Staff contends that the cited paragraphs of the Fact Stipulation merely address direct infringement by "at least one Voltage customer project in the United States." *Id.* According to Staff, "whether Voltage has provided specific instructions to its customers as stipulated differs from whether Voltage had knowledge that the induced acts constitute infringement of the solar power system claims of the '153 Patent." *Id.*

Staff agrees with Voltage that Shoals cannot rely on the filing of the amended complaint now to prove the knowledge requirement because Shoals was not permitted to supplement the record with new arguments and evidence. *Id.* Similarly, Staff contends that Shoals did not cite to the interrogatory responses in JX-0199C in the infringement sections at issue in any of Shoals' briefing, so those newly presented arguments should also be disregarded. *Id.* at 4-5.

b. Discussion

The dispute centers on whether Shoals asserted, and preserved, arguments regarding induced infringement for claims 21, 23, and 24 of the '153 patent. *See* Order No. 31; CISB at 1; RISB at 1; SRSB at 1. In particular, Voltage and Staff argue that Shoals failed to address the knowledge requirements for indirect infringement. *See* RISB at 2; SRSB at 1. The undersigned agrees with Voltage and Staff and finds that Shoals did not address indirect infringement, and specifically, induced infringement—including the knowledge requirements for induced infringement—in its post-hearing briefs.[69, 70] Therefore, pursuant to Ground Rule 13.1, Shoals

[69] While Shoals presents arguments regarding induced infringement for the Voltage Trunk Bus products in its supplemental briefing, Shoals does not address contr
CRSB; *see also* SRSB at 2 n.1.

[70] "[L]iability for inducing infringement attaches only if th
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(2015).

Shoals Technologies Group, LLC
EXHIBIT 2014
Voltage, LLC v.
Shoals Technologies Group, LLC
IPR2024-00877
Part 2 of 2

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[69] While Shoals presents arguments regarding induced infringement for the Voltage Trunk Bus products in its supplemental briefing, Shoals does not address contributory infringement. *See generally* CISB; CRSB; *see also* SRSB at 2 n.1.

[70] "[L]iability for inducing infringement attaches only if the defendant knew of the patent and that 'the induced acts constitute patent infringement'" *Commil USA, LLC v. Cisco Sys., Inc.*, 575 U.S. 632, 639 (2015).

has waived those arguments.[71] Furthermore, Shoals did not set forth contentions regarding the knowledge requirements for induced infringement in its pre-hearing brief and thus, Shoals has also waived those arguments pursuant to Ground Rule 9.2.

Ground Rule 13.1 regarding initial post-hearing briefs states that "[t]he post-hearing brief shall discuss the issues and evidence tried within the framework of the general issues determined by the Commission's Notice of Investigation and those issues that are included in the pre-hearing brief and any permitted amendments thereto" and that "[a]ll other issues shall be deemed waived." Order No. 2 at 28 (June 7, 2023). Ground Rule 9.2 regarding pre-hearing briefs states that "[a]ny contentions not set forth in detail as required herein shall be deemed abandoned or withdrawn, except for contentions of which a party is not aware and could not be aware in the exercise of reasonable diligence at the time of filing the pre-hearing brief." *Id.* at 17.

As stated above, Shoals claims that it asserts indirect infringement for claims 21, 23, and 24 of the '153 patent. CISB at 1. Claims 21, 23, and 24 are each directed to a "solar power system" with claims 21 and 23 reciting "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" and claim 24 reciting "a plurality of solar panels electrically coupled by a wire harness to form a first solar array." *See* '153 patent at cls. 21, 23, and 24. Shoals states that "[b]ecause it is undisputed that Voltage does not supply these system components, and that its customers do, Voltage's infringement liability as to claims 21, 23, and 24 is necessarily indirect." CISB at 1. Regardless of Shoals' belief that

[71] "When examining whether waiver should apply, the Commission has stated that '[g]enerally, an ALJ has discretion to establish and enforce ground rules. . . .'" *Certain Magnetic Data Storage Tapes & Cartridges Containing the Same*, Inv. No. 337-TA-1012, Comm'n Op., EDIS Doc. ID 640609, at 111 (Apr. 2, 2018) (quoting *Certain Flash Memory Controllers, Drives, Memory Cards, & Media Players & Prods. Containing Same*, Comm'n Op., Inv. No. 337-TA-619, 2009 WL 4087136, at *13 (Nov. 24, 2009)).

its assertion of infringement of claims 21, 23, and 24 was "necessarily indirect," the Ground Rules in this investigation dictate that that "[a]ll other issues" not included in the post-hearing briefs shall be deemed waived and that "[a]ny contentions not set forth in detail" in the pre-hearing brief shall be deemed abandoned or withdrawn. *See* Order No. 2 at 17, 28.

With respect to Shoals' post-hearing briefs, Shoals argues that it preserved the inducement issue in its initial post-hearing brief with citations to Mr. Brooks' hearing testimony and his reliance on the Fact Stipulation.[72] *See* CISB at 5 (citing CIB at 47-52; Tr. (Brooks) at 438:6-439:9, 443:5-22, 444:7-19, 445:18-24; JX-0345C at ¶¶ 23-26). Shoals' initial post-hearing brief states:

> Limitations [21.pre] through [21.d], in turn, are established by stipulation. Tr. (Brooks) at 438:6–439:9; JX-0345C at ¶¶ 23–26; *see also* Tr. (Cameron) at 1126:7–11 (admitting no opinion regarding element [21.a]).

CIB at 47-48. The brief further states:

> In addition to the evidence and arguments stated below, elements [24.a], [24.b], [24.c] and [24.h] are met by the Voltage fact stipulation (JX-0345C), ¶¶ 23–26. Tr. (Brooks) at 443:5–22, 445:18–24; *see also* Tr. (Cameron) at 1129:11–20 (admitting no opinion regarding element [24.a]).
>
> Limitations [24.pre], [24.b], and [24.e]. *See* Tr. (Brooks) at 443:5–22, 444:7–19. Limitations [24.pre], [24.b], and [24.e] are identical to limitations [21.pre], [21.b], and [21.f], respectively. Therefore, the evidence marshaled in connection with claim 21, above, shows that LYNX meets the corresponding limitations of claim 24, as well.

CIB at 50. Nothing in those paragraphs include any discussion regarding indirect infringement, induced infringement, or the knowledge required for liability with respect to induced

[72] Shoals does not assert that it addressed indirect infringement, induced infringement, or the knowledge required for liability with respect to induced infringement in its post-hearing reply brief. *See generally* CISB; CRSB. Indeed, Shoals' post-hearing reply brief does not discuss any of those issues. *See generally* CRB.

infringement. *See id.* at 47-48, 50. Furthermore, nothing in those paragraphs connects any of the cited hearing testimony or exhibits to indirect infringement, induced infringement, or the knowledge required for liability with respect to induced infringement. Thus, pursuant to Ground Rule 13.1, Shoals is deemed to have waived any arguments regarding indirect infringement, induced infringement, or the knowledge required for liability with respect to induced infringement.

Moreover, a review of the evidence cited in the above paragraphs of Shoals' initial post-hearing brief demonstrates that they are also not directed to the knowledge required for liability with respect to induced infringement. First, Mr. Brooks' hearing testimony shows that he relies on the Fact Stipulation. For instance, in response to a question asking if he finds the first element of claim 21 met, he stated:

> I do. And this comes from the Fact Stipulation. I don't believe that, to my knowledge, Voltage doesn't sell solar arrays, they sell products for solar arrays. And so it's provided in their instructions, telling them what to do with the products that they provide. And then their customers then take those products and use them in the field for that purpose.

See Tr. (Brooks) at 438:12-18. Similarly, Mr. Brooks stated that he found the first element of claim 24 met "[t]hrough the Fact Stipulations" and also stated that "they provide instructions, and their customer products have them." *See id.* at 443:13-15. The cited paragraphs of the Fact Stipulation state:

> 23. For customer projects having such a configuration, Voltage provides instructions to its customers in the United States for installing its LYNX Trunk Bus products in a solar power system comprising a plurality of solar panels each electrically connected to one of a plurality of branches of a wire harness to form a solar array. There has been at least one Voltage customer project in the United States with this configuration.

24. For customer projects having such a configuration, the LYNX Trunk Bus products are used in a solar power system comprising a plurality of solar panels each electrically connected to one of a plurality of branches of a wire harness to form a solar array. There has been at least one Voltage customer project in the United States with this configuration.

25. For customer projects having such a configuration, Voltage provides instructions to its customers for installing its LYNX Trunk Bus products in a solar power system wherein each of at least two drop lines of the LYNX Trunk Bus is electrically connected to a wire harness each of which harnesses is electrically connected to a plurality of solar panels to form a solar array. There has been at least one Voltage customer project in the United States with this configuration.

26. For customer projects having such a configuration, the LYNX Trunk Bus Products are used in a solar power system wherein each of at least two drop lines of the LYNX Trunk Bus is electrically connected to a wire harness each of which harnesses is electrically connected to a plurality of solar panels to form a solar array. There has been at least one Voltage customer project in the United States with this configuration.

JX-0345C at ¶¶ 23-26.

Shoals argues that the Fact Stipulation "is itself evidence of Voltage's knowledge." CISB at 1. However, as Voltage and Staff recognize, whether Voltage provided instructions to its customers that induced certain acts is different from whether Voltage had knowledge that the induced acts constitute patent infringement. *See* RRSB at 2-3; SRSB at 4; *Commil*, 575 U.S. at 639 ("liability for inducing infringement attaches only if the defendant knew of the patent and that the induced acts constitute patent infringement."); *Bio-Rad Labs., Inc. v. Int'l Trade Comm'n*, 998 F.3d 1320, 1335 (Fed. Cir. 2021) ("Induced infringement under 35 U.S.C. § 271(b) requires proof of underlying direct infringement, as well as proof that (1) 'the defendant knew of the patent,' (2) the defendant knew or should have known that 'the induced acts constitute patent

infringement,' and (3) the defendant 'possessed specific intent to encourage another's infringement.'"). Thus, even if citing to Mr. Brooks' testimony and the Fact Stipulation could reasonably be said to have preserved arguments regarding Voltage encouraging its customers' acts, it did not preserve arguments regarding whether Voltage had knowledge that the induced acts constitute patent infringement.[73]

Shoals' prehearing brief similarly did not assert these arguments. Shoals submits that it preserved the issue of indirect infringement in its prehearing brief by asserting claims 21, 23, and 24 at pages 167-169. *See* CISB at 4-5. Shoals' prehearing brief states:

> The LYNX Trunk Bus meets each of the limitations in claims [21.pre.]-[21.d.]. *See* discussion above of claim 7 of the '254 patent and claim 1 of the '153 patent above. *See also*, JX-0188C, ¶¶ 63, 66.

CPHB at 167.[74] Additionally, with respect to claim 24, Shoals' prehearing brief merely states that "[t]he LYNX Trunk Bus meets each of the limitations of claim elements [24.pre.]–[24.a.] as discussed herein such as, for example, with respect to claim 21 and, in particular, claim elements [21.pre.]–[21.a.], respectively." *Id.* at 169. The discussion in Shoals' prehearing brief regarding claim 1 is not informative as claim 1 is not a system claim and does not recite the same "plurality of solar panels" limitation as claims 21, 23, and 24. *See* '153 patent at cl. 1. Thus, the entirety of Shoals' discussion regarding indirect infringement for the '153 patent in its pre-hearing brief allegedly appears to be encompassed in the section regarding claim 7 of the '254 patent.

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[73] Shoals cites *Certain Mobile Elec. Devices* to argue that "intent to induce infringement may be proven with circumstantial or direct evidence and may be inferred from all the circumstances." *See* CRSB at 1 n.3 (citing *Certain Mobile Elec. Devices and Radio Frequency and Processing Components Thereof (II)*, Inv. No. 337-TA-1093, Initial Determination, 2019 WL 2058009, at *82 (Mar. 26, 2019)). However, as discussed above, the issue is whether Shoals' inducement arguments have been waived, and particularly, as to the knowledge requirements.

[74] Similar to claims 21, 23, and 24 of the '153 patent, claim 7 of the '254 patent is directed to a "solar power system" including a "first plurality of solar panels," and a "second plurality of solar panels." *See* '254 patent at cl. 7.

With respect to limitation [7.pre], which recites "a solar power system," Shoals' pre-hearing brief states:

> The accused Voltage LYNX Trunk Bus meets each limitation of claim [7.pre.] of the '254 patent; the Voltage LYNX Trunk Bus is used in solar power systems. *See, e.g.*, CX-0244; JX-0136C at VOLTAGE_00000011; JX-0159C at VOLTAGE_00005225; CX-0567 at ¶¶ 1, 3–6; *see also*, CX-0595C; CX-0698C. Indeed, Voltage's expert does not argue that claim element [7.pre.] is not met. *See*, RX-0383C.

CPHB at 123-124. Nothing in that paragraph includes any discussion, let alone any contentions "set forth in detail," regarding indirect infringement, induced infringement, or the knowledge required for liability with respect to induced infringement.[75] *See id*. Thus, in addition to the waiver above, pursuant to Ground Rule 9.2, Shoals is deemed to have abandoned any arguments regarding indirect infringement, induced infringement, or the knowledge required for liability with respect to induced infringement.

Moreover, a review of the exhibits cited in that portion of Shoals' pre-hearing brief demonstrates that none of them are directed to the knowledge required for liability with respect to induced infringement.[76] For example, exhibit CX-0244 is a page from the Voltage website that

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[75] This contrasts with Shoals' contentions in its pre-hearing brief with respect to claim 5 of the '739 patent. *See* CPHB at 38 [redacted] ***Therefore, Hikam at least indirectly infringes claim 5 either contributorily or through inducement.***") (emphasis added), 53 [redacted] ***Therefore, Voltage at least indirectly infringes claim 5 either contributorily or through inducement.***") (emphasis added).

[76] The undersigned notes that certain of these exhibits (JX-0136C, RX-0383C, JX-0188C, CX-0595C, CX-0698C) were not admitted into evidence. *See* Complainant and Joint Final Exhibit Lists, EDIS Doc. ID 818497 (Apr. 15, 2024); Respondents' Final Exhibit Lists, EDIS Doc. ID 819861 (Apr. 26, 2024); RISB at 3.

describes the Voltage Trunk Bus, exhibit JX-0136C is an Intertek report, exhibit JX-0159C is a document for the Ohana project, and exhibit CX-0567 (admitted as JX-0345C) is the Fact Stipulation. *See* CX-0244; JX-0136C; Tr. (Brooks) at 403:5-15; JX-0159C; Tr. (Brooks) at 398:8-13; JX-0345C. Exhibit RX-0383C is Dr. Cameron's rebuttal expert report where she does not provide any opinion regarding the solar panels limitations. *See* RX-0383C. Exhibit JX-0188C is Mr. Brooks' expert report. *See* JX-0188C. While Mr. Brooks' expert report refers to indirect infringement generally (not induced infringement), he specifically states: "In this case, I have not been asked to independently evaluate any Respondent's intent. I have instead limited my assessment of indirect infringement to confirming that the system parts or method steps not supplied or performed by one of the Respondents are nonetheless present, having been supplied or performed by a third party." *See id.* at ¶ 11. Exhibits CX-0595C and CX-0698C are claim charts for the '254 patent attached to Mr. Brooks' expert report and Shoals' interrogatory responses, respectively. *See* CX-0595C; CX-0698C. Even accepting Shoals' argument that those exhibits supply some of the system claim elements, they do not discuss knowledge required for liability with respect to induced infringement.[77] *See id.*; *see also* JX-0188C at ¶ 11.

In addition, Shoals asserts, for the first time in its supplemental briefing, that "[b]y reason of Shoals' amended complaint, Voltage knew that that its customers' use of the [Voltage Trunk Bus] was alleged to infringe." CISB at 1. Similarly, Shoals asserts, for the first time in its supplemental briefing, that Voltage admitted knowledge of the patent in an interrogatory

[77] Similarly, Shoals' pre-hearing brief with respect to limitations [7.a] (reciting "a first plurality of solar panels") and [7.b] (reciting "a second plurality of solar panels") relies on much of the same evidence as for limitation [7.pre]. *See* CPHB at 124. Of the additional evidence cited in that portion of Shoals' pre-hearing brief (*i.e.*, JX-0138C; JX-0139C; JX-0141C), however, none provide any allegations of indirect infringement, induced infringement, or the knowledge requirement. Exhibits JX-0138C and JX-0139C are high-level Voltage presentations and exhibit JX-0141C is a high-level Voltage Trunk Bus data sheet. *See* JX-0138C; JX-0139C; JX-0141C.

response.[78] *Id.* at 3. Those contentions, however, were not included in Shoals' pre-hearing or post-hearing briefs. *See generally* CPHB; CIB; CRB. Thus, as discussed above, pursuant to the Ground Rules, Shoals has waived those arguments. *See* Ground Rules 9.2 and 13.1.[79]

Moreover, presenting these arguments for the first time in supplemental briefing requested by the ALJ and submitted after post-hearing briefs, and not in pre-hearing and post-hearing briefs, is prejudicial to Voltage at least because it does not allow Voltage the opportunity to put forth evidence or arguments regarding a good-faith belief in non-infringement. *See* RSRB at 4-5; *DSU Med. Corp. v. JMS Co., Ltd.*, 471 F.3d 1293, 1307 (Fed. Cir. 2006). While Shoals argues that "Voltage has never asserted any noninfringement argument centered solely on the elements of inducement" (CISB at 3), Shoals as the complainant has the burden of proving induced infringement. *See DSU*, 471 F.3d at 1304 ("[t]he plaintiff has the burden of showing that the alleged infringer's actions induced infringing acts and that he knew or should have known his actions would induce actual infringements.") (internal quotations omitted). Voltage cannot be criticized for not presenting counterarguments against induced infringement, including its knowledge requirements, when these arguments were not briefed by Shoals in the first place.

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[78] The undersigned notes that knowledge of the patent, by itself, is not sufficient to prove induced infringement. *See Commil*, 575 U.S. at 639; *Bio-Rad*, 998 F.3d at 1335.

[79] This is consistent with Commission precedent. In *Certain Robotic Vacuum Cleaning Devices*, the Commission found that Complainant waived its argument that the filing of the complaint sufficed to show the requisite knowledge for induced and contributory infringement, in part because Complainant "did not present this argument in its initial post-hearing brief and argued for the first time in its post-hearing reply brief that [Respondents] had knowledge of the patents at issue at least as early as the filing of the complaint in [the] investigation." *See Certain Robotic Vacuum Cleaning Devices and Components Thereof Such as Spare Parts*, Inv. No. 337-TA-1057, Comm'n Op., EDIS Doc. ID 665703, at 18 (Feb. 1, 2019). Furthermore, the Commission stated that "at no time before its petition for review did [Complainant] make any argument based on the filing of the complaint regarding the requisite knowledge of patent infringement, which is a separate requirement from knowledge of the patents, for both induced infringement and contributory infringement." *Id.* at 18-19.

Accordingly, for the reasons discussed above, the undersigned finds that Shoals waived arguments regarding indirect infringement, and specifically, induced infringement and the knowledge requirement for induced infringement. Voltage is therefore entitled to a finding of non-infringement of claims 21, 23, and 24 for the accused Voltage Trunk Bus products.[80]

2. Voltage AD Trunk Bus Products[81]

With respect to whether claims 21, 23, and 24 could be infringed by the Voltage AD Trunk Bus Products, the parties dispute whether the inner mold of the Voltage AD Trunk Bus products is the claimed "primary mold that fully encases the nexus," substantially sealing the nexus "from external environmental conditions." The parties further dispute whether, alternatively, the outer mold of the Voltage AD Trunk Bus products could be considered the claimed "primary mold."

The evidence fails to show by a preponderance that the inner mold is the claimed "primary mold" in the Voltage AD Trunk Bus products. Voltage argues that the inner mold of the AD Trunk Bus does not "fully encase" the nexus or "substantially seal the nexus from external environmental conditions." RIB at 84-88, 91. Staff agrees. *See* SIB at 42-43, 44. Shoals argues that although the design calls for [redacted] *See* CIB at 72-73. Shoals argues that, to the extent

[80] To the extent the Commission finds that Shoals did not waive its arguments regarding indirect infringement and that Voltage knew of the patent and that the induced acts of its customer constituted patent infringement, the undersigned notes that the only non-infringement arguments asserted by Voltage and the Staff regarding the Voltage Trunk Bus are the same as those asserted for claim 1– namely, the "second aperture" and "third aperture" limitations. *See* CIB at 47-52; RIB at 89, 95-96; SIB at 44-45.

