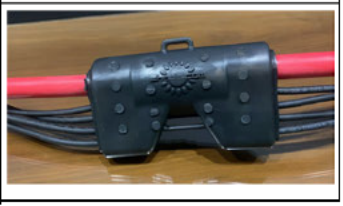
[redacted]

> after the close of the evidentiary hearing, when Respondents have no ability to seek expert economic analysis of that argument, or any ability to test the veracity of that argument through cross-examination of [Complainant's] economics expert. Moreover, I note that [Complainant's] last-minute allocation argument relies on assertions for which there is no evidentiary support.

Id., *aff'd, id.*, Comm'n. Op. at 47-48. The Chief ALJ's finding could be read to apply to this Investigation as well as they applied in *Subsea Telecomm*. As shown below, Shoals' new definition of '153 DI Products appears nowhere in its 226-page pre-hearing brief, and it is inconsistent with Shoals' disclosures throughout the investigation and to Intertek. It iswaived.

At the outset of this investigation, Voltage asked Shoals define its DI Products. *See e.g.*, RX-0327C.62 at Interrogatory No. 26. While Shoals has consistently claimed that its BLA practices the '153 Patent, its definition of a BLA suddenly changed in its initial post-hearing brief.

Throughout the entire investigation, Shoals described its '153 DI Product, the BLA, as the individual molded joint. In its Amended Complaint, Shoals pleaded that "[t]he DI Products that practice the '254 Patent and the '153 Patent include Shoals' Big Lead Assembly ("BLA") harnesses and the EV-BLA harness. Exemplary photographs of the BLA harness accompany this Complaint as Exhibits 8–11." EDIS Doc. ID 800563 at ¶ 6. Each of Exhibits 8 through 11 shows one or more individual joints and none shows a "feeder cable with multiple joints":

Exhibit 8 Shoals Big Lead Assembly ("BLA")	**Exhibit 9** Shoals BLA Installation	**Exhibit 10** Shoals BLA Undermold	**Exhibit 11** Shoals BLA Overmold
		[redacted]	

Id. at Compl. Exhibit List & Exs. 8-11. In his declaration, Mr. Bardos used the same photo in Exhibit 9 to illustrate a BLA harness. *See id.* at Ex. 59C at ¶ 9 & Fig. 2. Shoals' Amended Complaint and Mr. Bardos's declaration state that "the BLA harness is now available in several

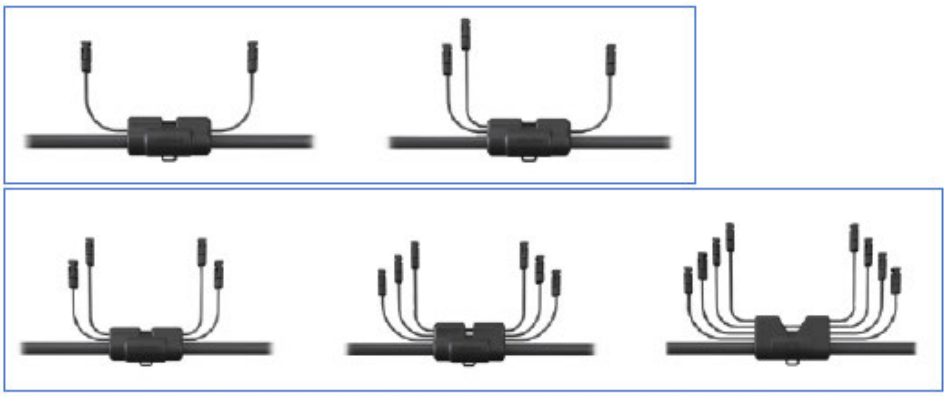
[redacted]

versions, from 2, 3, 4, 5, or 6 drop lines." *See* EDIS Doc. ID 800563 at ¶ 99; *id.* Ex. 59C at ¶ 14. It is clear that the "BLA harness" Shoals refers to is the individual joints, which have versions with either 2, 3, 4, 5, or 6 drop lines, because that is consistent with how Shoals describes its products outside the context of this investigation. For example, when seeking certification from Intertek, [redacted] *See* JX-118C.2; Tr. (Bardos) at 789:4-25; *see also* JX-0118C.91, .93, .103, .104, .106, .110, .111. The Intertek report contains numerous photographs and drawings that refer to [redacted] *See* JX-0118C.11, .12, .14, .43, .44, .60, .63, .66; *see also id.* at .101. Shoals also states in the Intertek report that [redacted], *see id.* at .26, .27, and it describes testing "[redacted], *see id.* at .76. Shoals' usage of [redacted] when seeking certification for its products is consistent with its pre-trial usage of that term.