[81] The Voltage AD Trunk Bus products are not being evaluated for purposes of violation (which would require a showing of inducement), but rather based on Voltage's request that these products be adjudicated and based on satisfaction of the *Oligosaccharides* factors.

the inner mold does not "substantially seal" the nexus, then "the design will not pass UL 9703 certification and is not a final design under the *Milk* factors." CRB at 33. Shoals also argues that the "substantially seal" non-infringement argument was waived. *Id.* at 34.

Upon review of the parties' submissions and evidence of record, Shoals has not shown by a preponderance of the evidence that the inner mold of the alternative designs "fully encases" the nexus. It is undisputed that the design itself calls for [redacted]. With respect to the exemplar physical products, Mr. Brooks identified only one exemplar product (CPX-0012C) whose cross-section could potentially have indicated [redacted]). *See* Tr. (Brooks) at 463:3-464:11; CDX-0005.110-112. Dr. Cameron provided persuasive testimony, based on CT scans, that each of the alternative design products did in fact [redacted] *See* Tr. (Cameron) at 1110:3-1111:23; RX-83C; RIB at 85-88.[82] For at least this reason, the evidence fails to show by a preponderance that the Voltage Trunk Bus AD products could meet the claim requirements of claims 21, 23, or 24 based on the inner mold.[83]

The evidence also fails to show by a preponderance that the outer mold would be considered the claimed "primary mold" by one of skill in the art. Voltage argues that the outer mold does not fully encase the nexus in the alternative designs and that the outer mold does not

[82] While Dr. Cameron did not scan the specific alternative product exemplars that were produced to Shoals, Dr. Brooks only provided testimony about one cross-section that did not show exposed nexus and did not show that this cross-section was representative of all cross-sections of the product. Dr. Cameron's CT scans, in contrast, provided 3D information. *See* Tr. (Cameron) at 1095:9-1096:1; *see also* RIB at 68, RRB at 26; RDX-0002C.0068; Tr. (Cameron) at 1112:25-1113:12.

[83] Accordingly, it is unnecessary to reach the "substantially sealed" arguments. The undersigned notes, however, that Dr. Cameron testified without objection that the Voltage Trunk Bus AD products' inner mold failed to meet the "substantially sealed" requirement and thus this evidence is not precluded. *See* Tr. (Cameron) at 1113:24-1114:13.

substantially seal the alternative design products from external environmental conditions. RIB at 93-95. Staff agrees. *See* SIB at 42043, 44. Shoals argues that the outer mold is the claimed "primary mold" because it "fully encases everything, including the nexus" and it "appears to substantially seal the nexus so as to protect it from environmental conditions."

As a matter of claim construction, and as discussed in Order No. 16, the term "primary mold" refers to a first layer of mold (as opposed to the "secondary mold" claimed in dependent claim 23). *See* Order No. 16, at 37 (the "contrast between a 'primary mold' and a potential 'secondary mold' indicates that the applicant is providing an order to the mold layers"). While the *Markman* Order left open the possibility that a "primary mold" might have some partial molding material underneath it, the undersigned finds that where, as here, the evidence shows an "inner mold" that covers the nexus in substantial part, the evidence fails to show that the outer mold qualifies as a "primary mold." *See* Order 16 at 38 n.31 (leaving open whether there could be "some partial molding material" underneath the "primary mold" and noting that this may "present fact questions depending on the type and degree of any such 'molding'"). For at least this reason, the evidence fails to show by a preponderance that the Voltage Trunk Bus AD products could meet the claim requirements of claims 21, 23, or 24 based on the outer mold.

E. Shoals' Motion to Strike RPX-0052, RX-0089, RX-0090, RX-0091, and Corresponding Testimony (Mot. Dkt. No. 1365-032)

On April 12, 2024, Shoals filed a motion (Mot. Dkt. No. 1365-032; "Mot."; EDIS Doc. ID 818471) to strike RPX-0052, RX-0089, RX-0090, RX-0091, and corresponding testimony on the basis that Voltage failed to lay a proper and sufficient foundation during the evidentiary hearing and failed to disclose sufficient foundation during discovery. Mot. at 1. Specifically, Shoals seeks to strike RPX-0052, which is allegedly a physical exhibit of the inner mold material of a Voltage Trunk Bus, and RX-0089, RX-0090, and RX-0091, which are photographs of RPX-

0052. *Id.* Shoals argues that Voltage did not identify which model or configuration of its products that exhibit was made from and Voltage did not identify when, where, or who created the exhibit, other than a "lab." *Id.* at 1-2. Similarly, Shoals contends that during Ms. Ge's deposition, she was unable to testify "when, where (China or the U.S.), or by whom the exhibit was created, other than that it was an 'External lab' and 'We had counsel involved.'" *Id.* at 2 (citing JX-0210C (Ge Dep.) at 205:3-206:7). Thus, Shoals asserts that RPX-0052 and the corresponding photographs should be stricken for lack of foundation. *Id.* Shoals also claims that RPX-0052 should be stricken because it is not relevant to any issue in this investigation. *Id.* at 3. For example, Shoals argues that Voltage did not preserve an argument using RPX-0052 in connection with the "See-Through Test." *Id.* Accordingly, Shoals seeks to strike RPX-0052, RX-0089, RX-0090, RX-0091, and the hearing testimony at 914:11-917:14 and 1142:9-24.[84]

On April 24, 2024, Voltage filed an opposition to Shoal's motion to strike ("Resp. Opp."; EDIS Doc. ID 819591). Voltage asserts that RPX-0052, RX-0089, RX-0090, and RX-0091 are relevant because they show an exemplary structure of the inner mold of the Voltage Trunk Bus product that is mapped to the "undermold" or "primary mold" limitations of the asserted claims. Resp. Opp. at 8. Voltage claims that these exhibits have all of the insulation and metal removed so that the inner mold structure is isolated and can be better observed. *Id.* at 10. Voltage submits that "[t]he only references to RPX-0052 in Voltage's post-hearing brief are for the limited purpose of showing an exemplary inner mold structure." *Id.* (citing RPHB at 8, 59). Voltage argues that the foundation for RPX-0052 and its photographs is proper and sufficient. *Id.* at 11. Voltage contends that Ms. Ge's hearing testimony (which was consistent with her deposition

[84] Shoals' motion to strike was discussed at the evidentiary hearing and permitted. *See* Tr. at 914:20-916:20.

testimony) demonstrated "—that RPX-0052 shows [redacted] or the inner mold structure after the metal and the insulation is removed." *Id.* (citing Tr. (Ge) at 914:11-18, 917:3-14; JX-0210C (Ge Dep.) at 204:13-206:11). In addition, Voltage asserts that Shoals never asked Ms. Ge or Voltage which model or configuration RPX-0052 was made from. *Id.* Voltage also argues that Shoals fails to explain why the details of exactly when and where RPX-0052 was created is required to lay a proper foundation. *Id.* at 11-12. Indeed, Voltage notes that Mr. Brooks considered RPX-0052 and did not raise any concerns regarding its authenticity. *Id.* at 12 (citing Tr. (Brooks) at 566:18-23).

On April 24, 2024, Staff filed a response to Shoals' motion to strike ("Staff Resp."; EDIS Doc. ID 819566) also opposing the motion. Staff Resp. at 1. Staff submits that Voltage and Ms. Ge laid a proper foundation for RPX-0052 and its related photographs. *Id.* at 1-2. Staff notes that before the evidentiary hearing, Shoals did not raise a motion *in limine* or high priority objection to RPX-0052 or its photographs, Shoals did not object to the authenticity of the exhibits, and Shoals did not object to Ms. Ge being the sponsoring witness to the exhibits. *Id.* at 2. Staff contends that Ms. Ge laid a proper foundation for the exhibits because she explained "that RPX-0052 shows the [redacted] of the inner mold structure after the metal and the insulation is removed from a Voltage LYNX Trunk Bus product." *Id.* (citing Tr. (Ge) at 914:11-18, 917:3-14). While Staff acknowledges that Voltage and Ms. Ge did not identify which specific model or configuration of its product RPX-0052 was made from, Staff submits that Shoals never asked Ms. Ge or Voltage for that information. *Id.* Staff further submits that "[w]hether that was done in a lab in the United States or China, or whether Dr. Kenny or someone else identified the lab is not critical, as Ms. Ge otherwise had personal knowledge to authenticate and generally discuss RPX-0052." *Id.* In addition, Staff asserts that Shoals has not provided any evidence showing that

RPX-0052 or its photographs are not what they purport to be, and Staff contends that Shoals had the opportunity to cross-examine Ms. Ge on the issues it raises. *Id.* at 2-3. As to relevance, Staff points out that Mr. Brooks considered RPX-0052. *Id.* at 3 (citing Tr. (Brooks) at 566:18-23).

Having reviewed the parties' submissions, the undersigned finds that Voltage has established a sufficient foundation for exhibits RPX-0052, RX-0089, RX-0090, and RX-0091. There is no dispute that Ms. Ge first testified about RPX-0052 during her deposition. There, she stated that RPX-0052 was "an inner mold [redacted]." *See* JX-0210C (Ge Dep.) at 204:14-205:2. She also testified that she believed an external lab took one of Voltage's products and took the cables out to create the mold. *See id.* at 205:3-20. This is consistent with Ms. Ge's testimony at the evidentiary hearing where she testified that a lab removed all the metal and insulation from one of Voltage's product samples resulting in an inner mold [redacted] *See* Tr. (Ge) at 914:11-18, 917:3-14. The undersigned finds this to be a sufficient foundation for the exhibit, particularly when Shoals has not specifically challenged the authenticity of the exhibit. *See* Ground Rule 9.5.6 ("All documents that appear to be regular on their face shall be deemed authentic, unless it is shown by particularized evidence that the document is a forgery or is not what it purports to be."). In addition, the evidence does not show significant prejudice to Shoals at least because Shoals had the opportunity to depose Ms. Ge about RPX-0052 and to cross-examine Ms. Ge during the evidentiary hearing. The undersigned therefore finds that Voltage has established a sufficient foundation for exhibits RPX-0052, RX-0089, RX-0090, and RX-0091.

Accordingly, Shoals' motion (1365-032) to strike RPX-0052, RX-0089, RX-0090, RX-0091, and corresponding testimony is hereby DENIED.

VII. DOMESTIC INDUSTRY – TECHNICAL PRONG

Shoals asserts that the DI Products meet each and every element of claims 1 and 21 of the '153 patent. CIB at 75-83. For the reasons set forth below, the evidence shows by a preponderance that the technical prong of the domestic industry requirement is met as to claims 1 and 21 of the '153 patent.

A. The DI Products

The DI Product asserted by Shoals is an "entire assembly" that includes the mold drops. *See* CIB at 7-8; Tr. (Brooks) at 471:22-23. Shoals thus asserts that this assembly is the relevant article for purposes of the domestic industry. *See* 19 U.S.C. § 1337(a)(3).

The Commission has held that the domestic industry generally extends to the patented item and, in addition, may extend beyond the patented item where the patented item is integral or essential to an article of commerce. *See, e.g.*, *Certain Video Game Sys. and Wireless Controllers and Components Thereof* ("*Video Game Sys.*"), Inv. No. 337-TA-770, Comm'n Op., EDIS Doc. ID 520573, at 66 (Oct. 28, 2013) ("the realities of the marketplace" may "require a modification of the principle that the domestic industry is defined by the patented article"); *Certain Personal Computers and Components Thereof*, Inv. 337-TA-140, 1984 WL 15659, at *16, Commission Determination (Mar. 9, 1984) ("[T]he patented and copyrighted elements are essential components of the personal computer. The Autostart ROM program, in particular, is an operating system program which is used every time the computer is used. In fact, the computer cannot be used without it. The article of commerce involved here is the complete personal computer."); *Certain Variable Speed Wind Turbines*, Inv. No. 337-TA-376, Initial Determination, USITC Pub. No. 3003, at 71, 1996 WL 1056330, at *56 (Nov. 1996) (finding that entire wind turbine should be considered where "it is the industry practice to sell them as an integral unit" and the "wind

turbine [including all components] is marketed as an integral whole" and "operates as an integral whole"); *Certain Diltiazem Hydrochloride and Diltiazem Preparations*, Inv. No. 337-TA-349, USITC Pub. No. 2902, 1995 WL 945191, Initial Determination, at 78-79 (June 1995) ("article of commerce" is patented item (diltiazem HCl) which has been converted into dosage form, since without the additional work, the patented item "would be worthless as a pharmaceutical product"); *Certain Double-Sided Floppy Disk Drives*, Inv. No. 337-TA-215, USITC Pub. No. 1860, Initial Determination, at 49-56 (May 1986) (finding that domestic industry should be defined in terms of disk drives, not merely patented head assemblies that were incorporated into the disk drives because the head assembly was used every time a disk drive was used and the disk was useless without the head assembly).

Here, the article protected by the patent and the article of commerce is an entire BLA lead assembly, as asserted by Shoals. The asserted claims of the '153 patent are directed to a "lead assembly" and a "solar power system comprising . . . a lead assembly." *See* '153 patent at cls. 1, 21.[85] The record evidence shows that Shoals markets and sells the entire BLA assembly, not individual mold drops. *See* Tr. (Bardos) at 658:5-10 ("Q: Okay. Does Shoals sell mold drops? A. No."); Tr. (Brooks) at 471:22-23. Each individual mold drop is a subpart of the overall BLA assembly. *See* Tr. (Bardos) at 798:23-799:13 ("one individual mold drop is only a subpart of a Big Lead Assembly"); Tr. (Macias) at 217:21-218:9 ("So a BLA product is a prefabricated cut-to-length solution that has a number of mold drops and various input leads along the length of that BLA completed solution. So it is a complete solution when we're making them."); *cf.* Tr.

[85] The patent refers to a "lead assembly" as a system that can contain multiple joints. *See, e.g.*, '153 patent at 2:34-35 ("Fig. 5 depicts a positive lead assembly having a single drop line per joint"); *id.* at 2:36-37 ("Fig. 6 depicts a negative lead assembly having a single drop line per joint."); *id.* Figs. 5, 6.

(Tolnar) at 336:11-16.[86] The realities of the marketplace confirm that, under these circumstances, the domestic industry properly includes the entire BLA lead assembly. *Cf. Video Game Sys.*, Comm'n Op. at 66.

On this record, the undersigned disagrees with Voltage's and Staff's argument that Shoals' identification of the DI products should be precluded. *See* RRB at 68; SRB at 41 n.14. Shoals' post-hearing brief states that "Shoals' DI product is its BLA" and that "[t]he products at issue 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." CIB at 7-8. This is consistent with Shoals' pre-hearing brief and Amended Complaint, which states that "Shoals' Big Lead Assembly (BLA) trunk bus harnesses" embody the '153 patent. CPHB at 1; Am. Compl. at ¶¶ 6, 87 ("The DI Products that practice the . . . '153 Patent include Shoals' Big Lead Assembly ('BLA') harnesses . . . .") (emphasis added). This is also consistent with Shoals' documentation. For example, the BLA data sheet describes the BLA as a "trunk system" and refers to the mold drops as "BLA mold drop[s]." *See* JX-0119 (emphasis added). Further, it was clear from the hearing testimony that Mr. Nelson, Shoals' economics expert, relied on revenues and costs relating to Shoals' BLA assemblies, not to individual mold drops, and no objection was raised with respect to this testimony. *See* Tr. (Nelson) at 877:19-878:7 (on cross-examination regarding BLA revenues, stating that "[t]he product . . . it's very lengthy portion of feeder cable with various mold drops attached to that, and that's the product. It's customized. It's specific to a customer"); *id.* at 889:17-890:9 (on cross-examination regarding BLA costs, stating that he

[86] Mr. Macias also testified with respect to a quotation for one of Shoals' customers and explained with regards to the quantity for the BLA that "[t]he quantity represents a set" for a BLA – a positive and a negative conductor – and that they sell the BLAs "in sets." *See* Tr. (Macias) at 133:11-135:9; CX-0266C. As shown in the customer quotation, Shoals does not sell individual mold drops. *See* CX-0266C.

included "all materials" including cost of "feeder cables"). Mr. Brooks also testified, without objection, regarding the distinction between a BLA and a mold drop. *See* Tr. (Brooks) at 393:23-394:25. While there is evidence in the record referring to "BLA" as both the entire assembly or just the individual mold drops, this does not affect the clear factual record that the "article of commerce" is the entire BLA lead assembly.

Accordingly, the relevant DI Products are the BLA assemblies as identified by Shoals.[87]

B. Representativeness

1. Background: Order No. 28 and the Evidentiary Hearing

Prior to the evidentiary hearing, Respondents filed a motion *in limine* to preclude Shoals from (1) offering new expert opinions on representative products not disclosed during expert discovery or (2) eliciting expert opinion testimony from fact witnesses relating to representative products. *See* Mot. Dkt. No. 1365-025. Subsequently, the undersigned issued Order No. 28 regarding that motion finding that "while Mr. Brooks may testify regarding his analysis and conclusions regarding the domestic industry products and which samples he analyzed, such testimony shall be limited to testimony within the scope of his expert report and deposition, which Shoals has not shown to include a representative product analysis for the '153 patent." Order No. 28 at 4-5 (Mar. 14, 2024). In addition, the undersigned found that "[a]s to any fact witnesses, including Mr. Macias, who Shoals intends to have testify regarding the structure and function of the domestic industry products, such testimony shall be limited to factual information within the witness's personal knowledge" and that "such witnesses may not provide expert

[87] The undersigned notes that this issue, while addressed here, is primarily relevant to the parties' disputes regarding the economic prong of the domestic industry requirement. This issue does not appear consequential to the technical prong because the disputed limitations of the asserted claims concern mold drop structure.

testimony, including, for example, a comparison of the products to the asserted claims of the '153 patent." *Id.* at 6.

During the evidentiary hearing, prior to Mr. Brooks' testimony, the parties raised certain disputes regarding the scope of his proposed testimony relating to representative products, including any discussion of the Shoals Intertek Report (Exhibit JX-0118C). *See* Tr. at 233:24-251:25. The parties eventually agreed that Mr. Brooks would not be the sponsoring witness for the Shoals Intertek Report and proposed that certain agreed-to deposition designations from Mr. Brooks' deposition would be admitted into the record as an exhibit. *See id.* at 260:7-263:14; JX-0206C (Brooks Depo.). The undersigned found the parties' proposal acceptable and further stated that, after a review of Mr. Brooks' deposition transcript, "there was certain limited testimony about BLA being representative that . . . could support at least a statement of representativeness" and that, to the extent this conflicted with Order No. 28, the ruling made at the hearing was the reconsidered ruling. Tr. at 263:15-23.

2. The Parties' Positions

Shoals asserts that the evidence shows that it is more likely than not that all BLAs, or at least BLAs that have at least one mold drop with at least two drop lines, have the molds and apertures required by claims 1 and 21 of the '153 patent. CIB at 83-84. Shoals contends that evidence of real-world use of the BLA makes it more likely than not that it meets every element of claims 1 and 21 (except those having to do with the molds and the drop line apertures, for which Shoals asserts different arguments, discussed below). *Id.* at 85-86. For example, Shoals submits that the market for the BLA is utility-scale solar farms and that BLA customers are the utility project owners or the engineering, procurement, and construction (EPC) companies that design and build such projects. *Id.* at 85. Shoals argues that the evidence shows industry use of

the BLA. *Id*. Moreover, Shoals asserts that it has also provided evidence of a project for a real customer, Signal Energy. *Id*. at 85-86. Shoals also contends that the evidence shows how BLA mold drops connect to wire harnesses via drop lines to collect power coming from solar panels to convey that power down a feeder cable to an inverter. *Id*. at 85.

As to the claim elements directed to the mold and apertures, Shoals argues that the Intertek tests confirm use of both an overmold and an undermold as required by limitation [1.h]. *Id*. at 91. Shoals argues that the Intertek testing is "circumstantial evidence that, when read with the technical DI analysis provided by Mr. Brooks at the hearing . . . and combined with the testimony from Messrs. Macias and Tolnar that the BLA molds do not differ from one another internally . . . makes it far more likely than not that the inner workings of all the molds are the same, regardless of cable size or number of drop lines, so long as there are at least two." *Id*. Shoals asserts that Mr. Brooks' analysis is a representative technical DI analysis. *Id*. at 92-93.

Voltage argues that Shoals failed to demonstrate by a preponderance of the evidence that the products its expert analyzed are representative for technical prong. RIB at 97-98. Voltage claims that Shoals' "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." RRB at 31. Voltage contends that because Shoals did not have an expert to opine on representativeness, it attempted to "back-fill" those deficiencies through its fact witnesses. RIB at 98. However, Voltage asserts that none of Shoals' three fact witnesses – Mr. Macias, Mr. Tolnar, or Mr. Bardos – established that the physical sample that Mr. Brooks cut open and analyzed or the images included in Mr. Brooks' expert report claim chart were representative of all of Shoals' BLA configurations. *Id*. at 99. Voltage argues that "the fact witnesses' testimony at the hearing showed a coordinated effort to characterize its BLA to fit Shoals' litigation positions,

despite being unsupported (and contradicted) by Shoals' documents [and] its witnesses' prior testimony." *Id.* Voltage claims that Shoals' arguments with respect to the Intertek Report are "agnostic to the claim required mold structure and its aperture requirements." RRB at 32. Voltage also argues that Shoals' representativeness theory is undercut by Mr. Bardos's testimony regarding a BLA configuration that Shoals made with multiple branches entering the compression lug and nexus from the same side. *Id.* at 33. Voltage submits that one of Mr. Bardos's demonstratives showed each drop line, including the exposed wire portion, going through and extending beyond the compression lug. *Id.*

Staff argues that Mr. Brooks was unable to demonstrate representativeness because he did not analyze each configuration of the DI Products. SIB at 45. Staff asserts that "[d]uring his deposition, Mr. Brooks admitted that he did not conduct a representative analysis or include one in his report, going so far as to suggest that he didn't believe one was necessary." *Id.* at 46 n.4. Staff, however, contends that Shoals' BLA configurations have a different number of drops, different types and sizes of cables and wire, different placement of wires, different molds, different compression lugs, and other engineering distinctions, and thus, Shoals should have presented evidence why any particular BLA would be representative of any other BLA. *Id.* at 46-48; SRB at 30-31 (annotating Shoals' BLA data sheet (JX-0119) to highlight at least three allegedly different outermold shapes). Staff also asserts that even if Mr. Brooks' opinions are accepted, they should be limited to the specific lead assemblies/harnesses that he actually tested and analyzed, and should exclude other configurations such as the three, five, and seven drop configurations. SIB at 48. Moreover, Staff notes that "[t]here is also a clear difference in the level of detail that Voltage provided to Shoals for the physical samples of Voltage's Trunk Bus Products and AD Trunk Bus Products in comparison to the information that Shoals, Mr. Brooks,

and Mr. Bardos provided for alleging representativeness of any of Shoals' BLA Products." *Id.* at 50 n.5

3. Discussion

Upon review of the parties' submissions and record evidence, the undersigned finds that the issue of "representativeness," under the specific circumstances here, should be analyzed on an element-by-element basis. The ultimate question is whether the evidence shows, by a preponderance, that each of the claim limitations is met by Shoals' BLA products. As discussed below, the element-by-element analysis shows by a preponderance that the Shoals' BLA products—except for any Shoals BLA product that includes only mold drop(s) with one drop line—meet the limitations of claims 1 and 21.

C. Claim 1

1. Claim Limitation [1.p]: "A lead assembly for use in a solar energy installation including:"

To the extent the preamble is limiting, evidence shows that the BLA products are lead assemblies for use in a solar energy installation. *See* Tr. (Brooks) at 472:1-4; CDX-0005C at 120; (Tolnar) at 225:10-226:25; CDX-0003C at 2; RIB at 102-104; RRB at 21-25; *see also* SIB at 51-54; SRB at 33-34. Further, the evidence shows by a preponderance that the preamble is met for all BLA products relied upon by Shoals for a domestic industry. *See* Tr. (Tolnar) at 226:5-25; JX-0119; CIB at 85-86. Neither Voltage nor Staff identified any evidence suggesting that this limitation is not met by BLAs with one type of mold drop versus another.

2. Claim Limitation [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;"

The evidence demonstrates that the BLA products have 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. *See* Tr. (Brooks) at 472:1-473:3; CDX-0005C at 120-121; JX-0186; CX-0167 at 1.

Further, the evidence shows by a preponderance that this limitation is met for all BLA products relied upon by Shoals for a domestic industry. *See* Tr. (Brooks) at 472:1-473:3; CDX-0005C at 120-121; JX-0186; CX-0167 at 1; Tr. (Tolnar) at 226:5-10 (harnesses "snap into" the Big Lead Assembly"); *id*. at 226:15-25 (explaining layout of BLA with respect to feeder cable); CIB at 85-86. Mr. Brooks's and Mr. Tolnar's testimony relates to the BLA generally, and neither Voltage nor Staff identified any evidence suggesting that this limitation is not met by BLAs with one type of mold drop versus another.

Accordingly, Shoals has shown that the BLA products meet Claim Limitation [1.a].

3. Claim Limitation [1.b]: "a feeder cable electrically coupled to the drop line at a nexus;"

The evidence demonstrates that the BLA products have a feeder cable electrically coupled to the drop line at a nexus. Mr. Brooks specifically testified regarding this limitation in a BLA mold drop with four drop lines. *See* Tr. (Brooks) at 473:4-16; CDX-0005C at 122; JX-0163; JX-0121; CPX-0036.1. Further, the evidence shows by a preponderance that this limitation is met for all BLA products relied upon by Shoals for a domestic industry. In particular, the

evidence shows that the BLA mold drops are designed to be able to transmit power or current from drop lines to the feeder cable through a nexus. Mr. Tolnar testified that the feeder cable has the same placement in the mold for different numbers of drop lines and that the different molds function electrically in the same way. *See* Tr. (Tolnar) at 231:23-233:17. *id.* at 233:4-17 (BLA molds with different numbers of drop lines have the "same basic structure" with respect to the drop lines, compression log, and feeder cable); CIB at 86-87. Neither Voltage nor Staff identify any evidence suggesting that this limitation is not met for any BLA mold drop. *See* RIB at 102-104; RRB at 21-25; *see also* SIB at 51-54; SRB at 33-34.

Accordingly, Shoals has shown by a preponderance of the evidence that the BLA products meet Claim Limitation [1.b].

4. Claim Limitation [1.c]: "an undermold that fully encases the nexus, the undermold further comprising:"

Voltage and Staff do not dispute that this limitation is met in the particular mold drop cut open and assessed by Mr. Brooks. *See* RIB at 102-104; RRB at 21-25; *see also* SIB at 51-54; SRB at 33-34. In addition, the evidence demonstrates that this BLA mold drop has an undermold that fully encases the nexus. *See* Tr. (Brooks) at 473:17-474:14; CDX-0005C at 123; JX-0162; JX-0121.

Further, the evidence shows, by a preponderance, that each of the BLA mold drops similarly has an "undermold that fully encases the nexus." The evidence persuasively shows that all the BLA mold drops have an undermold and overmold formed through injection molding. *See* Tr. (Macias) at 126:23-127:15; *id.* at 216:17-23 (describing molding tools and stating that the "mold machine injection molds the plastics, heats them up and does the undermold and overmold"); Tr. (Tolnar) at 232:19-233:17 (describing how feeder cable and lug with drop lines is "put into . . . the injection molding tool, and then the mold itself drops and encapsulates and

then it injects around the mechanism"); *id.* at 233:4-17 (BLA molds with different numbers of drop lines have the "same basic structure" with respect to the drop lines, compression log, and feeder cable); Tr. (Tolnar) at 314:19-25 (agreeing on cross-examination that a larger injection molding machine is used "for the undermold and overmold"); Tr. (Cameron) at 1153:6-8 (Shoals products are "made from injection molding"); JX-206C (Brooks Dep.) at 276:6-8, 279:10-15 (expressing opinion that BLA products are "all representative" and that "the molding itself is the same for all iterations within that family"). Given the evidence that the process for creating the undermold and overmold is performed in a similar way among the different mold drops, the undisputed evidence that the 4-drop line mold drop shown at the hearing includes an undermold that fully encases the nexus, and the lack of any evidence indicating that the other mold drops lack this limitation, the evidence shows, by a preponderance that all BLA mold drops meet this claim limitation. This is also consistent with the Intertek report, which indicates that the "Undermold Material" "[c]ompletely surrounds wire connections under the Overmold Material."[88, 89, 90] *See* JX-0118C at 23; CIB at 87-89. Accordingly, Shoals has shown by a preponderance that the BLA products meet Claim Limitation [1.c].

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[88] At the evidentiary hearing, the undersigned overruled an objection to the admission of the Intertek report (JX-0118C), ruling that Mr. Bardos had sufficient familiarity with the document to be the sponsoring witness. *See* Tr. at 693:14-16. Mr. Bardos testified that he was familiar with Intertek reports, and in particular, the Shoals Intertek report. *See* Tr. (Bardos) at 681:17-682:13, 685:16-687:12 (explaining that Shoals sent various product samples to Intertek for testing); JX-0118C. The undersigned noted that to the extent the document had technical information that required more explanation than Mr. Bardos or attorney argument could provide, that would go to the weight of the evidence. *See* Tr. at 693:16-694:1.

[89] As discussed above, the purpose of an Intertek report is "to obtain certifications per the standards that are required for photovoltaic installations as it pertains to safety." *See* Tr. (Macias) at 215:22-25; *see supra* at Part VI.A.

[90] Furthermore, Mr. Tolnar testified that [redacted]. *See* Tr. (Tolnar) at 350:4-352:19. This is additional circumstantial evidence that all BLA mold drops meet this claim limitation.

5. The "Aperture" Limitations: Claim Limitation [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"; Claim Limitation [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"; Claim Limitation [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:"

Voltage and Staff do not dispute that claim limitation [1.c.i] is met by the particular 4-drop mold drop whose cross section was shown by Mr. Brooks. *See* RIB at 102-104; RRB at 21-25; *see also* SIB at 51-54; SRB at 33-34. The evidence demonstrates that this BLA mold drop has a first aperture extending completely through the undermold with a first diameter where the feeder cable extends through the first aperture along a first longitudinal axis. *See* Tr. (Brooks) at 474:15-475:1; CDX-0005C at 124; JX-0162: JX-0121; JX-0118C at 11.

The evidence further shows, by a preponderance, that each of the BLA mold drops has the claimed "first aperture." Mr. Tolnar testified that the feeder cable has the same placement in the mold for different numbers of drop lines and that the different molds function electrically in the same way. *See* Tr. (Tolnar) at 231:23-233:17; *see also* Tr. (Macias) at 199:24-200:2 (testifying on cross-examination that the compression lug for a two-drop mold drop has a separate "seat" for the feeder cable). Further, as discussed above, the evidence shows that each of the BLA mold drops has an undermold fully encasing the nexus. Neither Voltage nor Staff identify any evidence indicating that this limitation is not met for any BLA mold drop. *See* RIB at 102-104; RRB at 21-25; *see also* SIB at 51-54; SRB at 33-34.[91]

[91] Similar to infringement, Voltage argues that "[t]aking Mr. Brooks' opinion that the second and third aperture only extend partially through because they are 'bounded by the nexus', the same would be true for the 'first aperture.'" *See* RRB at 22-23. However, under either the Modified Cable Test and Mr.

The parties dispute claim limitations [1.c.ii] and [1.c.iii]. Shoals asserts that any BLA mold drop with at least two drop lines will have second and third apertures from which a drop line and a second drop line extend along second and third longitudinal axes. CIB at 80. Shoals also contends that each aperture will have a diameter different than the first diameter. *Id.* In addition, Shoals argues that similar to the Voltage Trunk Bus, the second and third apertures of the BLA extend only partially through the undermold because they are bounded at one end by the outermold and at the other end by the nexus. *Id.* at 81.

Voltage argues that these limitations are not met for the same reasons as for the Voltage Trunk Bus products. RIB at 102. Voltage contends that Dr. Cameron's CT scan for the BLA shows that the pathway for the drop line cable is still in physical existence like the pathway of the feeder cable. *Id.* Voltage further contends that the 3D hole for each drop line cable extends completely through the undermold and thus, there is no second aperture or third aperture extending partially through the undermold. *Id.*

In addition, Voltage asserts that Shoals did not present expert testimony or attorney argument "as to how the second and third apertures are bounded by the nexus, but the first aperture is not." RRB at 21-22. According to Voltage, if the second and third aperture only extend partially through because they are bounded by the nexus, the same would be true for the first aperture. *Id.* at 22-23; *see supra* regarding limitation [1.c.i]. Voltage also argues that Mr. Brooks' opinion that the second and third aperture are bounded by the nexus is inconsistent with the claim requirement that the nexus is fully encased by the mold structure. *Id.* at 23. Voltage

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Brooks' approach, as discussed regarding claim construction, *supra*, the feeder cable aperture extends completely through the mold.

argues that it is possible that the wire forming a drop line could extend to the outer edge of the inner mold and could extend "completely through" the undermold. *See* RRB at 33-34.

Staff contends that for the same reason as the Voltage Trunk Bus, the BLA products also do not meet the second and third aperture limitations. SIB at 51-54. Staff argues that the BLA products use one continuous drop line/wire to form two drops or branches where the aperture of the drop line/wire necessarily extends continuously through the undermold. *Id.* at 51. According to Staff, Dr. Cameron offered CT scans and testimony showing that the drop line forms a second aperture that extends completely through the undermold/primary mold and compression lug in the same manner that the feeder cable forms a first aperture that extends completely through the undermold/primary mold and compression lug. *Id.* at 51-52. Staff also argues that the BLA products do not meet the third aperture limitation for the same reasons. *Id.* at 53.

Staff asserts that during the evidentiary hearing, Mr. Bardos showed a picture of "several BLA compression lugs having three drop lines/wires on the same side." SRB at 34 (citing CDX-4.11). Staff contends that a "close-up of the intermediate assembly shows that the bottom of the compression lug may still be open such that undermold material would likely seep in and still be in direct contact with the drop lines." *Id.* Staff therefore argues that Mr. Brooks' rationale for not including the entire length of the drop line (and arguing that the drop line is bounded by the nexus) is not correct when the bottom of the compression lug is still open. *Id.*

Upon review of the parties' submissions and record evidence, the undersigned finds that Shoals has established by a preponderance of the evidence that the BLA products meet the "second aperture" and "third aperture" claim limitations.[92]

[92] The record evidence shows, and Voltage and Staff do not dispute, that the drop line extends along a second longitudinal axis and second drop line extends along a third longitudinal axis. *See* Tr. (Brooks) at

With respect to the mold drop with four drop lines shown at the hearing by Mr. Brooks, the evidence shows two drop lines and a feeder cable (similar to the Voltage accused products assessed for infringement):



CDX-0005C.132; Tr. (Brooks) at 480:21-481:4; *see also* CIB at 80-81; Tr. (Brooks) at 475:2-478:22; CDX-0005C at 125-127.

Using the Modified Cable Test (*see supra* at Part V.E.1), and based on the same reasoning discussed above for infringement, this mold drop includes the claimed "second aperture" and "third aperture." *See* CIB at 81; CPX-0036; Tr. (Brooks) at 475:2-478:22; CDX-0005C at 125-127. Each of the second aperture and the third aperture extends partially through the undermold" for the same reasons discussed in connection with infringement.

Further, the evidence shows by a preponderance that all the BLA mold drops having more than one drop line similarly meet the claim requirements for the "second" and "third" apertures. The evidence of record indicates that the drop lines for the BLA mold drops have a different diameter than the feeder cable and thus, as a result, the corresponding apertures will

475:2-476:7; CDX-0005C at 125-127. In addition, the record evidence shows, and Voltage and Staff do not dispute, that the second aperture has a second diameter different than the first diameter and that the third aperture has a third diameter different than the first diameter. *See* Tr. (Brooks) at 477:20-478:15; CDX-0005C at 125-127.

have different diameters given the injection molded structure. *See* JX-0119; CPX-0036; CPX-0036.2; CPX-0036.4; CPX-0036.5; JX-0163; JX-0206C (Brooks Dep.) at 270:13-271:1. The evidence of record also shows, by a preponderance, that each aperture associated with these drop lines will extend "partially through" the undermold. The evidence shows by a preponderance that each drop line ends within the nexus. *See* Tr. (Brooks) at 483:14-17; Tr. (Cameron) at 1155:18-1157:11 (drop line ends "somewhere in the nexus"); Parts V.E.1c.i, VI.B.6 *supra*. Accordingly, any corresponding aperture within an undermold that fully surrounds the nexus extends "partially through" the undermold. *See* CIB at 90-91; CRB at 17-18 (citing Tr. (Cameron) at 1070:10-24).[93]

However, a BLA mold drop having only one drop line would not meet claim limitation [1.c.iii] because it would not have "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." *See* JX-0206C (Brooks Dep.) at 265:13-266:3 (agreeing that one-drop line BLA would not satisfy claim limitation for first and second drop line); CIB at 141 ("Only a BLA that has *only* molds with one drop line each would fall outside the scope of the patent.") (emphasis in original).

[93] While the record evidence appears to suggest there may be variations in the precise shape of the mold or size of wiring, for example, for BLA mold drops with different numbers of drop lines, none of these differences indicate that the limitation at issue would not be met by a BLA mold drop with more than one drop line. *See, e.g.*, JX-0119; Tr. (Tolnar) at 232:1-233:17; Tr. (Macias) 127:4-15. Staff's argument regarding a BLA compression lug having three drop lines on the same side (*see* SRB at 34) is unclear and does not appear to apply the Modified Cable Test. Similarly, Voltage does not appear to apply the Modified Cable Test on reply. *See* RRB at 33-34. As discussed *supra*, the evidence shows by a preponderance that each "drop line" ends somewhere within the nexus.

Accordingly, Shoals has shown by a preponderance of the evidence that the BLA products—except for any Shoals BLA product that includes only BLA mold drop(s) with one drop line—meet Claim Limitations [1.c.i], [1.c.ii], and [1.c.iii].

6. Claim Limitation [1.d]: "an overmold surrounding the undermold and forming an undermold-overmold interface at an outer surface of the undermold."

The evidence demonstrates that the BLA mold drops have an overmold surrounding the undermold and forming an undermold-overmold interface at an outer surface of the undermold. *See* Tr. (Brooks) at 473:17-474:11, 478:23-479:14; CDX-0005C at 128-129; JX-0121; JX-0163; JX-0120. Further, the evidence shows by a preponderance that all BLA mold drops meet this requirement. *See* discussion regarding Claim Limitation [1.c] *supra*; *see also* JX-0118C at 23. Neither Voltage nor Staff identified any evidence suggesting that this limitation is not met by BLAs with one type of mold drop versus another. *See* RIB at 102-104; RRB at 21-25; *see also* SIB at 51-54; SRB at 33-34.

Accordingly, Shoals has shown that the BLA products meet Claim Limitation [1.d].

* * *

Accordingly, because the evidence shows by a preponderance that each limitation of claim 1 is met for BLA products (excluding products that only include mold drops with one drop line), the BLA products practice claim 1 of the '153 patent.

D. Claim 21

1. Claim Limitation [21.p]: "A solar power system comprising:"

To the extent the preamble is limiting, and for the same reasons as discussed above with respect to claim 1, the evidence shows that the BLA products are used in a solar power system. *See* Tr. (Brooks) at 479:15-480:4; CDX-0005C at 131; CX-0167; Tr. (Tolnar) at 225:10-226:25 (explaining that Shoals has a photovoltaic installation using BLAs at its Plant 1 facility); *see also*

supra at Part VII.C.1; SIB at 54-55; SRB at 33-34. The evidence further shows that Shoals provides instructions for and encourages this use. *See* JX-0098 at 6 (Shoals BLA Installation and Operating Instructions stating that "[t]he Shoals BLA wiring harness with in line fuses . . . provides a means of combining multiple PV arrays into a single DC source"), *id.* at 8 (providing instructions for "connecting wires to the solar panels with component harnesses").[94] The evidence also shows by a preponderance that the preamble (to the extent limiting) is met for all BLA products relied upon by Shoals for a domestic industry. *See* Tr. (Tolnar) at 226:5-25; JX-0119.