Shoals repeated this concept in its domestic industry contentions. *See* JX-0318C. In Shoals' final contentions, it wrote "[t]he BLA practices each element of the identified claims in the same or substantially same way. In particular, exemplary aspects of the BLA are shown below. The other versions (*i.e.*, configurations) of the BLA practice the claims of the '153 Patent in substantially the same way." JX-0318C.0001. Later on in the claim chart, Shoals included the image below with the following notation: "The various configurations of the BLA include, for example, 2 drop lines, 3 drop lines, 4 drop lines up to 8 drop lines per trunk bus."

[redacted]

The BLA has various configurations with a plurality of drop lines, as depicted below.



SHOALS00006225. The various configurations of the BLA include, for example, 2 drop lines, 3 drop lines, 4 drop lines up to 8 drop lines per trunk bus.

JX-0318C.0003.

Shoals' corporate designees echoed this concept. Mr. Dominic Bardos, Shoals' corporate designee on economic DI issues, was asked at his deposition whether Shoals' manufacturing records would "[redacted]" JX-0205C.0025 (Bardos. Dep. Tr.) at 93:14-21. Mr. Bardos answered both questions with, "[redacted]" JX-0205C.0025 (Bardos. Dep. Tr.) at 93:14-22. In response to questioning from Staff, Mr. Bardos testified at the hearing that ["[redacted]" Tr. (Bardos) at 785:3-17. In that same vein, Mr. Jason Whitaker, another corporate designee and Shoals' former Chief Technology Officer, testified that [redacted] JX-0221C.0072 (Whitaker Dep. Tr.) at 291:20-292:5. This testimony by both witnesses supports the notion that Shoals considers the BLA to be the individual joint, not a long feeder cable with multiple joints with various numbers of drop lines.

Shoals reaffirmed its reliance on this theory in its summary determination briefing where it stated that "the '254/'153 DI products are BLA trunk buses with between two and eight drop lines." *See* EDIS Doc. ID 813118 at 2. Shoals went on to cite Mr. Macias's deposition testimony

[redacted] that equates a BLA with an individual joint: "[redacted]" *Id.* at 4. These statements, citing the testimony of Shoals' Chief Revenue Officer, Mr. Ben Macias, unequivocally affirm that prior to the hearing Shoals contended that the DI Products are the individual joints.

Shoals maintained this theory in its pre-hearing brief. Shoals defined the BLA as the "electrical junction between the drop lines and feeder cable," including "a feeder cable, at least a first drop line and second drop line, compression lug, undermold, and overmold." CPreHB at 10-11. Shoals then included the image below, describing it as an "exemplar BLA." CPreHB at 11. Shoals characterized the "one-drop BLA" as one "of the various BLA configurations." CPreHB at 220. In the same vein, Shoals included a DI system argument with respect to the '739 DI products, but not as to the '254 or '153 DI Products, in essence teaching away from the definition it has now adopted, *i.e.*, the concept that the '153 DI Product consists of a feeder cable system with multiple joints. *See* CPreHB at 208.

JX-0121 (with annotations).

But Shoals abandoned this theory in its post-hearing brief in favor of a new theory. Now, Shoals alleges that the DI products are "*not* individual joints; rather, the products are complete assemblies (*i.e.*, the "A" in BLA stands for "Assembly") that include a feeder cable with multiple joints." CPostHB at 7-8 (emphasis in original). This new contention seeks to compensate for Shoals' failure to allocate investments between non-practicing and practicing DI Products or to

[redacted]

have Mr. Brooks conduct a representative product analysis. Understandably, Voltage was caught off guard by Shoals' introduction of this new term, and evidence suggests it was crafted for the sole purpose of salvaging Shoals' domestic industry claim. Mr. Bardos admitted that [redacted]. Tr. (Bardos) at 752:17-753:2.