2. Claim Limitation [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;"

For at least the same reasons as for claim limitation [1.a], the evidence shows that the BLA products are used in a solar power system including 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. *See supra* at Part VII.C.2. The evidence further shows that Shoals provides instructions for and encourages this use. *See* JX-0098 at 6 (Shoals BLA Installation and Operating Instructions

[94] Analysis of the technical prong parallels the analysis for infringement. *See Alloc, Inc. v. Int'l Trade Comm'n*, 342 F.3d 1361, 1375 (Fed. Cir. 2003) ("[To determine whether an industry relates to the protected articles (the 'technical prong' of the domestic industry requirement), the Commission examines whether the industry produces articles covered by the asserted claims. The test for satisfying the 'technical prong' . . . is essentially [the] same as that for infringement, i.e., a comparison of domestic products to the asserted claims."). The technical prong can be met when the product directly or indirectly practices a claim of the asserted patent. *See Certain Beverage Brewing Capsules*, Inv. No. 337-TA-929, Order No. 21, 2015 WL 4124306, at *3 (May 18, 2015). It is unclear, however, whether the knowledge requirements applicable to infringement must be specifically proven in connection with the technical prong and thus whether the issues discussed in connection with indirect infringement of claim 21 apply to the technical prong as well. *See, e.g., Certain Beverage Brewing Capsules*, Inv. No. 337-TA-929, Initial Determination, at 101-102, 117 (Sept. 17. 2015) (EDIS Doc. ID 565571) (finding technical prong satisfied through indirect practice of the patent based on providing instructions but without addressing any knowledge requirement*), unreviewed in relevant part* (EDIS Doc. ID 568676). In any case, Shoals has established the technical prong of the domestic industry requirement at least through showing direct practice of claim 1.

stating that "[t]he Shoals BLA wiring harness with in line fuses . . . provides a means of combining multiple PV arrays into a single DC source"), *id.* at 8 (providing instructions for "connecting wires to the solar panels with component harnesses").

Additionally, for the same reasons as for claim limitation [1.a], the evidence shows by a preponderance that this limitation is met for all BLA products relied upon by Shoals for a domestic industry as they are all used for wire harnesses. *See supra* at Part VII.C.2; *see also* Tr. (Brooks) at 472:1-473:3; CDX-0005C at 120-121; JX-0186; CX-0167 at 1; Tr. (Tolnar) at 226:5-10 (harnesses "snap into" the Big Lead Assembly"); *id.* (explaining layout of BLA with respect to feeder cable). Neither Voltage nor Staff identified any evidence suggesting that this limitation is not met by BLAs with one type of mold drop versus another. *See* RIB at 104; RRB at 21-25; *see also* SIB at 54-55; SRB at 33-34.

Accordingly, Shoals has shown that the BLA products meet Claim Limitation [21.a].

3. Claim Limitation [21.b]: "a lead assembly comprising:"

For at least the same reasons as for claim limitation [1.p], the evidence shows that the BLA products are lead assemblies. *See supra* at Part VII.C.1; *see also* Tr. (Brooks) at 479:15-480:20; CDX-0005C at 131; RIB at 104 (raising same arguments for claim 21 as for claim 1).

4. Claim Limitation [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;"

For at least the same reasons as for claim limitations [1.a] and [21.a], the evidence shows that the BLA products have a drop line electrically connected to a central trunk of the wire harness and configured to receive power from the plurality of solar panels. *See supra* at Parts VII.C.2 and VII.D.2; *see also* Tr. (Brooks) at 480:7-20; CDX-0005C at 131; RIB at 104.

5. Claim Limitation [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;"

For at least the same reasons as for claim limitations [1.a] and [1.c.iii], the evidence shows that the BLA products (excluding products that only include mold drops with one drop line) have 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. *See supra* at Parts VII.C.2 and VII.C.5; *see also* Tr. (Brooks) at 480:7-20; CDX-0005C at 131; RIB at 104.

6. Claim Limitation [21.b.iii]: "a feeder cable, the feeder cable electrically connected to the drop line and the second drop line at a nexus; and"

For at least the same reasons as for claim limitations [1.b] and [1.c.iii], the evidence shows that the BLA products (excluding products that only include mold drops with one drop line) have a feeder cable and the feeder cable is electrically connected to the drop line and the second drop line at a nexus. *See supra* at Parts VII.C.3 and VII.C.5; *see also* Tr. at (Brooks) 480:21-481:4; CDX-0005C at 132; RIB at 104.

7. Claim Limitation [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:"

For at least the same reasons as for claim limitation [1.c], the evidence shows that the BLA product cut open by Mr. Brooks has a primary mold that fully encases the nexus so as to substantially seal the nexus from external environmental conditions. *See supra* at Part VII.C.4; *see also* Tr. (Brooks) at 481:5-17 (confirming that BLA has "primary mold in the mold drop" that "is enclosing and sealing the nexus"); CDX-0005C at 133; RIB at 104.

Additionally, for the same reasons as for claim limitation [1.c], the evidence shows, by a preponderance, that each of the BLA mold drops has an "primary mold that fully encases the nexus so as to substantially seal the nexus from external environmental conditions." *See supra* at Part VII.C.4; *see also* Tr. (Macias) at 126:23-127:15, 216:17-23; Tr. (Tolnar) at 232:19-233:17, 314:19-25; JX-0118C at 23 (describing that the "Undermold Material" "[c]ompletely surrounds wire connections under the Overmold Material.").

Accordingly, Shoals has shown that the BLA products meet Claim Limitation [21.b.iv].

8. The "Aperture" Limitations: Claim Limitation [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"; Claim Limitation [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"; Claim Limitation [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."

For at least the same reasons as for claim limitation [1.c.i], the evidence shows, by a preponderance, that each of the BLA mold drops has a "first aperture extending completely through the primary mold and having a first diameter, wherein the feeder cable extends through the first aperture." *See supra* at Part VII.C.5; *see also* Tr. (Tolnar) at 231:23-233:17; JX-0119; RIB at 104.

Additionally, for the same reasons as discussed above with respect to claim limitations [1.c.ii] and [1.c.iii], the undersigned finds that Shoals has established by a preponderance of the evidence that the BLA products meet the "second aperture" and "third aperture" claim

limitations, except for BLA products that only include mold drops with one drop line.[95] *See supra* at Part VII.C.5; *see also* Tr. (Brooks) at 482:4-483:19; CDX-0005C at 134-137.

* * *

For the reasons set forth above, the evidence shows by a preponderance that the BLA products (excluding products that only include mold drops with one drop line) indirectly practice claim 21 of the '153 patent.

VIII. DOMESTIC INDUSTRY – ECONOMIC PRONG

To meet the economic prong of the domestic industry requirement, Shoals relies on domestic investments in plant and equipment and labor or capital with respect to the BLA products. CIB at 133. For the reasons set forth below, the evidence shows by a preponderance that Shoals has met the economic prong of the domestic industry requirement based on investments in plant and equipment and labor and capital.

A. Background

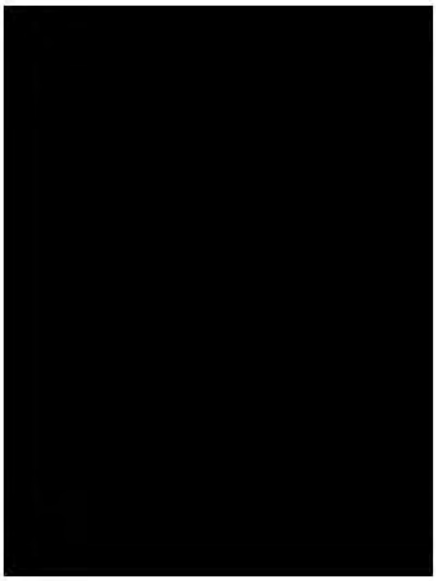
Shoals is a Tennessee limited liability company and has its principal place of business at 1400 Shoals Way, Portland, Tennessee. CIB at 3; Am. Compl. at ¶¶ 2, 11. The evidence shows that Shoals manufactures the BLA products in the United States at two plants in Portland, Tennessee – one at its headquarters ("Plant 1") and the other at 109 Kirby Drive ("Plant 4"). *See* CDX-004C at 3; Tr. (Bardos) at 647:11-650:20 ("Plant 1 . . . was the original manufacturing location of the Big Lead Assembly products."; "Plant 4 . . . [t]hat's the most recently added manufacturing for Big Lead Assembly products."); *see also* CIB at 3; Am. Compl. at ¶¶ 90, 91,

[95] The record evidence shows, and Voltage and Staff do not dispute, that the drop line extends into the second aperture and the second drop line extends into the third aperture. *See* Tr. (Brooks) at 482:4-483:19; CDX-0005C at 135-136. In addition, the record evidence shows, and Voltage and Staff do not dispute, that the second aperture has a second diameter smaller than the first diameter and that the third aperture has a third diameter smaller than the first diameter. *See* Tr. (Brooks) at 482:4-483:19; CDX-0005C at 135-136.

93; Tr. (Macias) at 106:1-19; Tr. (Tolnar) at 222:10-14 ("BLAs are made in the U.S. and always have been."); Tr. (Bardos) at 648:6-8 ([redacted]). At the evidentiary hearing, Mr. Bardos showed a photograph of the manufacturing floor of Plant 4 (reproduced below).



See CDX-0004C at 9; Tr. (Bardos) at 663:10-20. Also at the evidentiary hearing, Mr. Macias showed a photograph of molding machines in Plant 4 that are used in manufacturing the BLA products (reproduced below).



See CDX-0009C at 2; Tr. (Macias) 107:3-13. In addition, the evidence shows that all of Shoals' research, development, testing, and manufacturing takes place in the United States. Tr. (Macias) at 105:6-106:19; Tr. (Tolnar) at 221:20-24, 222:10-14; Tr. (Bardos) at 647:11-650:6, 654:11-657:10; CDX-0004C at 7; JX-0217C (Solon Dep.) at 181:20-22.

B. Domestic Industry Products and Non-Practicing Products

As an initial matter, the parties dispute which products are properly included in the domestic industry analysis. *See* CIB at 140-142; CRB at 58-62; RIB at 141-145; RRB at 68-70; SIB at 65-66; SRB at 41 n.14. In addition to objections concerning Shoals' representativeness analysis and definition of the DI Products (discussed above in connection with the technical prong), Voltage and Staff disagree with the inclusion of the Electric Vehicle BLA ("EV BLA") and the one-drop line BLA mold in Shoals' domestic industry calculations.[96] *See, e.g.*, RIB at 143-144; SIB at 65-66.

The Parties' Positions

Shoals argues that while Voltage criticizes the inclusion of investments in the EV BLA and the one-drop line BLA, any investment in non-DI products is *de minimus*.[97] CIB at 140. Shoals asserts that it only produced the EV BLA in 2022 and none in prior years. *Id*. In addition, Shoals submits that the production of the EV BLA [redacted]

[96] Shoals asserts that "Staff also alleges, for the first time and without evidence, that non-practicing products also include three, five, and seven drop line BLAs" and that "[b]ecause Staff did not make this argument in its prehearing brief, it should be precluded from making it now" CRB at 58. The undersigned finds that Staff's arguments are encompassed by the representativeness issue *supra*, and thus are not waived to the extent that Staff is arguing a failure of proof regarding representativeness for the DI products.

[97] Shoals' EV BLA is an Electric Vehicle Big Lead Assembly that not used in photovoltaic solar installations. *See* Tr. (Bardos) at 677:19-678:2 ("The EV Big Lead Assembly is [] much shorter and it's not for photovoltaic solar."). Shoals is not relying on the EV BLA as a domestic industry product. *See* CIB at 140-142; *see also* Tr. (Bardos) at 678:3-6.

[redacted]. *Id.* Shoals argues that "[i]f a pro rata reduction in Shoals' 2022 investments were to be applied, it would be about [redacted]"[98] *Id.*

As to the one-drop line BLA, Shoals asserts that this argument "rests on confusion about what Shoals sells: Shoals sells BLAs, not individual mold drops." CRB at 58. Shoals states that it "sells individual mold drops, including molds with only one drop line, rather than BLAs of which any particular mold drop is just one part." CIB at 140; *see also* CRB at 59 ("Shoals' domestic investments relate to the BLA, generally, not to any particular configuration thereof"). Shoals acknowledges that it "may have sold a few BLAs that have a mold drop that has only a single drop line." CIB at 140. However, Shoals also contends that "if Shoals were to sell a BLA that includes a one-drop mold, that one-drop mold would be at one end or the other of a BLA with a long feeder cable that includes other molds, too." *Id.* at 140-141. Shoals therefore claims as long as a BLA has at least one mold drop with multiple drop lines, it practices the patent. *Id.* at 141; *see also* CRB at 58 ("Further, . . . so long as a BLA has at least one drop mold with at least the two drop lines required by the claims, the presence or absence of additional drop lines, in even or odd numbers, is irrelevant."). Shoals also submits that such a BLA that has only one-drop line molds would "run counter to the point of the BLA." *Id.* at 141. Shoals states that the only possible exception is a single transaction that involved [redacted], which

[98] Voltage contends that this pro rata reduction was presented for the first time in Shoals' post-hearing brief and thus, Shoals waived it under the Ground Rules. *See* RRB at 69. The undersigned finds this argument unpersuasive. The number of EV BLAs produced in 2022 is found in Shoals' source document JX-0126C and Mr. Bardos also testified to that number generally at the evidentiary hearing. *See* JX-0126C at "Summary" tab; Tr. (Bardos) at 677:19-678:2. In addition, calculating [redacted] simply involves dividing the number of EV BLAs produced in 2022 ([redacted]) by the number of BLAs produced in 2022 ([redacted]) – *i.e.*, [redacted] = [redacted]. *See* CIB at 140; JX-0126C at "Summary" tab. Calculating the [redacted] reduction simply requires taking [redacted] of Shoals' total Plant and Equipment expenses for the year 2022 – *i.e.*, [redacted]. *See* CIB at 139-140.

Shoals submits amounts to about [redacted] of Shoals' BLA sales. *Id.* Shoals states that [redacted] of Shoals' [redacted] in plant and equipment investments is about [redacted]. *Id.*

Voltage asserts that Shoals failed to prove that some of its alleged DI products practice the '153 patent and that because its investments are presented in the aggregate, it is impossible to exclude investments in non-DI products. RIB at 141. Voltage argues that Shoals' economic expert, Mr. Nelson, relied on Mr. Brooks' opinions for technical domestic industry and assumed that 100% of the BLA products were covered by the '153 patent. *Id.* at 143. Moreover, Voltage contends that Mr. Bardos testified that Shoals' data included investments for every variation of the BLA, including one-drop BLAs and BLAs with odd numbers of drop lines. *Id.* Thus, Voltage argues that Shoals' investments are overstated because they include investments associated with non-DI products. *Id.* at 143-144. Furthermore, Voltage asserts that it is impossible to exclude the non-DI products from Shoals' investments as Mr. Bardos testified that the evidence Shoals produced did not permit him to allocate investments to remove specific BLA products. *Id.* at 144. Voltage argues that evidence presented at the evidentiary hearing suggests that data exists to be able to account for products that do not practice the '153 patent, but that Shoals elected not to produce that data. *Id.*

Staff asserts that Shoals' economic expert, Mr. Nelson, did not exclude non-practicing products such as BLAs having just one drop line and the EV BLAs from his allocations. SIB at 65-66. Staff therefore argues that it is impossible to accurately calculate Shoals' investments in products that practice the '153 Patent, even if Shoals' arguments regarding the technical prong were accepted. *Id.* at 66. Thus, Staff contends that even if Shoals can show that certain BLA products satisfy the technical prong, Shoals has not met its burden to show that the economic prong has been satisfied. *Id.* at 66-67.

Discussion

To establish a domestic industry, Shoals must show "with respect to the articles protected by the patent," "(A) significant investment in plant and equipment; (B) significant employment of labor or capital; or (C) substantial investment in its exploitation, including engineering, research and development, or licensing. 19 U.S.C. § 1337(a)(3). As discussed above with respect to technical prong, the DI Product asserted by Shoals is an "entire assembly" that includes the mold drops and the entire BLA lead assembly is the article protected by the patent for purposes of the domestic industry requirement. *See supra* at Part VII; *see also* CIB at 7-8; Tr. (Bardos) at 658:5-10, 798:23-799:13 ("one individual mold drop is only a subpart of a Big Lead Assembly"); Tr. (Macias) at 217:21-218:9 ("BLA product is a prefabricated cut-to-length solution that has a number of mold drops and various input leads along the length of that BLA completed solution"); Tr. (Brooks) at 471:22-23; Tr. (Tolnar) at 336:11-16.[99]

Thus, the undersigned agrees with Shoals that as long as a BLA lead assembly has at least one mold drop that practices the '153 patent, then the BLA is properly included in the domestic industry analysis. And as discussed above, Shoals has demonstrated that the BLA products (excluding products that only include mold drops with one drop line) satisfy the technical prong of the domestic industry requirement. *See supra* at Parts VII.C and VII.D. While a BLA having mold drops with only one drop line would not practice the '153 patent, the record evidence includes only [redacted],

[99] In addition, as discussed above, the undersigned disagrees with Voltage's and Staff's argument (raised on reply) that Shoals' identification of the DI products should be precluded. *See supra* at Part VII.

which amounts to about [redacted] of Shoals' BLA sales.[100, 101] *See* CIB at 141, Tr. (Bardos) at 742:20-743:24; *cf.* JX-0206C (Brooks Dep.) at 274:22-275:3 (explaining that "a four-drop line would probably be the most common" configuration), 271:1-10 (single drop line configuration "would be extremely rare in a design of a power plant").

As for the EV BLA, the record evidence demonstrates that its effect on Shoals' domestic investments is minimal. First, Mr. Bardos testified that any revenue generated from EV BLA harnesses were not included in the total BLA revenue. *See* Tr. (Bardos) at 678:3-6, 738:25-739:7; JX-0126C. Additionally, in 2022, the only year during the relevant time period (*i.e.*, 2019-2022) where Shoals manufactured the EV BLA, Shoals only manufactured [redacted]. *See* JX-0126C at "Summary" tab; *see also* Tr. (Bardos) at 677:25-678:6. In contrast, Shoals manufactured [redacted] and Shoals manufactured [redacted]. *See* CIB at 140; JX-0126C at "Summary" tab. Thus, Shoals' EV BLA production amounts to about [redacted] of its total BLA production in 2022 (the only year during the relevant time period when the EV BLA was manufactured). As Shoals states, with respect to its investments in plant and equipment, this only amounts to about [redacted] for the year 2022.[102] *See* CIB at 140; JX-0126C at "Summary" tab. Such a small proportion of Shoals' investment in plant and equipment does not materially affect the domestic industry analysis, particularly when all of the manufacturing for the BLA is done in the U.S. *Cf.* JX-0205C (Bardos Dep.) at 300:2-18 (Mr.

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[100] Voltage argues that this is a brand-new contention that should be stricken. *See* RRB at 69-70. The undersigned finds this argument unpersuasive. Mr. Bardos testified to the [redacted] revenue amount at the evidentiary hearing, which Voltage did not object to. *See* Tr. (Bardos) at 742:20-743:24. In addition, calculating [redacted] simply requires dividing the revenue of the one-drop line BLAs ([redacted]) by the total BLA revenue from 2019 to 2022 ([redacted]) – *i.e.*, [redacted]. *See* CIB at 141; JX-0126C at "Summary" tab.

[101] There appears to have been another customer sample of a one-drop line BLA, but the record evidence shows that resulted in [redacted] of revenue. *See* Tr. (Bardos) at 743:9-16.

[102] *See supra* at n.98.

Bardos testifying that the same technology and same types of manufacturing processes are used for the EV BLA).

Accordingly, BLA products having at least one mold drop with more than one drop line are properly included in the domestic industry analysis. In addition, any investments in one-drop line BLAs or EV BLAs do not meaningfully affect the domestic industry analysis.

C. Domestic Investments and Allocation

1. Allocation Methodology

Shoals' expert, Mr. Nelson, applies several different allocation methodologies in his domestic industry analysis. First, under plant and equipment, for acquisition costs, rent expense, and some plant expenses, Mr. Nelson employs a square footage-based allocation by calculating the BLA footprint in Plants 1 and 4. *See* CIB at 134-137; CDX-0012C at 8-14. He calculates the BLA footprint in Plant 1 as the square footage of Plant 1 that is dedicated to BLA production ([redacted]) divided by Plant 1's total square footage ([redacted]), which equals [redacted] *See* CIB at 135; Tr. (Nelson) at 823:6-15; CDX-0012C at 9. He also calculates the BLA footprint in Plant 4 as the square footage of Plant 4 that is dedicated to BLA production ([redacted]) divided by Plant 4's total square footage ([redacted], which equals [redacted]. *See* CIB at 134; Tr. (Nelson) at 822:15-823:1; CDX-0012C at 8.

For repairs and maintenance and utilities under plant expenses, which are tracked in Shoals' general ledger as a single account covering Plant 1 and Plant 2 (another facility in Tennessee that Shoals owns), Mr. Nelson applied a square footage-based allocation by calculating the BLA footprint in Plants 1 and 2. *See* CIB at 137 (citing Tr. (Nelson) at 825:24-826:24). He calculates the BLA footprint in in Plants 1 and 2 as the square footage of Plant 1 that is dedicated to BLA production ([redacted]) divided by Plant 1 and 2's combined total square

footage ([redacted]), which equals [redacted]. *See* CIB at 134; Tr. (Nelson) at 825:24-826:4; CDX-0012C at 14-15.

For tooling charges and factory supplies under plant and equipment, and indirect manufacturing labor compensation, trade shows, and SG&A[103] under labor and capital, Mr. Nelson employs a revenue-based allocation according to the share of revenues contributed by the BLA – *i.e.*, percentage calculated by dividing the BLA revenues by Shoals' total Tennessee revenues. *See id.* at 137-138 (citing Tr. (Nelson) at 826:25-828:7; CDX-0012C at 15-16), 145 (citing Tr. (Nelson) at 831:15-832:4; CDX-0012C at 22), 148-149 (citing Tr. (Nelson) at 833:9-25; CDX-0012C at 24). He calculates this by dividing the BLA revenues ([redacted]) by Shoals' total Tennessee revenues ([redacted]), which equals [redacted]. *See* CIB at 138; Tr. (Nelson) at 826:25-828:7, 831:15-832:6, 833:9-25, 835:25-836:21; CDX-0012C at 15-16, 22, 24, 27, 28.

For R&D labor compensation, Shoals states that current R&D personnel were interviewed to identify current and former personnel who had participated in R&D relating to the DI products and that they developed estimates for the amount of time each identified employee spent on R&D for the BLA product in each year. CIB at 146; Tr. (Bardos) at 733:4-734:18. There was no additional allocation by Mr. Nelson. *See* Tr. (Nelson) at 832:7-22.

For administrative labor under labor and capital, Mr. Nelson employs a revenue-based allocation according to the share of revenues contributed by the BLA – *i.e.*, percentage calculated

[103] Shoals' post-hearing brief states that Mr. Nelson allocated SG&A expenses based on using BLA revenues as a percentage of Shoals' worldwide revenues. *See* CIB at 154-155. However, Mr. Nelson's testimony from the evidentiary hearing and associated demonstrative seems to indicate that he allocated the SG&A expenses based on BLA revenues as a percentage of Shoals' Tennessee revenues. *See* Tr. (Nelson) at 839:13-21; CDX-0012C at 28. Given that the BLA share of Tennessee revenue ([redacted]) is very similar to the BLA share of worldwide revenue ([redacted]), the undersigned finds that this discrepancy does not materially affect the domestic industry analysis.

by dividing the BLA revenues by Shoals' worldwide revenues. *See id*. at 149-150 (citing Tr. (Nelson) at 834:1-10; CDX-0012C at 25). Shoals submits that its worldwide revenues are used in this context because this category of personnel supports Shoals' worldwide operations. *Id*. He calculates this allocation by dividing the BLA revenues ( ) by Shoals' worldwide revenues ( ), which equals . *See* CIB at 149-150; Tr. (Nelson) at 834:1-10; CDX-0012C at 25.

For direct labor expenses (payroll taxes and benefits) under labor and capital, Mr. Nelson allocated a portion of Shoal's total Tennessee direct labor benefits, payroll taxes, and contract labor to the BLA using a percentage calculated by dividing the BLA direct labor compensation by Shoals' total Tennessee direct labor payroll. *See id*. at 151 (citing Tr. (Nelson) at 830:22-831:14; CDX-0012C at 21). He calculated this by dividing the BLA-specific direct labor compensation ( ) by Shoals' total Tennessee direct labor payroll ( ), which equals . *See* CIB at 151; Tr. (Nelson) at 830:22-831:14; CDX-0012C at 21. Similarly, for non-direct labor expenses (payroll taxes and benefits) under labor and capital, Mr. Nelson allocated a portion of Shoal's total Tennessee non-direct labor benefits, payroll taxes, and contract labor to the BLA using a percentage calculated by dividing the BLA non-direct labor compensation by Shoals' total Tennessee non-direct labor payroll. *See* CIB at 152; Tr. (Nelson) at 834:18-835:9; CDX-0012C at 26. He calculated this by dividing the BLA-specific non-direct labor compensation ( ) by Shoals' total Tennessee non-direct labor payroll ( ), which equals . *See* CIB at 152; Tr. (Nelson) at 834:18-835:9; CDX-0012C at 26.

Lastly, for anything "uniquely identified as [] pertaining to the BLA," Mr. Nelson allocated 100% of that investment. *See* Tr. (Nelson) at 822:15-823:5. For example, for

manufacturing equipment dedicated to BLA production under plant and equipment, Mr. Nelson allocates 100% of Shoals' investments. *See id.*; CIB at 134. In addition, for Shoals' direct labor force consisting of hourly wage labor used in the direct manufacturing of the products, Mr. Nelson allocated 100% of the compensation associated with those positions to the BLA. CIB at 145; Tr. (Nelson) at 830:6-20.

Voltage challenges the reliability of Shoals' square footage allocations. RIB at 148. Voltage submits that an unknown employee may have looked at blueprints of the facilities, that Mr. Bardos also claimed to have looked at the blueprints, but that Shoals never produced those blueprints. *Id.* In addition, with respect to R&D labor, Voltage asserts that the time estimates underlying Shoals' R&D labor investments lack evidentiary value. *Id.* at 153. Voltage contends that Shoals estimated the amount of time each employee spent on R&D without reference to any documents and that those estimates are not only uncorroborated, but also inconsistent with the record evidence. *Id.* at 153-154. In addition, Voltage asserts that Shoals failed to produce any evidence of who was interviewed or how the current R&D personnel identified the current and former personnel who had participated in R&D. RRB at 73. For example, Voltage submits that "Shoals allocated [redacted] of Mr. Dean Solon's time to R&D on all DI Products in 2021 even though he testified during his deposition that [redacted]'" RIB at 154. In addition, Voltage claims that Mr. Clark found inconsistencies with several employees who were identified in one spreadsheet as having no time dedicated to R&D but were also identified in another spreadsheet as contributing [redacted] of their time. *Id.* at 154-155. Voltage also asserts that Shoals performed an additional allocation between the in-line fuse and the BLA products where Shoals allocated [redacted] of R&D time to the BLA for every year between 2019 and 2022. *Id.* at 156. Voltage argues that Shoals presented no evidentiary support for the [redacted] allocation. *Id.*

The undersigned finds as follows. As an initial matter, Voltage does not oppose the bulk of Mr. Nelson's allocation methodologies – for example, with respect to the revenue-based allocations, allocations based on a percentage of direct labor compensation to Tennessee direct labor payroll, and 100% allocation for anything exclusively pertaining to the BLA.[104] *See generally* RIB at 147-160; RRB at 70-78; *Certain Movable Barrier Operator Systems and Components Thereof* ("*Movable Barrier*"), Inv. No. 337-TA-1118, Comm'n Op., EDIS Doc. ID 730303, at 23 (Jan. 12, 2021) (Commission accepting accuracy and reliability of allocations, *inter alia*, in ID where respondents never challenged complainant's reliance on sales-based allocations as a general proposition). In addition, having reviewed the parties' submissions and based on the record presented, the undersigned finds these allocation methodologies as applied by Mr. Nelson are reasonable under the circumstances.[105]

With respect to the square footage-based allocations, the undersigned finds that Shoals' estimates are reasonable and reliable. Mr. Bardos explained that based on his understanding, Shoals' facilities manager, Joe Sprouse, reviewed blueprints of Plant 1 and Plant 4 facilities to identify the floor space dedicated to BLA production, and that Mr. Bardos himself (who is familiar with the manufacturing floor) reviewed the blueprints to confirm that the estimates made sense. *See* JX-0205C (Bardos Dep.) at 312:6-315:10; Tr. (Bardos) at 657:11-16, 778:18-21). In addition, Shoals' expert, Mr. Nelson, also visited Shoals' facilities. *See* Tr. (Nelson) at 822:1-

[104] Staff does not address Shoals' allocation methodology. *See generally* SIB at 65-75; SRB at 39-44.

[105] "[A] complainant is not obligated to use a particular allocation methodology." *Certain High-Density Fiber Optic Equip. & Components Thereof*, Inv. No. 337-TA-1194, Comm'n Op., EDIS Doc. ID 750094, at 65 (Aug. 23, 2021). Rather, "all that is required is the use of reasonable allocations for the purposes of establishing the economic prong of the domestic industry requirement." *Certain Solid State Storage Drives, Stacked Elecs. Components, and Prods. Containing Same*, Inv. No. 337- TA-1097, Comm'n Op., EDIS Doc. ID 649139, at 21 (June 29, 2018). In addition, complainants need not provide a "precise accounting" of their expenditures so long as their allocations are reasonable under the circumstances. *See Movable Barrier*, Comm'n Op. at 28.

824:3. The undersigned finds this witness testimony sufficiently reliable to support the domestic industry analysis. *See Certain Elec. Devices, Including Mobile Phones, Portable Music Players & Computs.* ("*Elec. Devices*"), Inv. No. 337-TA-701, Order No. 58, EDIS Doc. ID 439031, at 5 (Nov. 18, 2010) ("[T]he Administrative Law Judge declines as a matter of law to give credence to Apple's pro forma objections that Nokia has failed to give a precise accounting or failed to provide underlying documentation for sworn witness testimony."), *unreviewed by* Comm'n Notice, EDIS Doc. ID 440675 (Dec. 20, 2010).[106]

As to R&D, the undersigned finds that the time and wage estimates provided in spreadsheet JX-0133C are not supported by the record evidence because Shoals' allocation methodology is insufficiently reliable. Mr. Bardos, the only witness at the evidentiary hearing to testify as to the underlying time and wage estimates in JX-0133C, provided a vague description of how the team identified employees that were involved in research and development efforts during the relevant time period. *See* Tr. (Bardos) at 732:7-733:1. He further stated that exhibit JX-0133C listed those employees and the team designated whether those employees were involved in R&D efforts relating to the DI products. *See id.* at 733:4-10. Mr. Bardos clarified that he did not have any personal knowledge of the inputs into JX-0133C and that "Ms. Lund and the team" were the ones who solicited the exact inputs into that spreadsheet. *See id.* at 750:1-7. Nor did Mr. Bardos appear to know specifically how the allocation percentages in JX-0133C were determined. *See id.* at 764:4-767:2. This is consistent with his deposition testimony where Mr. Bardos could not provide the names of employees that were asked about their time spent

[106] The undersigned also notes that Mr. Nelson's allocation with respect to acquisition cost category (iv) – *i.e.*, equipment supporting manufacturing operations either in Plant 1, or in Plants 1 and 4 more generally – may be a conservative approach as he allocated those expenses based on the BLA footprint in Plant 1, which is [redacted] than the BLA footprint in Plant 4. *See* Tr. (Nelson) at 823:7-824:11.

working on the DI products and could not attest to how the allocation percentages were determined. *See* JX-0205C (Bardos Dep.) at 345:12-351:9 ("Yeah, I have to rely on the engineering experts on the methodology."); *id.* at 346:16-17 ("But I don't know the precise list of exactly who was, you know, spoken to on that topic."); *id.* at 347:5-9 ("I'm not an expert in the research and development. I cannot say how they determined or how they spend their time."); *id.* at 348:20-349:2 ("I do not know their exact method.").

The undersigned also finds that certain inconsistencies in Shoals' spreadsheet indicate that Shoals' R&D allocations are insufficiently reliable. Exhibit JX-0133C includes an "In/Out" column (Column I) that indicates whether Shoals designated that an individual contributed to R&D for the DI products. *See* JX-0133C, "RD_EN Summary w %" tab; Tr. (Bardos) at 732:7-733:10. On the "RD_EN Summary w %" tab in that exhibit, [redacted] are identified as "out" and have no percentage time estimates for any of the relevant years. *See* JX-0133C, "RD_EN Summary w %" tab; Tr. (Clarke) at 1006:21-1007:14. In addition, [redacted] is identified as "in," but also has no percentage time estimates for any of the relevant years. *See id.* Despite these employees not having any time estimates, they are included at 100% of their time in exhibit JX-0133C at the "EN_RD Wages Expense by Year" tab, which lists all three employees as included in R&D labor. *See* JX-0133C, "EN_RD Wages Expense by Year" tab; Tr. (Clarke) at 1007:15-1008:1. Similarly, Mr. Nelson's updated Schedule 11 included all three employees at 100% of their time. *See* RDX-0015C at 23; JX-0197C at 2; Tr. (Clarke) at 1007:15-1008:1. Mr. Bardos's only explanation for these individuals is that "these were individuals identified as spending all their time on research and development efforts for the products, originally the '739 and '254, which also includes a Big Lead Assembly now." *See* Tr. (Bardos) at 734:19-735:4. Given the conflicting information within JX-0133C, in addition to the

conflict between JX-0133C and Mr. Bardos's testimony, that is yet another reason that Shoals' R&D allocations are unreliable.

In addition, Shoals did not present credible evidence to support allocating [redacted] of Mr. Dean Solon's time from 2019 to 2021 to R&D for the DI products. Mr. Solon testified that his role at Shoals as of January 2021 was "[redacted]" and that he "[redacted]." *See* JX-0217C at 118:6-10. Furthermore, he described how his roles at the company lessened starting in January 2021 through his retirement in 2022. *See id.* at 119:19-120:5.

Taken as a whole, Shoals' R&D labor allocation methodology is insufficiently reliable and thus the undersigned has not credited those investments.

2. Plant and Equipment

Shoals submits investments in plant and equipment that are grouped into three categories: (1) acquisition costs; (2) rent; and (3) other plant expenses. CIB at 134. The investments are also divided into the following time periods: pre-2019, 2019, 2020, 2021, and 2022. *Id.* For acquisition costs, Shoals relies on its audited fixed-asset list. *Id.* at 134. Mr. Nelson further divided the acquisition costs into the following categories: (i) Plant 1; (ii) manufacturing equipment dedicated to BLA production; (iii) equipment supporting manufacturing operations in Plant 4; and (iv) equipment supporting manufacturing operations either in Plant 1, or in Plants 1 and 4 more generally. *Id.* Shoals submits that it makes the BLA at Plant 1, which Shoals purchased in [redacted], and Plant 4, which was leased in [redacted]. *Id.* Mr. Nelson allocated Shoals' investments in acquisition costs using the methodology described above. *Id.*; *see also supra* at Part VIII.C.1. Mr. Nelson therefore allocated the acquisition costs as shown below:

Acquisition Costs					
Pre-2019	2019	2020	2021	2022	Total
[redacted]					

Id. at 135; JX-0091C, "Fixed Asset List" tab; JX-0195C at 3; JX-0270C; CDX-0012C at 17. Shoals disputes Voltage's argument that it overstates the purchase price of Plant 1 because it was not used for BLA production [redacted]. *See* CRB at 66. Shoals argues that all of the space allocated to the BLA is necessary for production and that there is no evidence that the value of Plant 1 has declined. *Id.*

Shoals also allocates rent for Plant 4 to the BLA. CIB at 136. Mr. Nelson allocated this corresponding to the Plant 4 BLA footprint. *Id.* For [redacted], which is the year that Shoals asserts that it began making the BLA in Plant 4, Shoals submits that the allocated share of rent is [redacted]. *Id.* at 137; CDX-0012C at 17.

Shoals submits that Mr. Nelson divides the third category of plant expenses into five categories: (i) real estate and property taxes; (ii) repairs and maintenance; (iii) utilities; (iv) tooling charges; and (v) factory supplies. *Id.* Mr. Nelson relied on county records and Shoals' general ledger for the underlying data for these categories. *Id.* Mr. Nelson allocated these expenses as described above. *Id.* at 137-138; *see also supra* at Part VIII.C.1. Mr. Nelson therefore allocated the plant expenses as shown below:

Plant Expenses				
2019	2020	2021	2022	Total
[redacted]				

Id. at 139; JX-0271C; JX-0276C; CDX-0012C at 17.

In response to Mr. Clarke's criticism that some of the Plant 1 and Plant 4 square footage allocated to the BLA is used for warehousing and distribution, Shoals contends that its source document identifies this space as "Raw Materials/Finished Good." CIB at 142-143. According to Shoals, it makes and delivers BLAs on a schedule developed in consultation with each customer for each other. *Id.* Shoals states that "[t]his requires Shoals to have space for all the raw materials that will be required to fill each stage of an order, when it starts production; and it also requires Shoals to have space to store individual products are they are finished, until a deliverable subset of the entire order is completed and ready for trucking." *Id.* Shoals argues that unlike warehousing and distribution, these staging areas are essential for the production and sale of the BLA products and are therefore properly included in Shoals' DI investments. *Id.*; CRB at 64-65. Moreover, Shoals argues that even if those spaces were considered warehousing, they should be included in the domestic industry because rather than being a mere importer, Shoals develops and manufactures the BLA exclusively in the U.S. CRB at 65-66.

In response to Voltage's arguments regarding the inclusion of factory supplies, Shoals contends that plant and equipment expenses may include overhead. *Id.* at 66-67. In addition, Shoals submits that Mr. Bardos testified that those factory supplies are used to support the BLA, and directly relate to BLA production. *Id.* at 67.

Voltage argues that there are three significant flaws with Shoals' analysis under subsection (A): "(1) Shoals failed to separately quantify warehouse and distribution-type activities; (2) Shoals ignored the element of time for the purchase price of Plant 1; and (3) Shoals included factory supplies as an investment without evidentiary support." RIB at 146-147.

Voltage asserts that "[w]arehouse and distribution activities are generally viewed by the Commission as unrelated to the 'intellectual property right concerned.'" *Id.* at 147; RRB at 71.

Voltage claims that neither Plant 1 nor Plant 4 is solely dedicated to the BLA nor are they substantially used for manufacturing. RIB at 148. For example, Voltage contends that Mr. Bardos testified that only [redacted] of the [redacted] square feet in Plant 1 allocated for the BLA is used for production while [redacted] square feet is used for warehousing and staging. *Id.* Similarly, Voltage contends that Mr. Bardos testified that only [redacted] of the [redacted] square feet in Plant 4 allocated for the BLA is used for production with the remainder used for warehouse and distribution. *Id.* Voltage argues that "Shoals should have quantified its investments based on true manufacturing space separately from its investments based on mere warehousing and distribution space" and that "Shoals instead aggregated its much larger space used for warehousing and distribution with its much smaller space used for actual manufacturing, thereby skewing and artificially inflating its subsection (A) investments." *Id.* at 149. Furthermore, Voltage contends that Shoals did not distinguish between pre- and post-production warehouse space. RRB at 72. Voltage claims that "[w]hile the storage of raw materials for the manufacture of the BLAs is necessary for the production of the BLA, storage of the finished BLA is not." *Id.*

In addition, Voltage asserts that Shoals erred in using the full Plant 1 purchase price of [redacted] million when Plant 1 was not used for BLA production until [redacted] after it was purchased. RIB at 151. Voltage argues that "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." RRB at 70. Thus, Voltage contends that Shoals should have discounted Plant 1's acquisition cost to account for the [redacted] before it started production of the BLA. *Id.* at 71.

Voltage also argues that Shoals lacks evidentiary support to justify its investments in factory supplies. RIB at 152; RRB at 73. Voltage asserts that Mr. Bardos was not exactly sure about the content of factory supplies. RIB at 152. In addition, Voltage submits that Shoals failed to provide evidence on how cleaning materials and other disposable product relate to the manufacture of the DI products. *Id.* Voltage also claims that shipping supplies have no direct bearing on the manufacture of the DI products. *Id.*

The undersigned finds as follows. With respect to Shoals' acquisition of Plant 1 in [redacted] as discussed above, the record evidence shows that the space allocated to the BLA is necessary for production. *See* JX-0205C (Bardos Dep.) at 312:6-315:10. In addition, the undersigned is not aware of any Commission precedent requiring the use of depreciation as opposed to acquisition cost. Moreover, complainants need not provide a "precise accounting" of their expenditures so long as their allocations are reasonable under the circumstances. *See Movable Barrier*, Comm'n Op. at 28; *Stringed Instruments*, Comm'n Op., at *16 ("[T]here is no need to define or quantify the industry itself in absolute mathematical terms."). Thus, the undersigned finds no persuasive reason not to credit the acquisition of Plant 1.[107]

As to space that Voltage alleges is dedicated to warehouse and distribution, the undersigned finds that those portions of Plants 1 and 4 are properly included in the domestic industry, particularly because the BLA is manufactured exclusively in the U.S. *See, e.g.*, Tr. (Bardos) at 649:19-650:6; *see, e.g.*, *Certain Toner Supply Containers and Components Thereof (I)*, Inv. No. 337-TA-1259, Comm'n Op., EDIS Doc. ID 778370, at 9 (Aug. 19, 2022) (crediting investments in warehousing and storage expenses); *Certain Toner Supply Containers and Components Thereof (II)*, Inv. No. 337-TA-1260, Comm'n Op., EDIS Doc. ID 777011, at 7

[107] Voltage has not presented any evidence that the value of Plant 1 has diminished.