A comparison between Shoals' statements in its pre-hearing brief and its post-hearing brief reveals this change in contentions. In its pre-hearing brief, Shoals showed a photo of a cross-section of an individual joint and referred to it as an "exemplar BLA," CPreHB at 11, whereas in its initial post-hearing brief, Shoals showed the exact same photo and referred to it as "a bisected mold drop," CPostHB at 9. The term "mold drop" did not appear once in Shoals' 226-page pre-hearing brief, and yet it appears over 70 times in Shoals' post-hearing brief. Shoals' change in terminology from its pre-hearing brief to its post-hearing brief demonstrates the change in contentions that violates Ground Rule 9.2. What Shoals referred to as the "BLA harness" became just the "BLA," and what was the "BLA" became the "mold drop." But Shoals' new descriptions conflict with its own evidence. For example, at the hearing, Mr. Macias, Shoals' Chief Revenue Officer, testified that the BLA is not a harness. Tr. (Macias) at 147:20-21.

As Shoals did not argue in its pre-hearing brief that the '153 DI Products are complete assemblies including a feeder cable with multiple joints, it has waived that theory. The ALJ should disregard this belated attempt to compensate for Shoals' failure to prove representativeness and accurately allocate its investments to any products proven to practice the '153 Patent.

IX. ECONOMIC DOMESTIC INDUSTRY

Shoals seems to think that being a domestic manufacturer is enough to satisfy the economic DI requirement. *See* CPostHB at 132. Shoals even goes so far as to state that should Voltage's position on economic DI prevail, the DI requirement will be transformed "into a pointless obstacle

[redacted]

to relief for domestic companies being harmed by unfair foreign competition." CPostHB at 132. Shoals diminishes the DI requirement. The DI requirement is not an *obstacle to relief*; it is a foundational element of proof necessary to establish the *right* to relief under Section 337. *See* 19 U.S.C. § 1337(a)(2); *John Mezzalingua Assocs., Inc. v. Int'l Trade Comm'n*, 660 F.3d 1322, 132728 (Fed. Cir. 2011) (discussing the history and importance of the DI requirement and noting that Congress "recognized that the Commission is fundamentally a trade forum, not an intellectual property forum" and that the DI requirement ensures that Section 337 is used to protect U.S. industries). Shoals elected to file in the ITC and, therefore, elected to assume the burden of this element of proof. U.S. companies do not get a free pass on the DI requirement. *See Certain Television Sets, Television Receivers, Television Tuners & Components Thereof*, Inv. No. 337-TA-910, ID at 178, EDIS Doc. ID 554925 (Feb. 27, 2015) (rejecting U.S. company's alleged investments under subsections (A) and (B) because the evidence was unreliable and concluding economic DI requirement was not met), *affirmed*, *id.*, Comm'n Op. at 66, EDIS Doc. ID 568157 (Oct. 30, 2015); *Subsea Telecomm.*, Inv. No. 337-TA-1098, ID at 85-86 (same), *affirmed*, *id.*, Comm'n Op. at 66.

Shoals has not proven that it has made significant investments in patent-practicing versions of the BLA under either subsection (A) or subsection (B). Contrary to Shoals' suggestion that Voltage attempts to impose an unreasonable standard, CPostHB at 133, Voltage and Staff merely seek to hold Shoals to the foundational standard that Shoals adduce reliable evidence establishing that it makes significant investments in articles protected by the '153 Patent. *See* 19 U.S.C. § 1337(a)(2)-(3); *Certain Access Control Sys. & Components Thereof*, Inv. No. 337-TA-1016, ID at 257-59, EDIS Doc. ID 629565 (Oct. 23, 2021) (stating that the record "must consist of sufficient reliable and credible evidence" to find that the complainant established the economic prong and

[redacted]

holding that the complainant failed to establish quantitative significance under subsection (A) for lack of "credible evidence").

A. Shoals should not be permitted to redefine the DI products at this stage of the investigation.

As discussed above, Shoals adopts a new definition of '153 DI Products in its post-hearing brief. In its pre-hearing brief, Shoals described its '153 DI Product as the BLA, which "acts as an electrical junction between the drop lines and feeder cable that carries the combined DC current to the inverter." CPreHB at 10. Shoals included image after image of cross-sections of the individual joints that it now disclaims as its DI Products. *Id.* at 10-11, 176-83. In its post-hearing brief, Shoals alleges that the domestic industry product is "*not* individual joints; rather, the products are complete assemblies (*i.e.*, the "A" in BLA stands for "Assembly") that include a feeder cable with multiple joints." CPostHB at 7-8 (emphasis in original). Shoals' new contention as to the definition of '153 DI Products should be precluded under Ground Rule 9.2.