(Aug. 3, 2022) (crediting investments in warehousing and storage expenses); *cf. Certain Batteries and Prods. Containing Same*, Inv. No. 337-TA-1244, Comm'n Op., EDIS Doc. ID 779709, at 12 (Sept. 8, 2022) (crediting labor investments related to packaging). Further, Mr. Bardos explained that certain spaces in Plants 1 and 4, which are referred to as "Raw Materials/Finished Good" in one of Shoals' source documents, are part of the overall production process for the BLA. *See* JX-0091C at "Expense Allocation Support" tab; *see also* Ex. 59C to Am. Compl. at ¶ 15. For example, he describes that [redacted]. *See* Tr. (Bardos) at 650:7-20. Mr. Bardos also testified that [redacted]. *See id*. at 664:1-665:4. For example, he explains that "[redacted]." *Id*. at 664:16-18. The record evidence therefore shows that this space serves an important role in the overall process to produce a finished product for the customer. *See id*. at 703:17-704:1. Thus, Voltage's reliance on the Commission's opinion in the 1226 Investigation, for example, is misplaced. In that investigation, the Commission agreed with the FID that the record did not support including any warehousing and distribution costs, in part, because the domestic industry products were manufactured outside the U.S. and no additional steps occur in the U.S. to make them saleable. *See Certain Artificial Eyelash Extension Sys., Prods. and Components Thereof*, Inv. No. 337-TA-1226, Comm'n Op., EDIS Doc. ID 782895, at 51-52 (Oct. 24, 2022). In contrast, the BLA is only manufactured in the U.S. and the spaces in Plants 1 and 4 at issue are used as part of the overall production process.

Similarly, for factory supplies, the undersigned finds that investments are properly included in the domestic industry, particularly because the BLA is manufactured exclusively in the U.S. *See, e.g.*, Tr. (Bardos) at 649:19-650:6. Mr. Bardos testified that factory supplies [redacted] *See id.* at 708:3-15; *see also* JX-0205C (Bardos Dep.) at 332:10-333:2. Items such as [redacted] clearly go towards production of the BLA. Additionally, as described above, the pre-production/pre-manufacturing staging and the post-production staging, which utilizes some of these factory supplies is part of the overall production process for the BLA. *See* Tr. (Bardos) at 674:18-675:22, 650:7-20.

Accordingly, the undersigned finds that Mr. Nelson's calculations regarding Shoals' investments in plant and equipment, as shown below, are reasonable and sufficiently supported by the evidence of record.

Plant and Equipment						
	Pre-2019	2019	2020	2021	2022	Total
Acquisition	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Rent					[redacted]	[redacted]
Plant expenses		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Total						[redacted]

See CIB at 139; Tr. (Nelson) at 829:21-830:1; CDX-0012C at 17; JX-0091C, JX-0134C, JX-0195C, JX-0270C; JX-271C, JX-0276C.

3. Labor and Capital

Shoals' expert, Mr. Nelson, analyzed and categorized Shoals' labor investments into five compensation categories (direct manufacturing, indirect manufacturing, R&D, sales and project management, and administrative labor) and two expense categories (direct and non-direct). CIB at 144. Shoals submits that its "direct labor force consists of 'hourly wage labor used in the direct manufacturing . . . of the products . . . and also the inspectors that are also assigned hourly wage overseeing the production quality.'" *Id.* at 145. Mr. Nelson allocated 100% of the compensation associated with these positions from 2019 to 2022 to the BLA as shown below:

Direct Manufacturing Labor Compensation				
2019	2020	2021	2022	Total
[redacted]				

Id.; Tr. (Nelson) at 830:6-11; CDX-0012 at 19; JX-0272C at 2; JX-0133C; JX-0196C.

Shoals also submits that its indirect labor is "'not directly hands-on working on the manufacture' but is instead 'overseeing all of the production aspects on the floor.'" CIB at 145. As previously discussed, Mr. Nelson allocated these investments according to the BLA share of Shoals' overall revenues from its Tennessee manufacturing operations as shown below:

Indirect Manufacturing Labor Compensation				
2019	2020	2021	2022	Total
[redacted]				

Id. at 145-146; Tr. (Nelson) at 831:15-832:6; CDX-0012 at 19; JX-0272C at 2; JX-0133C; JX-0196C; JX-0276C.

In addition, as discussed above, Mr. Nelson allocated the R&D compensation based on time estimates for employees identified as performing R&D on the DI Products as shown below:

R&D Labor Compensation				
2019	2020	2021	2022	Total
[redacted]				

CIB at 146-147; Tr. (Nelson) at 832:7-22; CDX-0012C at 19; JX-0133C; JX-0197C. Shoals submits that although Voltage's expert seems to question certain pay increases to corporate officers post-IPO, that is not grounds for disputing that Shoals made the investments claimed in the BLA. CIB at 148.

Shoals also divides the general SG&A compensation category into two subcategories: (i) sales and project management and (ii) administrative.[108] *Id*. According to Shoals, sales and project management labor support Tennessee operations and predominantly the BLA. *Id*. at 148. Shoals also contends that its sales team, sales integration team, and customer service team work very closely with its customers to make sure that the orders match exactly what the customer's need in a very consultative approach. *Id*. at 148-149. As discussed above, Mr. Nelson allocated sales and project management labor using used Shoals' share of Tennessee revenues as shown below:

Sales and Project Management Labor Compensation				
2019	2020	2021	2022	Total
[redacted]				

Id. at 149; Tr. (Nelson) at 833:9-25; CDX-0012C at 19; JX-0272C at 2; JX-0133C; JX-0196C; JX-0276C.

[108] In response to Voltage's and Staff's arguments that Shoals' SG&A expenses should carry less weight, Shoals contends that it is not a mere importer. *See* CRB at 69-70. Thus, Shoals submits that its sales, administrative, and customer support teams are critical to support the BLA, and that "Shoals is not relying solely on marketing expenses to satisfy the economic prong." *Id*. at 70.

Next, Shoals submits that the administrative labor category of labor "captures everyone who supports BLA production, other than direct, indirect, R&D, and sales and project management personnel." CIB at 149. For example, Shoals contends that "[t]hese are people who perform 'more back-office . . . functions' that support Shoals' worldwide operations—operations that are dominated by, but not limited to, BLA production in Tennessee." *Id*. As discussed above, Mr. Nelson allocated these investments according to the percentage share of Shoals' worldwide revenues as shown below:

Administrative Labor Compensation				
2019	2020	2021	2022	Total
[redacted]				

Id. at 150; Tr. (Nelson) at 834:1-10; CDX-0012C at 19; JX-0272C; JX-0796C; JX-0133C; JX-0196C; JX-0276C. In response to Voltage's criticisms regarding SG&A labor investments, Shoals argues that Mr. Nelson calculated those expenses separately and that the size of Shoals' SG&A payroll demonstrates how significant its domestic manufacturing and customer support operations are. CIB at 150-151 ("if Shoals were merely passing along imported goods to the domestic market, its administrative overhead would be significantly smaller; conversely, managing a substantial manufacturing and customer support operation takes more administration than merely brokering imported goods").

In addition, Shoals' asserts direct labor expenses, which include labor-related investments in payroll taxes and benefits and investments in temporary contract employees that work side by side with its employees, doing the same work on the floor, on the same lines, often on the same machines. *Id*. at 151. As discussed above, Mr. Nelson allocated Shoals' direct labor expenses by

using BLA-specific direct labor compensation as a percentage of Shoals' total Tennessee direct labor payroll as shown below:

Direct Labor Expenses				
2019	2020	2021	2022	Total
[redacted]				

Id.; Tr. (Nelson) at 830:22-831:14; CDX-0012C at 19; JX-0272C at 2; JX-0133C; JX-0196C. In response to Voltage's argument that Shoals' direct labor expenses are overstated, Shoals contends that contract labor is properly included as a qualifying domestic investment and is necessary to enable Shoals to scale production. *See* CRB at 70-71.

Lastly, Shoals submits investments in non-direct labor expenses – *i.e.*, the share of Shoals' payroll taxes and benefits for all categories of labor other than direct labor. CIB at 152. As described above, Mr. Nelson allocated those investments the non-direct labor compensation that he had allocated to the BLA, divided by Shoals' total non-direct labor payroll, multiplied by Shoals' total non-direct payroll taxes and benefits for Tennessee as shown below:

Non-direct Labor Expenses				
2019	2020	2021	2022	Total
[redacted]				

Id.; Tr. (Nelson) at 834:18-835:15; CDX-0012C at 19; JX-0133C; JX-0272C; JX-0196C.

As for capital, Shoals asserts investments in trade shows expenses. CIB at 153. Shoals asserts that its President and CFO both testified about the importance of trade shows to its BLA marketing efforts. *Id.* Mr. Nelson allocated these expenses using the BLA share of Tennessee revenues percentages as shown below:

Trade Show Expenses				
2019	2020	2021	2022	Total
[redacted]				

Id.; Tr. (Nelson) at 835:25-836:10; CDX-0012C at 27; JX-0268C at 2; JX-0134C; JX-0275C; JX-0276C. In response to Staff's characterization of the trade shows as a chance to "wine and dine" and "relax," Shoals argues that Mr. Bardos explained that he spent time at the trade show speaking to potential customers and showcasing the BLA. CIB at 154 (citing Tr. (Bardos) at 711:14-25). Moreover, Shoals contends that the only overseas trade show appearance by Shoals was in 2023, outside the period covered by Mr. Nelson's calculation, and thus, no international trade show expenses have been claimed by Shoals. *Id.* (citing Tr. (Tolnar) at 358:6-359:1).

The final category that Shoals submits regarding labor and capital is SG&A expenses, which Shoals states includes advertising and promotion, computer and internet expenses, dues and subscriptions, insurance, marketing, office supplies, outside contract services, other supplies, and travel expenses. *Id.* at 154-155. Shoals asserts that all outside contract services vendors are domestic. *Id.* at 155. As previously described, Mr. Nelson allocated these expenses using BLA revenues as a percentage of Shoals' worldwide revenues as shown below:

SG&A Expenses				
2019	2020	2021	2022	Total
[redacted]				

Id.; Tr. (Nelson) at 836:13-21; JX-0268C at 2; JX-0275C at 2; JX-0134C; JX-0276C; CDX-0012C at 28.

Voltage argues that there are three major flaws with Shoals' analysis under subsection (B): "(1) the data underlying the R&D labor is unreliable and inconsistent; (2) Mr. Nelson failed

to separately quantify expenses related to sales, marketing, and adminstrative [*sic*] activities; and (3) the direct manufacturing labor expense is overstated." RIB at 153.

As discussed above with respect to Shoals' allocation methodology, Voltage asserts that the time estimations underlying Shoals' R&D labor investments lack evidentiary value. *Id*. In addition, Voltage claims that Shoals' R&D labor also includes "unexplained multiples of compensation." RIB at 156. For instance, Voltage states that "[redacted] compensation in [redacted] was roughly [redacted], and then in [redacted], his compensation almost tripled to [redacted]." *Id*. at 157. Voltage argues that Shoals did not explain these significant increases and that there is no way to know whether those increases relate to R&D for the DI products. *Id*.; RRB at 75 ("If the increases are not attributable to the DI Products, for example if they were payouts associated with Shoals' IPO, then they inflate the DI investment."). Moreover, even if these investments were credited, Voltage argues that by the end of 2022, "they decrease to almost nothing." RIB at 157. Voltage submits that at most, Shoals had only [redacted] conducting R&D on the BLA in 2022. *Id*.

In addition, Voltage asserts that Shoals overstates its investments under subsection (B) by including both SG&A labor and SG&A expenses. RRB at 75. Voltage claims that the Commission considers sales, marketing, and administrative activities to be akin to those of a mere importer and ascribes them less weight in assessing a domestic industry. *Id*. at 75-76. Voltage argues that while SG&A employees may be important to the success of Shoals as whole, that does not mean they are integral to the manufacture of any patent practicing BLAs and thus SG&A is entitled to less weight. *Id*. at 76. Additionally, similar to some of the R&D labor, Voltage contends that some of the SG&A salaries increased substantially without explanation. *Id*. at 159.

With respect to Shoals' SG&A expenses, Voltage argues that investments in contract services were extensive. *Id.* at 159. Voltage also contends that investments in trade shows are not cognizable because they are sales and marketing events. *Id.* Volage further asserts that trade show expenses for international trade shows have no nexus to a domestic industry. *Id.* at 160. In addition, Voltage asserts that the evidence shows that Shoals maintained sales offices outside the U.S. RRB at 77.

Voltage also contends that Shoals' direct manufacturing labor is overstated because of its investments in contract labor. RIB at 160. Voltage argues that "Shoals contracts with third parties which provide the laborers, so the [redacted] that Shoals claims to have invested in contract labor reflects what is paid to the agencies, which includes the agencies' overhead." *Id.* Voltage therefore submits that Shoals' expense for contract labor is not an accurate employment of labor in the U.S. *Id.*

Staff contends that "Shoals' alleged labor expenditures under 'Other Capital Investments' represent questionable expenditures" and argues that the entire category should be excluded as non-cognizable expenditure. SIB at 70-71 (calling out "sales and project management labor," "administrative labor," SG&A expenses, and trade show expenses), 73. Staff submits that those alleged expenditures should be excluded, arguing that Shoals was not able to adequately support their inclusion during Mr. Tolnar's and Mr. Bardos's "somewhat conflicting testimonies." *Id.* at 72. Moreover, Staff asserts that "[e]ven if *some* of these expenditures for the '153 Patent could be justified, the fact that Shoals groups them all together with no reasonable way to consider the merits for each of them shows that Shoals is still being overinclusive." *Id.* at 72-73.

The undersigned finds that first, as to direct manufacturing, Shoals' investments related to contract labor are reasonable and qualify toward a domestic industry. Mr. Bardos explained, for

example in reference to a photograph of the manufacturing floor of Plant 4 (excerpt reproduced below), [redacted]



See Tr. (Bardos) at 665:12-20; CDX-0004 at 9. Given the direct connection between the contract labor and the production of the BLA, the undersigned finds no sufficient reason to exclude those investments.

As discussed above, the undersigned finds that Shoals' allocation methodology for R&D labor is unreliable. Accordingly, the undersigned declines to credit Shoals' investments in R&D labor.

As for Shoals' investments in SG&A labor, the undersigned finds that Shoals has shown that its investments in sales and marketing may be taken into account as part of the overall evaluation of domestic industry. The Commission permits consideration of marketing and sales as part of the overall evaluation. *See Certain Vacuum Insulated Flasks and Components Thereof*, Inv. No. 337-TA-1216, Comm'n Notice, EDIS Doc. ID 754803, at 3 (Oct. 21, 2021) ("As the Commission has previously stated, '[w]hile marketing and sales activity, alone, may not be

sufficient to meet the domestic industry test, those activities may be considered as part of the overall evaluation of whether or not a Complainant meets the economic prong.'"); *Certain In Vitro Fertilization Prods., Components Thereof & Prods. Containing the Same*, Inv. No. 337-TA-1196, Comm'n Op., EDIS Doc. ID 755285, at 22-23 (Oct. 28, 2021); *Certain Collapsible Sockets for Mobile Elec. Devices & Components Thereof*, Inv. No. 337-TA-1056, Comm'n Op., EDIS Doc. ID 649819, at 19-20 (July 9, 2018) (explaining that complainant relied on sales and marketing expenditures in addition to "evidence of significant expenditures in its employment of labor in other qualifying activities, such as engineering, product development, product assembly, supply chain and operation management, and customer service, as well as capital expenditures for fixtures, furniture, software, and equipment used for design, engineering, and operating management"); *cf. Certain Artificial Eyelash Extension Sys., Prods., and Components Thereof*, Inv. No. 337-TA-1226, Comm'n Op., EDIS Doc. ID 782895, at 53-54 (Oct. 24, 2022) (agreeing with FID finding that sales and marketing should not be credited towards a domestic industry because complainant did not demonstrate that it had other significant qualifying expenditures).

Here, Shoals has shown domestic investments in other qualifying activities other than sales and marketing. For example, as described above, Shoals has qualifying investments in manufacturing. *See supra*. Moreover, the record evidence also shows that Shoals' sales and project management labor are directly related and important to the BLA. For example, Mr. Bardos described how customers "work very closely" in "a very consultative approach" with the sales team, the sales integration team, and the customer service team "to make sure that [the] orders match exactly what they need." *See* Tr. (Bardos) at 664:7-665:4 ("So that's how they really work together to make sure that needs are being met."); *see also id.* at 736:7-20 (testifying that sales and project management predominantly support the BLA "due to the consultative

nature"). The undersigned finds that, in the context of the evidentiary record as a whole, it is reasonable to credit Shoals' investments in sales and marketing as part of an overall evaluation of domestic industry.

For the same reasons, the undersigned finds that it is reasonable to also credit Shoals' investments in SG&A expenses.[109] *See* CIB at 154-155. These expenses include general capital investments such as advertising and promotion, computer and internet expenses, insurance, and marketing, that can be allocated to the BLA. *See* JX-0275C. In addition, as Mr. Bardos testified, the contract services category goes toward supporting SG&A salaried staff. *See* Tr. (Bardos) at 709:10-710:9. Similarly, the undersigned finds that under these circumstances, Shoals' investments in trade show expenses are properly considered. *See* Tr. (Tolnar) at 359: 8-360:6 (explaining that trade shows are important to Shoals because they meet customers, new customers, potential customers, and are educating them about the conversion process); Tr. (Bardos) at 710:11-712:1 ("So attendance at trade shows is a way that Shoals really can get the name out there, get the product out there, and help educate customers and potential customers about the benefits of the solution.").[110]

Accordingly, other than investments in R&D labor, the undersigned finds that Mr. Nelson's calculations regarding Shoals' investments in labor, and labor and capital, as shown below, are reasonable and sufficiently supported by the evidence of record.

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[109] Furthermore, the undersigned finds that even if these expenses were not credited toward a domestic industry, that would not affect the significance analysis because Shoals' investments in labor (*i.e.*, [redacted]), and specifically, manufacturing labor ([redacted]), would still be significant. *See infra*.

[110] While Voltage argues that some of the trade show expenses were for international trade shows, *see* RIB at 160, the only record evidence of Shoals attending an international trade show was in 2023, and even if Shoals employees did attend such a trade show, it would still be in support of the domestically manufactured DI products. *See* Tr. (Tolnar) at 358:22-359:1.

Labor Investments					
	2019	2020	2021	2022	Total
Direct labor compensation	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Indirect labor compensation	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Sales & project mgmt. comp.	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Administrative compensation	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Direct labor expense	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Non-direct labor expense	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Total	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

See CDX-0012C at 19; Tr. (Nelson) at 830:4-837:7.[111]

Labor and Capital					
	2019	2020	2021	2022	Total
Labor	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
SG&A	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Total					[redacted]

See CIB at 156; Tr. (Nelson) at 837:1-7; CDX-0012C at 29.

D. Significance

Shoals asserts that its investments are quantitatively and qualitatively significant. CIB at 156. First, Shoals argues that its Tennessee investments in plant and equipment and labor and

[111] The above table includes a "Total" column (at right) showing the total investments for each labor category from 2019-2022 as well as a "Total" row (at bottom) showing the total investments for each individual year in all labor categories. The "Total" row differs from Mr. Nelson's demonstrative because it does not include R&D labor as discussed *supra*. In addition, the order of the labor categories in the table matches the order in which they are discussed above (which is different than the order in which they appear in Mr. Nelson's demonstrative). *See supra*; CDX-0012C at 19.

capital are significant and indispensable to the BLA because the BLA is only manufactured in Tennessee, using only domestic plant and equipment and only domestic labor and capital.[112] *Id.*

Additionally, Shoals argues that quantitative significance is demonstrated by the domestic activities' added value to the BLA. CIB at 156. Shoals submits that its "domestic labor on raw materials, performed using domestic plant and equipment, accounted for a weighted average of [redacted] of the value of BLAs sold between 2019 and 2022." *Id.* Shoals asserts that this shows it is "no mere importer and reseller" because "if it were then it could never command prices so far in excess of the price it pays for materials because someone else would start selling for less than Shoals but still above the cost of the materials." *Id.* Shoals argues that including profits is appropriate "because if Shoals were a 'mere importer,' there would be little difference between costs and revenue because there would be no 'opportunity to generate profit.'" CRB at 72-73. According to Shoals, by showing added value of better than [redacted], "Mr. Nelson shows that Shoals cannot be a mere importer, because if it were, its profits would be limited to arbitrage." *Id.* at 73 ("That Shoals' investments are a but-for cause of [redacted] of the revenue derived from the products is a compelling indicator of significance, whether or not there might be additional factors in play."). Moreover, Shoals emphasizes that 100% of the value-add occurs domestically. *Id.* at 73-74. In response to Mr. Clarke's assertion that Shoals should have compared the cost of assembly in the United States to manufacture the BLA to the combination of that cost with the cost of components sourced overseas, Shoals argues that just because other comparisons could

[112] Shoals argues to the extent Mr. Clarke suggests that Shoals should have compared its foreign manufacturing and domestic manufacturing costs, "his argument makes no sense because, as Mr. Clarke acknowledges, Shoals does not engage in foreign manufacture of the BLA." CRB at 72 n.40.

have been made "does not deprive the comparison that was made by Shoals' expert of any of its force."[113] CIB at 158.

As to its labor investments, Shoals' expert analyzed the relative magnitudes of Shoals' manufacturing labor and its sales and project management labor. *Id.* Shoals asserts that its manufacturing to sales labor ratio of [redacted] demonstrates a significant domestic manufacturing operation. *Id.* In addition, while Voltage proposed lowering the ratio by comparing the manufacturing labor to all SG&A labor, Shoals argues that higher administrative labor costs are actually consistent with a greater emphasis on manufacturing. *Id.* at 161. As to Voltage's and Staff's argument that Shoals' manufacturing to sales ratio omitted administrative labor, Shoals submits that "manufacturing is far more administration-intensive than sales administration." CRB at 74. Shoals therefore argues that if administrative labor was included, it would be included in the numerator, not the denominator, and thus would increase the ratio rather than decrease it. *Id.*

Moreover, Shoals argues that its investments are qualitatively significant as "the BLA manufacturing done in Tennessee, by domestic labor using domestic plant and equipment, is driving Shoals' overall growth and success." CIB at 158. For example, Shoals submits that "BLA revenues grew dramatically as a share of overall Shoals revenue, even as overall Shoals revenue also grew," which Shoals asserts "shows that BLA growth is not a beneficiary or by-product of Shoals growth but instead is a driver of that growth." *Id.* at 158-159 (citing Tr. (Nelson) at 840:11–841:25; CDX-0012C at 34-35). Shoals also contends that Mr. Bardos testified to an

[113] Shoals contends that a quantitative analysis of its domestic activity against its foreign activity is not required as it has minimal global sales, activities, and investments, and almost everything it does it domestic. CIB at 156-157 (citing Tr. (Tolnar) at 221:25-222:14; Tr. (Bardos) at 659:9-661:25, 802:18-803:3).

example of a [redacted] transaction that Shoals would have lost without the [redacted] *Id.* at 159-160 (citing Tr. (Bardos) at 745:3-25). In response to Voltage's contention that revenues are not relevant to a significance analysis, Shoals argues that revenue comparisons have been used to assess quantitative significance. CRB at 75.

Shoals also submits that its investments in both plant and equipment and labor and capital grew year over year, thus demonstrating that its investments are significant in the context of its operations. CRB at 72 (citing CDX-0012C.7 (depicting yearly plant and equipment investments based on JX-0091C, JX0134C, JX-0195C, JX-0271C, JX-0276C, and JX-0215C); CDX-0012C.18 (depicting yearly labor and capital investments based on JX-0133C, JX-0134C, JX-0272C, JX-0196C, JX-0197C, JX-0275C, and JX-0276C). In addition, Shoals disagrees with Voltage's contention that it should have provided evidence about facilities in Japan and UAE because it does not have any offices or facilities in Japan or UAE. *Id.* (citing Tr. (Bardos) at 659:12–20, 802:22–803:3, 803:23–804:21).

Although Voltage argues that "Shoals continues to lean heavily on the qualitative fact that its status as a US manufacturer proves that its US investments are significant" (*see* RRB at 78), Voltage does not appear to dispute qualitative significance. *See generally* RIB at 160-164; RRB at 78-79.

Voltage, however, argues that because Shoals' claimed domestic industry investments are overstated, it is impossible to assess the quantitative significance of those investments. RIB at 161. Voltage also asserts that Shoals failed to provide the necessary context of its operations, the marketplace, or the industry in question because it did not provide evidence for investments at its facilities in California and Alabama, and it did not provide evidence regarding its facilities in Japan, the UAE, Arizona, and Georgia. *Id.* at 161-162. Voltage therefore contends that "it is

impossible to assess the significance of Shoals' alleged investments in the context of the company's overall business." *Id.* at 162. To the extent significance is nonetheless assessed, Voltage asserts that each of Shoals' quantitative metrics – value add analysis, manufacturing/sales labor ratio, and revenue growth – is flawed. *Id.*

First, Voltage submits that a value-add analysis should be based on cost of goods instead on revenue because an analysis based on revenue includes all of Shoals' profits, which can be affected by external factors, such as market demand or government policies encouraging solar energy. *Id.*; RRB at 78. Voltage submits that those factors are unrelated to activity performed by Shoals in the U.S. and artificially inflate the value added in the U.S. RIB at 62. As for the manufacturing/sales labor ratio, Voltage argues that Mr. Nelson omitted administrative labor from his calculation even though [redacted] of the labor expenditures he relies on for subsection (B) are attributable to SG&A labor. *Id.* at 163. Voltage contends that Mr. Nelson conceded that if he had included administrative labor, his ratio would have been less than [redacted]. *Id.* Lastly, Voltage argues that sales and revenue are not relevant to a significance analysis. *Id.* Additionally, Voltage submits that even if sales and revenue were relevant, Mr. Nelson's revenue-based metric is overstated because it includes sales or revenue derived from the sale of non-DI products. *Id.* Voltage also claims that revenue is susceptible to influence by external factors, such as market demand or government policies encouraging solar energy and thus, is not an adequate metric by which to measure significance. *Id.* at 164. According to Voltage, commercial success of the BLA is susceptible to market demand and other external factors and thus, the success is not indicative of the significance of the investments. RRB at 78-79. To the extent it is relevant, Voltage contends it is limited to qualitative significance. *Id.* at 79.

Like Voltage, Staff asserts that because Shoals' total investments are overstated, it is impossible to assess quantitative significance. SIB at 73. Staff also submits that qualitative significance cannot compensate for a lack of quantitative significance. *Id*. As to Mr. Nelson's value-added theory, Staff argues that it should have analyzed cost of goods sold rather than revenue. *Id*. at 73-74. In addition, Staff contends that Mr. Nelson's manufacturing/sales labor ratio is flawed because Mr. Nelson omitted administrative labor from his calculation. *Id*. at 74.

Having reviewed the evidence of record, the undersigned finds that Shoals has shown by a preponderance of the evidence that it has made significant investments in plant and equipment and labor and capital relating to the BLA.[114] "[W]hether the complainant's investment and/or employment activities are 'significant' is not measured in the abstract or in an absolute sense, but rather is assessed with respect to the nature of the activities and how they are 'significant' to the articles protected by the intellectual property right." *Certain Printing and Imaging Devices and Components Thereof* ("*Printing and Imaging Devices*"), Inv. No. 337-TA-690, Comm'n Op., EDIS Doc. ID 444708, at 26 (Feb. 17, 2011). Here, Shoals' domestic activities are necessary to the BLA, for without those activities the BLA would not exist. This not an investigation involving a mere importer. *See, e.g.*, *Schaper*, 717 F.2d at 1372-73 ("Congress did not mean to protect American importers (like Schaper) who cause the imported item to be produced for them abroad and engage in relatively small nonpromotional and non-financing activities in this country").

The evidence shows that Shoals' investments in plant and equipment and labor and capital are qualitatively significant. As previously discussed, all of Shoals' research,

[114] The undersigned also notes that Voltage's expert did not opine that Shoals' investments were not significant. *See* Tr. (Clarke) at 1023:23-1024:5.

development, testing, and manufacturing takes place in the United States. *See* Tr. (Macias) at 105:6-106:19; Tr. (Tolnar) at 221:20-24, 222:10-14; Tr. (Bardos) at 647:11-650:6, 654:11-657:10; CDX-0004C at 7; JX-0217C (Solon Dep.) at 181:20-22. In other words, manufacturing of the BLA is done at Shoals' facilities in Tennessee, by domestic labor using domestic plant and equipment. There is no foreign manufacturing of the BLA. *See* Tr. (Bardos) at 648:6-8. In addition, Mr. Bardos confirmed that Shoals does not have any offices outside of the U.S. nor does Shoals have any employees outside of the U.S.[115] *See* Tr. (Bardos) at 659:12-20.

The evidence also shows that from 2019-2022, Shoals' investments in both plant and equipment and labor and capital grew year over year, which indicates that its investments are at least qualitatively significant in the context of its overall operations. *See* CDX-0012C at 29; *see also* JX-0112 at 13 (showing continued investment in property, plant, and equipment); CX-0261C at 15 (showing continued investment in property, plant and equipment in Shoals' 10-Q for period ending June 30, 2023); Tr. (Bardos) at 650:22-651:5 (testifying about Shoals' plans to [redacted]); JX-0112 at 27 (stating "an increase in wages and related taxes of $2.0 million due to increased employee headcount to support out growth"); *Certain Automated Put Walls & Automated Storage and Retrieval Sys., Assoc. Vehicles, Assoc. Control Software, & Component Parts Thereof* ("*Automated Put Walls*"), Inv. No. 337-TA-1293, Comm'n Op., EDIS Doc. ID 802614, at 25-26 (Aug. 17, 2023) (finding investments significant within the context of complainant's operations when "each and every category of expenditure, including plant, equipment, labor, and capital demonstrate marked [% increase redacted] year over year."). In addition, the evidence shows that BLA revenues grew as a share of overall

[115] While Mr. Bardos testified that [redacted]. *See* Tr. (Bardos) at 659:15-23, 803:15-804:21.

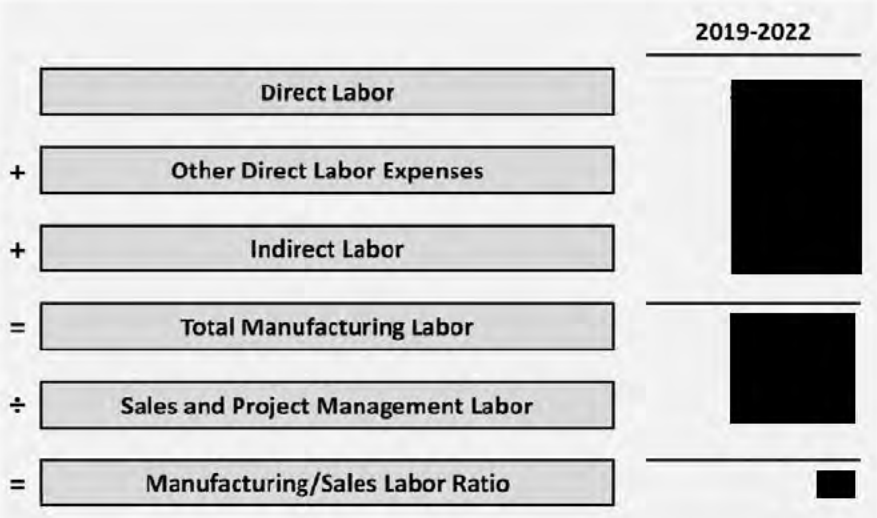
Shoals revenue and that BLA growth is a driver of that growth. *See* Tr. (Nelson) at 840:11–841:25; CDX-0012C at 34-35; Tr. (Tolnar) at 272:6-273:24, 280:8-21 ("[redacted]"), 286:2-20; JX-0113 at 26; JX-0112 at 27 ("[r]evenue increased by $37.1 million, or 55%, for the three months ended March 31, 2023 as compared to the three months ended March 31, 2022, driven by higher sales volumes as a result of increased demand for solar EBOS generally and our combine-as-you-go system solutions specifically and to a lesser extent increased pricing").

Particularly in this context, the evidence shows that Shoals' investments are quantitatively significant. As an initial matter, a comparison of Shoals' domestic investments to Shoals' foreign investments under (A) and (B) with respect to manufacturing the BLA shows quantitative significance as there is no foreign manufacturing of the BLA. *See* Tr. (Bardos) at 648:6-8; *Bone Cements*, Comm'n Op. at 24 ("Other types of activities, such as manufacturing in the United States, have traditionally been considered ones that Congress intended to form the basis for a domestic industry and the Commission generally credits them towards a domestic industry").[116] Thus, Shoals' manufacturing activity occurs 100% in the United States, which demonstrates quantitative significance. *See Certain Luxury Vinyl Tile & Components Thereof*, Inv. No. 337-TA-1155, Initial Determination, EDIS Doc. ID 716630, at 240 (May 15, 2020) (finding significance where 100% of the manufacture of the domestic industry product occurred

[116] Voltage argues that Shoals waived the "argument that its domestic activity is significant as against its foreign activity." *See* RRB at 78 n.31. The undersigned disagrees. Shoals' prehearing brief clearly asserts that the BLA is only manufactured in the U.S. *See, e.g.*, CPHB at 210 ("Because the DI products are manufactured *only* in Tennessee, Shoals' Tennessee investments in plant and equipment are *significant* and indeed *indispensable* to the DI products."). While Shoals thereafter indicated that this showed that "qualitative" significance was thus "indisputable" (*see id.*) this statement provided sufficient notice of reliance on this fact for significance purposes.

domestically), *not reviewed in relevant part by* Comm'n Notice, EDIS Doc. ID 713658 (June 30, 2020); *Certain Lithium-Ion Battery Cells, Battery Modules, Battery Packs, Components Thereof & Prods. Containing Same*, Inv. No. 337-TA-1181, Order No. 28, EDIS Doc. ID 728455 at 16 (Nov. 23, 2020) ("Significantly, LGC asserts that the P2.7 product is manufactured exclusively in the U.S., meaning that 100% of its investments in the P2.7 product are domestic. While the number of P2.7 units produced is smaller than that of the other domestic industry products, the qualitative and quantitative significance of the P2.7 product is considerable."), *not reviewed by* Comm'n Notice, EDIS Doc. ID 728884 (Dec. 23, 2020); *cf. Certain Gas Spring Nailer Prods. and Components Thereof*, Inv. No. 337-TA-1082, Comm'n Op., 2020 WL 2093834, at *41 (April 28, 2020) (finding quantitative significance where "all, *i.e.*, 100 percent, of Kyocera's R&D and engineering expenditures relating to complainant's Fusion Nailers occurs in the United States"), *vacated and remanded on other grounds*, 22 F.4th 1369 (Fed. Cir. 2022).

In addition, several metrics presented by Shoals further indicate quantitative significance. First, Mr. Nelson presents a manufacturing to sales labor ratio for the BLA that compares Shoals' domestic investments in manufacturing labor as compared to its domestic investments in sales and project management labor.



See Tr. (Nelson) at 839:21-840:9; CDX-0012C at 33. To arrive at the "Total Manufacturing Labor" number for 2019-2022, Mr. Nelson added "Direct Labor" (*i.e.*, the total direct manufacturing labor compensation: [redacted]), "Other Direct Labor Expenses" (*i.e.*, the total direct labor expenses: [redacted]), and "Indirect Labor" (*i.e.*, the total indirect manufacturing labor compensation: [redacted]). *See id*. For 2019-2022, this results in total manufacturing labor of [redacted] for the BLA. *See id*. Mr. Nelson compares this as a ratio to the total sales and project management labor compensation for 2019-2022 to arrive at a [redacted] ratio. *See id*. The undersigned finds that this supports an inference of quantitative significance.[117]

A finding of quantitative significance is also consistent with a comparison between domestic industry investments and sales or revenue. *See, e.g.*, *Certain Carburetors & Prods. Containing Such Carburetors* ("*Carburetors*"), Inv. No. 337-TA-1123, Comm'n Op., EDIS Doc. ID 692517, at 17, 20 (Oct. 28, 2019) ("The Commission has previously used sales of protected articles in order to consider the context of a complainant's domestic industry investments."); *Certain Outdoor and Semi-Outdoor Elec. Displays, Prods. Containing Same, and Components Thereof*, Inv. No. 337-TA-1331, Order No. 19, EDIS Doc. ID 800101, at 17-20 (June 15, 2023) (assessing domestic industry investments as percentage of total global revenues), not reviewed by Comm'n Notice, EDIS Doc. ID 800420 (July 17, 2023). Staff sought testimony at the hearing comparing manufacturing labor investments in the DI products to total Tennessee revenues (including both BLA and non-BLA products); however, the more relevant comparison would use

[117] Voltage criticizes this metric because Mr. Nelson omitted administrative labor from his calculation. However, if administrative labor compensation were included in the denominator, as Voltage asserts, this would result in a ratio of [redacted], which would still support an inference of quantitative significance under the circumstances presented here. *See* RIB at 163.

BLA revenues. *See Carburetors*, Comm'n Op. at 20.[118] That quantitative comparison demonstrates that the percentage of Shoals' total manufacturing labor ( ) to the BLA revenues for 2019-2022 ( ) is about .[119] *See* CDX-0012C at 32-33. The undersigned finds that this also supports an inference of quantitative significance under the circumstances.

Mr. Nelson's analysis, as shown in his demonstrative (reproduced below), also presents a comparison of the BLA's revenue to its material costs.

	2019	2020	2021	2022	Total
BLA Revenue					
BLA Material Cost					
BLA Value Added					
BLA Value Added % of Revenue					

See Tr. (Nelson) at 838:18-839:19; CDX-0012C at 32; *see also Bone Cements*, Comm'n Op. at 26-27 ("Commission decisions have accepted a 'value-added analysis' to assess whether an industry in the United States exists."). As the record evidence shows, the difference between the raw materials cost and the revenue of the products represented as a percentage of the revenue on average for the years 2019 to 2022 is about . *See id*. As Mr. Nelson explained, "if there were an assertion that Shoals were a mere importer, I would expect those numbers to be very similar in terms of order of magnitude, that you would see materials coming in and materials going out or goods going out . . . [i]t would be akin to a commission or a brokerage or a passthrough for that type of an environment." *See* Tr. (Nelson) at 839:3-12. Here, the comparison of material cost

[118] *See* Tr. (Nelson) at 893:16-895:9 (Staff asking Mr. Nelson to calculate ratio of manufacturing labor to Tennessee revenue, which was "not just for the BLAs").

[119] Mr. Nelson testified to the total BLA revenue for 2019-2022. *See* Tr. (Nelson) at 838:20–839:16; CDX-0012C at 32; JX-0126C; JX-0278C; JX-0277C. Voltage does not appear to dispute the accuracy of this amount. *See* RIB at 162-163.

to revenue further supports the inference that Shoals' investments are quantitatively significant. *See Automated Put Walls*, Comm'n Op. at 26 n.22 (Commissioner Kearns noting that where a large proportion of the DI products [proportion redacted] are "engineered, researched, developed, and manufactured in the United States . . . , the value added by the domestic operations will usually be significant); *Printing and Imaging Devices*, Comm'n Op. at 32 n.10 ("We recognize that an analysis of the value added by a complainant's domestic activities is better suited to a situation in which those domestic activities involve at least some production work.").

In view of the above, the evidence or record shows by a preponderance that Shoals' domestic investments in plant and equipment and labor and capital related to the BLA are qualitatively and quantitatively significant.

E. Timing

The parties also dispute whether Shoals has sufficiently shown that a domestic industry existed as of the time the complaint was filed. Voltage argues that Shoals failed to establish that a domestic industry existed when the complaint was filed in May 2023. RIB at 141, 145. Voltage contends that Mr. Nelson used investments primarily corresponding to the 2019-2022 timeframe (while also including some equipment investments from [redacted] and the plant acquisition from 2008), but Shoals did not produce any quantification of investments in 2023. *Id.* at 145. While Voltage acknowledges that Mr. Bardos claimed there were no audited financials available for 2023 when Shoals collected its data, Voltage submits that Shoals' 10-Q for the quarter ending on March 31, 2023 was available, and while it was unaudited, could have been produced with the Amended Complaint or at any time before the close of fact discovery. *Id.* Voltage claims that "[t]he absence of record evidence relating to investments at the time of the complaint is significant, as this is the most relevant time for DI investments and because Shoals claims

continuing investments in R&D without evidence that those investments relate to products that practice the patent." *Id*. at 146.