Shoals changed this definition in its post-hearing brief to try to compensate for its failure to prove representativeness and failure to produce evidence – which its witnesses testified ***does exist*** – to allocate out investments in products that are not shown to practice the asserted patent. Shoals' claimed economic DI investments [redacted]. *See* Tr. (Clarke) at 995:20-996:20. Remarkably, Shoals tries to blame Mr. Clarke for being "confus[ed] about the product that Shoals sells." CPostHB at 140. Any confusion is engendered by Shoals' shifting contention as to the definition of DI Product and is not the fault of Voltage or Mr. Clarke. The ALJ should disregard this belated attempt to compensate for Shoals' failure to accurately allocate its investments to any products proven to

[redacted]

practice the '153 Patent.

In the alternative, Shoals argues that "[a]ny investment in non-DI products is *de minimis*." CPostHB at 140. But this argument multiplies the confusion. Mr. Bardos admitted that Shoals' [redacted]. Tr. (Bardos) at 755:2-16. For the first time, Shoals argues that its investments [redacted]. CPostHB at 140. Shoals never made this argument in its pre-hearing brief. Moreover, neither Mr. Bardos nor Mr. Nelson testified as to this calculation or potential reduction even though Voltage raised it in its pre-hearing brief. *See* RPreHB at 224, 227. Accordingly, Shoals waived this pro rata reduction. *See* Ground Rule 9.2; *Subsea Telecomm.*, Inv. No. 337-1098, ID at 76-77 (rejecting complainant's "last-minute allocation" to account for investments in non-DI products because it did not appear "in the nearly 1500 pages" of the complainant's pre-hearing brief and was thus abandoned under the ground rules), *affirmed*, *id.*, Comm'n Op. at 47 (finding ID "properly rejected" the complainant's "belated allocation" in its post-hearing brief).

Shoals' arguments surrounding the one-drop BLA are also new. Shoals argues for the first time that there is "[redacted]. CPostHB at 141. Shoals claims that transaction accounted for [redacted]. CPostHB at 141.[24] This new contention flies in the face of Shoals' contention in its motion for summary determination that "[redacted]

[24] Incredibly, just one month before the hearing, Shoals represented to the ALJ that this calculation was impossible: "[redacted]" CPreHB at 220.

[redacted]. EDIS Doc. ID 812232 at 34. Shoals' brand-new contention should be stricken. *See* Ground Rule 9.2.

Shoals' inclusion of investments in non-DI Products means that its DI investments are overstated. *See Subsea Telecomm.*, Inv. No. 337-TA-1098, ID at 78-79. Without a reliable accounting of investments in articles protected by the '153 Patent, Shoals cannot be found to satisfy the DI requirement.

B. Shoals has not proven significant subsection (A) investments.

1. Shoals' subsection (A) investments are inflated by the inclusion of the entire [redacted].

Shoals' inclusion of the [redacted] undermines Shoals' claim that it "undercounted" its BLA investments. CPostHB at 135. Shoals defends its inclusion of the entire cost, arguing that "there is no suggestion that [redacted], and the fact that Shoals put it to other productive uses in that interval makes it [redacted]." CPostHB at 136 (emphasis in original). But whether [redacted] is beside the point. ITC precedent establishes that a complainant must account for the length of time between the acquisition of an investment and when the investment was used for the patented article, especially when that investment was used, in the meantime, on non-DI products. *See Certain Dimmable Compact Fluorescent Lamps & Prods. Containing the Same*, Inv. No. 337-TA-830, ID at 63-64, EDIS Doc. ID 507084 (Feb. 27, 2013) ("*Dimmable*");[25] *Certain Computer Forensic Devices & Prods. Containing the Same*, Inv. No. 337-TA-799, ID at 11-12 n.9, EDIS Doc. ID 497867 (Oct. 26, 2012), *unreviewed by Comm'n*, *id.*, Notice, EDIS Doc. ID 500209 (Dec. 31, 2012). Shoals did not

[25] The parties settled after the Commission noticed review, but before a Final Determination. *See Dimmable*, Inv. No. 337-TA-830, Notice, EDIS Doc. ID 514587 (July 26, 2013).

[redacted] begin [redacted], and it used [redacted]. *See* JX-0277C (Nelson Report, Schedule 14); CPostHB at 136. Shoals should have discounted [redacted].

Shoals tries to salvage its acquisition cost by claiming [redacted] in the middle of the Great Recession, so it would have been more expensive "[redacted]" CpostHB at 136. But Shoals did not make this argument in its pre-hearing brief or even at the hearing, so it is waived. *See* Ground Rule 9.2. Further, Shoals' point is merely attorney argument, which is not evidence, *Icon Health and Fitness, Inc. v. Strava, Inc.*, 849 F.3d 1034, 1043 (Fed. Cir. 2017), and its cursory request for judicial notice (CPostHB at 136 n.27) should be denied as there is no evidence that nationwide economic trends are relevant to the cost of real estate in rural Tennessee. Shoals' attorneys are not qualified to discuss the differences in the real estate market f[redacted].

2. Because Shoals failed to properly allocate [redacted], several of Shoals' subsection (A) investments are inflated.

Shoals improperly includes [redacted]. Firstly, Shoals mischaracterizes Mr. Clarke's opinion on the issue. Mr. Clarke did not "complain[] that some of the [redacted]." CPostHB at 142. Mr. Clarke testified that it was his opinion that several of Mr. Nelson's subsection (A) investments which were allocated [redacted]. Tr. (Clarke) at 1001:8-1002:14. Mr. Clarke testified that because [redacted] they need to be calculated separately. Tr. (Clarke) at 1002:3-14. Secondly, Shoals splits hairs on the titles of these activities. Shoals argues that while Mr.

[redacted]

Clarke described the areas as dedicated to [redacted], Shoals' "source document identifies this space as '[redacted]'" CPostHB at 142-43. Mr. Bardos, in his declaration, described the space as "[redacted]" RX-0482C.008. Shoals does not distinguish between [redacted]. While the storage of r[redacted] is necessary for the production of the BLA, [redacted] is not. In other words, [redacted] does not have "a direct bearing on the *practice* of the ['153 Patent]." *Printing*, Inv. No. 337-TA-690, Comm'n Op. at 30 (emphasis added). Moreover, the cases Shoals cites in support of its argument are distinguishable. In *Certain Collapsible Sockets for Mobile Elec. Devices & Components Thereof*, the Commission took no position on whether the complainant established a DI under subsection (A). Inv. No. 337-TA-1056, Comm'n Op. at 20, EDIS Doc. ID 649819 (July 9, 2018). The Commission held that the complainant's expenditures "in its *employment of labor* in other qualifying activities, such as engineering, . . . supply chain and operation management, and customer service, [*etc.*,]" were sufficient to establish a DI under subsection (B). *Id*. at 19-20 (emphasis added). Here, however, Shoals' [redacted] are included under subsection (A) investments. Similarly, in *Certain Loom Kits for Creating Linked Articles*, the Commission was not deciding whether the complainant satisfied the DI requirement under subsection (A) but subsection (C). Inv. No. 337-TA-923, Comm'n Op. at 5, EDIS Doc. ID 559662 (June 26, 2015). And Shoals takes its support from one entry in a table. *Id.* at 6. It is thus unclear whether the [redacted]

As addressed by Mr. Clarke at the hearing, Shoals' failure to properly allocate its [redacted] affects Mr. Nelson's [redacted]. RPreHB

[redacted]

at 150. Consequently, Shoals' investments using those ratios, [redacted] are overstated.

3. Shoals' evidence on its investments in [redacted] is conflicting and should be discounted.

Shoals ignores the conflicting evidence that undermines its reliance on its second largest subsection (A) expenditure: "[redacted]." JX-0271C (Nelson Report, Schedule 8); JX-0134C at Sheet '[redacted].' Of the [redacted] Shoals allocated to subsection (A) investments, [redacted]. JX-0134C at Sheet '[redacted].'[26] Shoals now cites Mr. Bardos' hearing testimony where he described the category as a "[redacted]. Tr. (Bardos) at 708:4-15; CPostHB at 138. But Shoals cannot reconcile this with Mr. Bardos' deposition testimony (as Shoals' corporate designee on economic DI) where he was "[redacted]" JX-0205C.0084-85 (Bardos Dep. Tr.) at 332:10-333:2. Mr. Bardos's untimely recollection of what comprises factory supplies when questioned by his own counsel at trial should be discounted.

C. Shoals has not proven significant subsection (B) investments.

1. Shoals' data underlying its [redacted] is unreliable.

Shoals cannot overcome the reliability issues underlying its [redacted]. To collect this data, Shoals claims to have [redacted]" CPostHB at 146; Tr. (Bardos) at 733:5-10. But Shoals failed to produce any evidence [redacted] At his deposition, Mr. Bardos could

[26] [redacted].

not provide any information validating these alleged interviews. *See* JX-0205C.0087 (Bardos Dep. Tr.) at 343:11-21 (“ ”). At the hearing, Mr. Bardos admitted that he was “ . Tr. (Bardos) at 749:23-750:7. But . Tr. (Bardos) at 748:11-16.[27]

Mr. Clarke correctly characterized Mr. Solon’s testimony that . *See* CPostHB at 147. The testimony that Shoals points to – . CPostHB at 147; JX-0217C.0031 (Solon Dep. Tr.) at 118:17-18. But even if it were, Shoals cannot deny that Mr. Solon testified *See* JX-0217C.31 (Solon Dep. Tr.) at 117:22-118:10 (…). Despite this testimony, Shoals still allocates . *See* JX-0133C at “ ” at .

Shoals ineffectively addresses Mr. Clarke’s observation regarding inconsistencies in the source data where two individuals were identified as . CPostHB at 148. Shoals dismisses Mr. Clarke’s observation stating that Mr. Bardos “

[27] It would be error to conclude that what they were asked, or how they determined their answers – satisfies a complainant’s burden. *See* CPostHB at 146 n.32.

[redacted]

[redacted]" at the hearing. CPostHB at 148. But Voltage is entitled to rely on Shoals' source data. And Shoals cannot pick and choose when Voltage should rely on the source data. As noted in the discussion of Shoals' investments in [redacted], Shoals took issue with Mr. Clarke's characterization of the activities because the source data described them differently. Shoals cannot argue that Voltage should rely on the source data in *that* circumstance but not here. Moreover, Mr. Bardos testified for the *first time* as to the allocations of these individuals. And as previously established, Mr. Bardos did not personally [redacted], so it is unclear how he could even make that confirmation. Accordingly, no weight should be given to his testimony.

Finally, Shoals does not adequately address Mr. Clarke's observation regarding t[redacted]. CPost at 148. Shoals misunderstands Mr. Clarke's opinion. Mr. Clarke was not questioning the "reasonableness" of [redacted]. Rather, he was questioning whether the [redacted] is attributable to the DI Products. If the [redacted] are not attributable to the DI Products, for example i[redacted] then they inflate the DI investment.

2. Shoals' [redacted] re overstated by its failure to separately quantify [redacted].

Shoals overstates its subsection (B) investments by including [redacted][28] In general, the Commission considers sales, marketing, and administrative activities (collectively, "SG&A") to be akin to those of a mere importer and ascribes them less weight in

[28] Shoals feigns confusion at Mr. Clarke's testimony [redacted]. CPostHB at 150 (citing Tr. (Clarke) at 1010:6-7). True, Shoals included a separate category for these expenses, but Shoals included them with equal weight in its subsection (B) investments. This is problematic because [redacted] subsection (B) investments is for [redacted] with inadequate legal and factual support.

[redacted]

assessing a DI. *See Certain Bone Cements, Components Thereof, & Prods. Containing the Same*, Inv. No. 337-TA-1153, Comm'n Op. at 22, EDIS Doc. ID 731649 (Jan. 25, 2021). Within Shoals' [redacted] Shoals includes [redacted] arguing that [redacted] CPostHB at 149. Shoals' SG&A employees may be important to the success of Shoals as whole, but that does not mean they are integral to the manufacture of any patent-practicing BLAs. SG&A is entitled to less weight in a DI analysis because some investment in SG&A is necessary to sell any product in the U.S. To weight sales and marketing investments equivalently to manufacturing, engineering, and R&D would dilute the DI requirement.

Shoals inaccurately cites *Solid State* as supporting the notion that "marketing and sales activity [is] cognizable as economic DI." CPostHB at 149 (citing *Certain Solid State Storage Drives, Stacked Elecs. Components, and Prods. Containing the Same*, Inv. No. 337-TA-1097, 2018 WL 4300500, at *13 (June 29, 2018) ("*Solid State*")). In *Solid State*, the Commission stated while that marketing and sales activity may be considered as part of the economic prong, the Complainant there separately calculated the time its employees "spent on product production and support activities." *Id.* The Commission noted that the time estimates included technical activities about which a sales employee testified in detail) and excluded sales and marketing. *Id.* Thus, the facts in *Solid State* vary *greatly* from those here. While the Commission credited certain investments in sales and marketing employees, it did so because the complainant only counted the time spent by those employees on *technical activities*—not sales and marketing activities. Unlike in *Solid State*, Shoals [redacted] In fact, Shoals has not cited any evidence that [redacted]

[redacted][29]

Shoals similarly overstates its subsection (B) investments by including [redacted]. One of Shoals' largest expenses in that category [redacted]. Shoals argues that [redacted] CPostHB at 153, but that just reinforces Voltage's argument that as SG&A, they are entitled to no or little weight. Regardless of whether Shoals' chief *financial* officer was exhausted at a trade show, *see* CPostHB at 154, trade shows remain nothing other than sales and marketing. Again, the cases Shoals cites are distinguishable. In *Certain Integrated Circuits*, the "travel and entertainment" expenses at issue were some unknown portion of complainant's "other expenses" category, so the ALJ determined it was "inappropriate" to "completely eliminate" the "other expenses" category. *See* CPostHB at 154 (citing *Certain Integrated Circuits & Prods. Containing the Same*, Inv. No. 337-TA-1148, Order No. 38 at 10, EDIS Doc. ID 695256 (Nov. 4. 2019)). Here, on the other hand, [redacted] that can and should be ignored.[30] And Shoals cannot affirmatively say "[redacted]." CPostHB at 154. Its own President testified that [redacted] Tr. (Tolnar) at 358:6-25. Moreover, the evidence shows that Shoals maintained [redacted], *see* RX-0270C.002, .005, and Mr. Bardos testified that he [redacted], Tr. (Bardos) at

[29] Shoals' reliance on *Certain Movable Barrier Operator Sys.* is perplexing for similar reasons. *See* CPostHB at 151 (citing *Certain Movable Barrier Operator Sys. and Components Thereof.* Inv. No. 337-TA-1118, Remand ID at 31, EDIS Doc. ID 716611 (July 6, 2020)). There, the "commercialization and sale" activities the ALJ credited related to "engineering, research and development, and technical service and support." *Id.* In other words, the ALJ was not counting SG&A without a technical nexus, as Shoals is here.

[30] *Certain Collapsible Sockets* is inapposite because it makes no mention of trade show, travel, or even entertainment expenses. *See* CPostHB at 154 (citing *Certain Collapsible Sockets for Mobile Elect. Devices & Components Thereof*, Inv. No. 337-TA-1056, Comm'n Op. at 14-20, EDIS Doc. ID 649819 (July 9, 2018)).

[redacted]

768:4-25.

D. Shoals' significance metrics do not adequately measure quantitative significance.

Unlike some of Shoals' other economic DI contentions that changed from pre- to post-trial briefing, Shoals continues to lean heavily on the *qualitative* fact that its status as a US manufacturer proves that its US investments are significant. The Federal Circuit disagrees. *See Lelo Inc. v. Int'l Trade Comm'n*, 786 F.3d 879, 884 (Fed. Cir. 2015) (requiring a complainant to characterize the DI "quantitatively, *i.e.*, by the amount of money invested").[31]

As Mr. Clarke testified, Shoals' value-add analysis is flawed because it is based on [redacted] which can be affected by external factors, such as market demand or government policies encouraging Solar energy. Tr. (Clarke) at 1012:19-1013:16. Shoals' rebuttal – that Mr. Clarke should have performed his own [redacted] – improperly shifts the burden to Voltage. *See* CPostHB at 158. The cases Shoals cites do not help its position. *See* CPostHB at 150. In *Printing*, the Commission specifically noted that the complainant failed to demonstrate how its domestic activities added value to its products. Inv. No. 337-TA-690, Comm'n Op. at 30. And *Table Saws* resolved an *unopposed* motion for summary determination. *Certain Table Saws Incorporating Active Injury Mitigation Tech. & Components Thereof*, Inv. No. 337-TA-965, ID at 1, EDIS Doc. ID 579776 (Mar. 22, 2016).

Shoals' r[redacted] Shoals claims that [redacted], CPostHB at 158, but the

[31] Shoals' argument that its domestic activity is significant as against its foreign activity was not in its Prehearing Brief, so it is waived. See Ground Rule 9.2.

[redacted]

commercial success of the BLA is susceptible to market demand and other external factors (including the federal government's inducements to invest in solar energy), so the success is not indicative of the significance of the investments. *See Certain Mobile Elec. Devices*, Inv. No. 337-TA-1324, Order No. 23 at 13 n.14, EDIS Doc. ID 796192 (May 1, 2023) (ALJ Bhattacharyya, Monica). To the extent Shoals' revenue is at all relevant to a significance analysis, its relevance is limited to an assessment of qualitative significance. *See Certain Mobile Elec. Devices & Radio Frequency & Processing Components Thereof*, Inv. No. 1065, ID at 112, EDIS Doc. ID 660155 (Oct. 29, 2018), *unreviewed in relevant part by Comm'n*, *id.*, Notice, EDIS Doc. ID 664008 (Dec. 12, 20189). But evidence of any qualitative significance cannot compensate for Shoals' failure to show quantitative significance. *See Lelo Inc. v. Int'l Trade Comm'n*, 786 F.3d at 884. And Shoals fails to explain why its [redacted] should *not* include [redacted] which, if added, lowers the ratio from roughly [redacted]. *See* Tr. (Nelson) at 852:22-855:17. Shoals tries to dismiss this critique by stating that Mr. Nelson testified [redacted]. Tr. (Nelson) at 897:4-14. But Mr. Nelson's opinion stands unsupported, and it does not address why Shoals would not include administration labor in its ratio, especially since Shoals has vehemently argued that [redacted] should be included, because it supports manufacturing. If SG&A counts when tallying investments, it must also count when assessing the significance of those investments.

X. REMEDY & BONDING

Voltage maintains that it has not violated Section 337, so no remedial orders should issue, but it will respond briefly to Shoals' arguments on remedy.

A. Limited Exclusion Order

Voltage takes great exception to the accusation that its request to delay the effective date

[redacted]

of any LEO "to permit respondents to deliver products to customers under contracts entered into prior to the Target Date" was made in bad faith. Shoals conflates two separate issues. The first—subject to the stipulation cited in Shoals' post-hearing brief—is that Voltage does not maintain an inventory of Accused Products in the U.S. EDIS Doc. ID 814046. Because there is no inventory, it follows there should be no cease-and-desist order as Voltage does not have inventory to undermine a LEO. This reality is undisputed as all parties agree that the products in this investigation are customized and not fungible. Tr. (Macias) at 120:5-6; Tr. (Bardos) at 878:6; Tr. (Clarke) at 1016:10-14. The second issue is that Voltage is likely to enter into new contracts where the products will be delivered after the issuance of any LEO. Voltage should not have to stop pursuing new business simply because an LEO might issue, nor should Voltage's customers, *i.e.*, third parties, be penalized by any LEO. The issues are separate and prove that Voltage's request is reasonable and was not made in bad faith. Moreover, Voltage's request would not allow it to "build up a backlog of orders to be filled with products that would continue to be imported [for] months if not years." CPostHB at 163. While orders may take three to six months to fulfill, there is no evidence that Voltage could book and import products for any longer period of time.

Shoals' request that Voltage be required to continually produce samples for analysis in the event the AD LYNX is excluded from an LEO does not follow the standard certification process, and there is no reason to depart from that process. The standard is that an importer can certify that product is outside the scope of an LEO because it has been adjudicated as non-infringing (either by the ITC or Customs and Border Protection). There is no reason to depart from that standard procedure here. Voltage affirms its arguments regarding bond.

XI. CONCLUSION

Voltage maintains its position that the ALJ issue an ID finding no violation.

[redacted]

Dated: April 26, 2024

Respectfully Submitted,

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CERTIFICATE OF SERVICE

I, Nikole Faasisila, hereby certify that the attached document has been served upon the following parties as indicated below on April 26, 2024.

RESPONDENTS' POST-HEARING REPLY BRIEF

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I, Nikole Faasisila, hereby certify that the attached document has been served upon the following parties as indicated below on May 7, 2024.

VOLTAGE RESPONDENTS' PUBLIC POST-HEARING REPLY BRIEF

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