Shoals submits that as of the filing date of the complaint, Shoals did not have audited financials for 2023. CIB at 142. In addition, Shoals asserts that "[b]ecause there is not so much as a hint of a dramatic dropoff or other shift in Shoals' investments at the beginning of 2023, the passage of a few months between the latest data presented and Shoals' initial complaint is inconsequential." *Id*. Shoals also argues that the evidence shows that its domestic activities continue to grow. *Id*.

The undersigned finds Voltage's argument unpersuasive.[120] "Although a domestic industry is assessed from the perspective of the time of the filing of the complaint, there is no requirement that the investments relied upon to satisfy the domestic industry requirement must be incurred only at the time the complaint is filed, and not prior to that date." *Automated Put Walls*, Comm'n Op. at 26 n.23. "Commission precedent establishes that a domestic industry may be established 'based on past significant or substantial investments relating to articles protected by the patent.'" *Id*.; *see also Certain Television Sets, Television Receivers, Television Tuners, and Components Thereof*, Inv. No. 337-TA-910, EDIS Doc. ID 568157, at 69 (Oct. 30, 2015) (stating that Commission precedent indicates that even in cases "where production, development or sales of protected articles have declined or even ceased entirely, a domestic industry may nevertheless be established based on past significant or substantial investments relating to the protected articles provided that complainant continues to maintain ongoing qualifying activities under section 337(a)(3) at the time the complaint is filed").

[120] Staff does not present any arguments regarding this issue. *See generally* SIB at 65-75; SRB at 39-44.

While Shoals first filed its complaint in May 2023 and presents financial data from 2019-2022, the totality of the evidence shows that its domestic activities continued to the time of the complaint. For example, Mr. Tolnar testified about a Q1 2023 presentation he gave that illustrated growth in the adoption of the BLA from 2022 to 2023. *See* Tr. (Tolnar) at 272:6-273:24; JX-0113 at 26; *see also* Tr. (Tolnar) at 280:8-21 ("[redacted]"). He also testified how that presentation showed "quoting volumes" for the BLA growing 56% year over year and "backlog and awarded orders" up 75% year over year, which was about two to three times market growth rate.[121] *See* Tr. (Tolnar) at 273:25-274:21; JX-0113 at 35; *see also* CX-0261C at 27. This is further corroborated by Mr. Tolnar's testimony regarding Shoals' 10-Q. Shoals' 10-Q for the period ending March 31, 2023 states that "[r]evenue increased by $37.1 million, or 55%, for the three months ended March 31, 2023 as compared to the three months ended March 31, 2022, driven by higher sales volumes as a result of increased demand for solar EBOS generally and our combine-as-you-go system solutions specifically and to a lesser extent increased pricing." *See* Tr (Tolnar) at 286:2-20; JX-0112 at 27; *see also id*. at 13 (showing continued investment in property, plant, and equipment); CX-0261C at 15 (Shoals' 10Q for the period ending June 30, 2023 showing continued investment in property, plant and equipment). Similarly, Mr. Macias' testimony suggests continuing operations in the second half of 2023 based on at least an exemplary customer quotation for the BLA from

[121] Mr. Tolnar explained the sales cycle as follows: "[redacted]" Tr. (Tolnar) at 274:2-4. [redacted] *Id*. at 274:4-6. [redacted] *Id*. at 274:6-9. [redacted] *Id*. at 274:9-13. [redacted]" *Id*. at 274:12-14.

September 2023. *See* Tr. at 133:11-136:12; CX-0266C. In addition, Mr. Bardos testified about [redacted]. *See* Tr. (Bardos) at 650:22-651:5. Mr. Bardos's testimony also indicated a growing number of domestic employees. *See id.* at 806:14-22; *see also* JX-0112 at 27 (Shoals 10-Q for period ending March 31, 2023) (referencing "an increase in wages and related taxes of $2.0 million due to increased employee headcount to support our growth"). Voltage, on the other hand, has not put forth any evidence to suggest that Shoals' domestic activities have changed or diminished between the end of 2022 and the filing of the complaint. The evidence of record shows, by a preponderance, that a domestic industry relating to the articles protected by the '153 patent existed at the time the complaint was filed in this investigation.

* * *

Accordingly, the evidence shows that Shoals satisfies the economic prong of the domestic industry requirement under 19 U.S.C. § 1337(a)(3)(A) and (B) based on domestic investments in the BLA.

IX. INVALIDITY

Voltage contends that claims 1, 12-14, 18, 21, 23, and 24 of the '153 patent are invalid as obvious in view of the combination of the Yamawaki and Shao references.[122] RIB at 106-128. In addition, Voltage contends that the asserted claims are invalid for lack of written description or for indefiniteness under 35 U.S.C § 112. *Id.* at 128-139.

[122] Voltage does not assert that claim 11 of the '153 patent is invalid as obvious. *See* RIB at 106.

A. Obviousness

1. Asserted Prior Art References

a. U.S Patent No. 6,268,559 ("Yamawaki") (RX-0052)

Voltage relies in part for its obviousness arguments on U.S. Patent No. 6,268,559, naming inventor Takeharu Yamawaki. RX-0052 ("Yamawaki"). There is no dispute that Yamawaki constitutes prior art to the '153 patent. *See, e.g.*, CIB at 94-124; CRB at 48-56. Yamawaki was considered by the examiner during prosecution of the '153 patent. *See* '153 patent at cover. According to the Abstract, Yamawaki generally relates to "[a] wiring apparatus" that "comprises a trunk cable, branch junctions, and branch cables diverging individually from the branch junctions." RX-0052, Abstract. A "plurality of photovoltaic modules, which are arranged side by side on a roof of a building or the like, or module units, composed of the modules, serve as generating sections. The respective outputs of the generating sections are lead into the building by means of a trunk conductor of the trunk cable." *Id.*

Figs. 1, 8A, and 8B of Yamawaki relate to an embodiment of the patent. They depict, respectively, a "conceptual diagram showing the relations between a photovoltaic generation system according to a first embodiment"; a "partial side view of a wiring apparatus for negative electrode used in the generation system according to the first embodiment"; and "partial side view of a wiring apparatus for positive electrode used in the generation system according to the first embodiment."

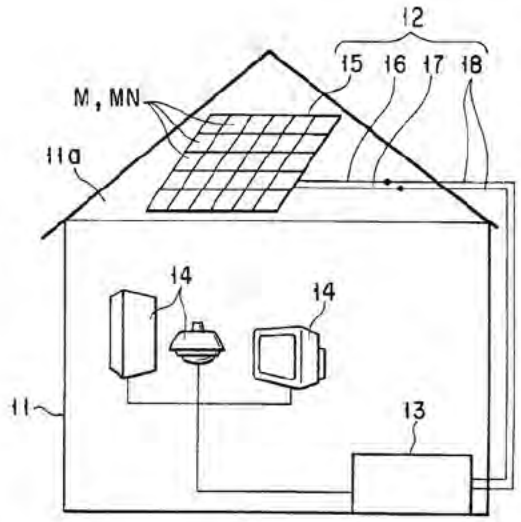


FIG. 1

RX-0052, Fig. 1.

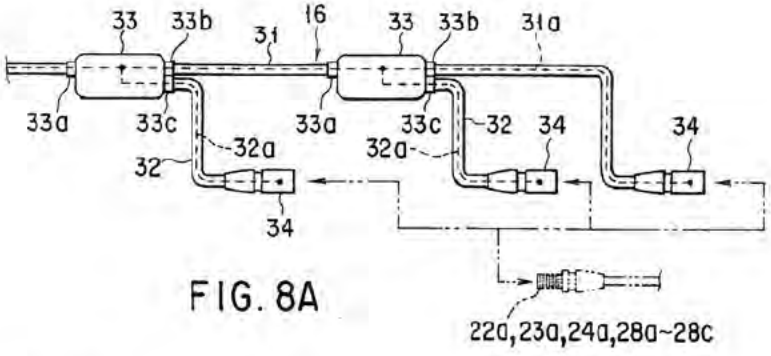


FIG. 8A

RX-0052, Fig. 8A.

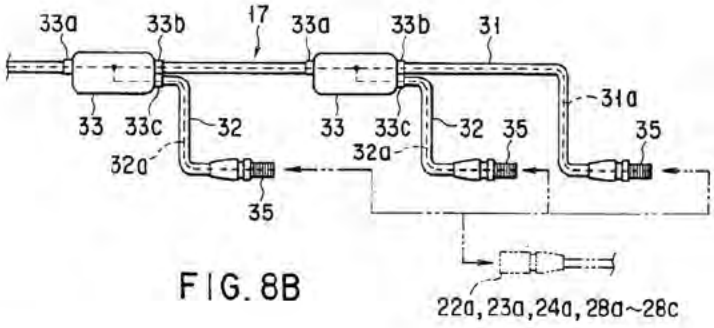


FIG. 8B

RX-0052, Fig. 8B.

Figures 9A and 9B of Yamawaki show a "side view" and "perspective view," each "partially in section" showing the branch junction "of the wiring apparatus shown in Figure 8A.

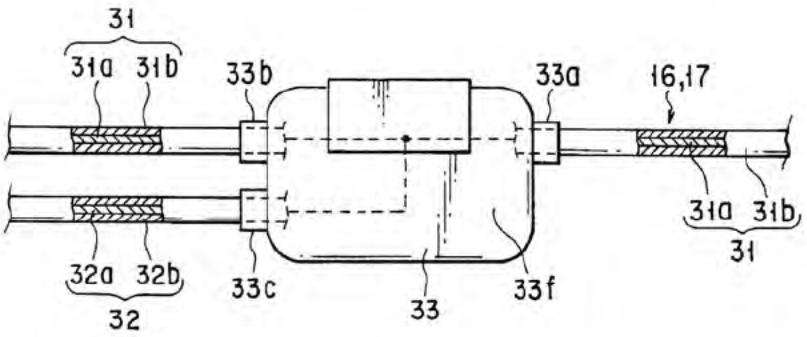


FIG. 9A

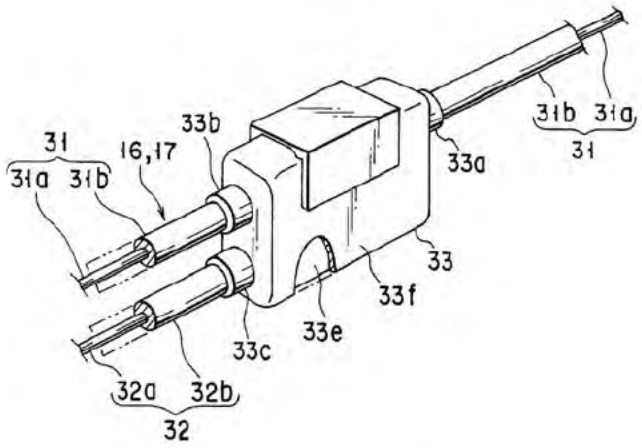


FIG. 9B

RX-0052, Figs. 9A, 9B.

b. Chinese Patent No. CN2785100Y ("Shao") (RX-0097)

Voltage also relies in part for its obviousness arguments on Chinese Patent No. CN2785100Y, naming inventors Wenlin Shao, Xuelin Cui, Wenkui Chen, Jinfeng Zhu, and Jixian Guo. RX-0097 ("Shao"). Shao issued on May 31, 2006. *See* RIB at 107; RX-0097. As discussed below, the parties dispute whether Shao constitutes relevant prior art to the '153 patent because Shoals asserts that Shao is not analogous art. *See* CIB at 94-95, 100-101; CRB at 48-50.

Shao is entitled "Power Cable with Bidirectional K-shaped branch." RX-0097. Shao states that "[a] K-shaped branch structure can enable single-branch-joint double-branch power distribution. The branch lines are led out in an upper direction and a lower direction of the branch joint, respectively and can be led to two floor power distribution boxes, respectively." RX-0097.001. Figure 1 of Shao shows "a schematic structural diagram" of the "present utility model":

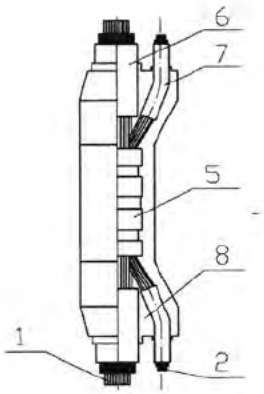


FIG. 1

RX-0052.006, .008.

2. Analogous Art

The parties dispute whether Shao is "analogous art" that can be considered in an obviousness analysis. "Two separate tests define the scope of analogous prior art: (1) whether the art is from the same field of endeavor, regardless of the problem addressed and, (2) if the reference is not within the field of the inventor's endeavor, whether the reference still is reasonably pertinent to the particular problems with which the inventor is involved." *In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004) (internal citations omitted). The "field of endeavor" is determined "by reference to explanations of the invention's subject matter in the patent application, including the embodiments, function, and structure of the claimed invention." *Id.* at 1359. The "reasonable pertinence" test looks to the problem with which the inventor is

concerned. "A reference is reasonably pertinent if, even though it may be in a different field from that of the inventor's endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention in considering his problem." *In re ICON Health and Fitness, Inc.*, 496 F.3d 1374, 1379-80 (Fed. Cir. 2007) (quoting *In re Clay*, 966 F.2d 656, 659 (Fed. Cir. 1992)).

Here, Voltage contends that Shao qualifies as analogous art under both tests. Voltage contends that Shao is analogous art under the field of endeavor test because "[t]he claims recite a structure of the lead assembly, which is applicable to all other electrical components and assemblies that combines and distributes current, but is not necessarily unique to the assemblies for photovoltaic devices." RIB at 108. Voltage contends that Shao is analogous art under the "reasonable-pertinence" test because "[t]he object of Shao's branch connector is similar to the '153 Patent, as Shao describes that its bidirectional K-shaped branch, which has few branch joints and multiple out-leads is easy to mount and use." *Id.* at 109 (citing '153 patent at 1:55-59, 6:10-13; RX-0097 at 4; Tr. (Kenny) at 1208:22-24); *see also* RRB at 49 ("the '153 patent's problem is simply how to combine energy coming from several sources").

Shoals contends that Shao is not analogous art. Shoals contends that Shao relates to a different field of endeavor because the '153 patent is about "consolidating power, not distributing it"; because the '153 patent relates to solar technology; and because the '153 patent relates to a DC system rather than an AC device. *See* CRB at 49. With regard to the reasonable pertinence test, Shoals argues that Voltage does not articulate a "particular" problem that is shared between the '153 patent and Shao.

As discussed above with respect to the level of ordinary skill in the art, the '153 patent's explanation of its subject matter (including its embodiments, function, and structure) is directed

to electrical wiring in the context of solar installations. *See* Part V.D *supra*. Voltage has not identified anything in the Shao reference indicating its use in the solar installation context. *See also* Tr. (Weiner) at 1283:11-14. Taken as a whole, Voltage has not shown that Shao qualifies as analogous art based on the "field-of-endeavor" test. *Cf. In re ICON*, 496 F.3d at 1380 ("Icon argues that Teague falls outside the 'treadmill art' . . . [w]e agree that, describing a folding bed, Teague comes from a different field than Icon's application"); *Polygroup Ltd. MCO v. Willis Elec. Co., Ltd.*, 759 Fed. Appx. 934, 941-42 (Fed. Cir. 2019) (affirming PTAB's determination that prior art directed to a "latching side-by-side support arm for electrical device" was not within the field of endeavor of "artificial trees with decorative lighting" and thus rejecting argument that "a person of ordinary skill would have been motivated by Otto's teaching of the use and availability of coaxial connectors in artificial trees to modify the Miller tree with the connector taught by Jumo"); *Airbus S.A.S. v. Firepass Corp.*, 941 F.3d 1374, 1380-81 (Fed. Cir. 2019) (affirming Board's finding that the field of endeavor for the asserted patent was "devices and methods for fire prevention/suppression" and that prior art reference was not within the field endeavor where, *inter alia*, the word "fire" did not appear in reference).[123]

With respect to the "reasonable pertinence" test, as noted by Voltage, the Examiner rejected claims during prosecution based on an electrical connector in the Vander Ploog reference, which did not relate specifically to solar installations, without objection by applicants

[123] Some Federal Circuit cases, however, have indicated that the "field-of-endeavor" test may be satisfied where the prior art and the patent have areas of focus that "overlap" or are "relevant" to each other. *See, e.g., Unwired Planet, LLC v. Google Inc.*, 841 F.3d 995, 1001-02 (Fed. Cir. 2016) (stating that where focus of patent was on "graphical user interfaces" and focus of prior art was on "interfaces for location-based services," they were within the same field of endeavor because "the teachings in graphical user interface design . . . have relevance in interfaces for location-based applications"). Under this broader approach, Shao may qualify as the same field of endeavor as the '153 patent. Regardless of whether Shao is analogous art, however, the evidence fails to clearly and convincingly show obviousness. *See* discussion *infra*.

based on lack of analogous art. *See* RIB at 111-113; *see also* '153 File History, at SHOALS00001640 (Notice of Allowability) (arguing that the prior art, including prior art not drawn specifically to solar installations "teaches lead assemblies suitable for use in solar power systems" but that claims drawn to specific lead assemblies were allowable). This suggests that references drawn to electrical connectors can be reasonably pertinent to the field of solar installations. Whether the Shao reference, in particular, would have "logically . . . commended itself to an inventor's attention in considering his problem" (496 F.3d at 1380) is intertwined with issues concerning a reason to combine Shao and Yamawaki.[124] As discussed below in connection with the "aperture" terms, the evidence fails to clearly and convincingly show a reason to combine Yamawaki and Shao to obtain the limitations of the patents at issue. Accordingly, even if Shao qualifies as analogous art under the "reasonable pertinence" test, this is insufficient to clearly and convincingly show obviousness.

3. Claim Limitation Analysis

Particularly given the finding above in Part V.D that Dr. Kenney does not meet the requirements for one of ordinary skill in the art, the evidence does not clearly and convincingly show obviousness, at least because there is insufficient evidence showing a reason to combine the references. *See* discussion *infra*.[125] Even if Dr. Kenny's testimony were considered, however,

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[124] The question of "analogous art" and reason to combine are analytically distinct, in that a reference can be analogous art under the "reasonable pertinence" test without ultimately showing obviousness. *See, e.g., Sci. Plastic Prods., Inc. v. Biotage, A.B.*, 766 F.3d 1355, 1360-61 (Fed. Cir. 2014) (finding references were analogous art and then proceeding to examine a reason to combine). There is overlap in the two inquiries, however, since they may both look to reasons to consider certain problems in the art of the patent.

[125] Expert testimony is not necessarily required for a finding of patent invalidity. *See, e.g., Intercontinental Great Brands LLC v. Kellogg N.A. Co.*, 869 F.3d 1336, 1348 (Fed. Cir. 2017) ("we have recognized that some cases involve technologies and prior art that are simple enough that no expert testimony is needed"). As discussed below, the evidence fails to clearly and convincingly show a reason

the evidence would not show that claims 1, 12, 13, 14, 21, 23, or 24 are obvious by clear and convincing evidence. (As previously noted, there is no obviousness-based invalidity argument for claim 11.) An element-by-element analysis is set forth below for the claims that Voltage asserts are obvious.

a. Claim 1

i. Claim Limitation [1.p]: "A lead assembly for use in a solar energy installation including:"

As set forth above regarding infringement, the parties do not address whether the preamble is limiting. *See generally* CIB; RIB; SIB. To the extent limiting, however, the parties dispute whether Yamawaki discloses a "lead assembly."[126]

Voltage argues that Yamawaki discloses the preamble, to the extent limiting, because it "describes a wiring apparatus and a wiring structure for conducting electric power produced by the generation system into buildings." Voltage relies on Figure 3 of Yamawaki, as shown below, and in particular on wiring that connects different "MN" units shown in Figure 3.

to combine Yamawaki and Shao to obtain the asserted claims even with Dr. Kenny's testimony. Voltage's showing is even less persuasive without Dr. Kenny's testimony.

[126] Even if not limiting, the issue of "wire harness" vs. "lead assembly" is relevant to other claim limitations and thus is discussed here.

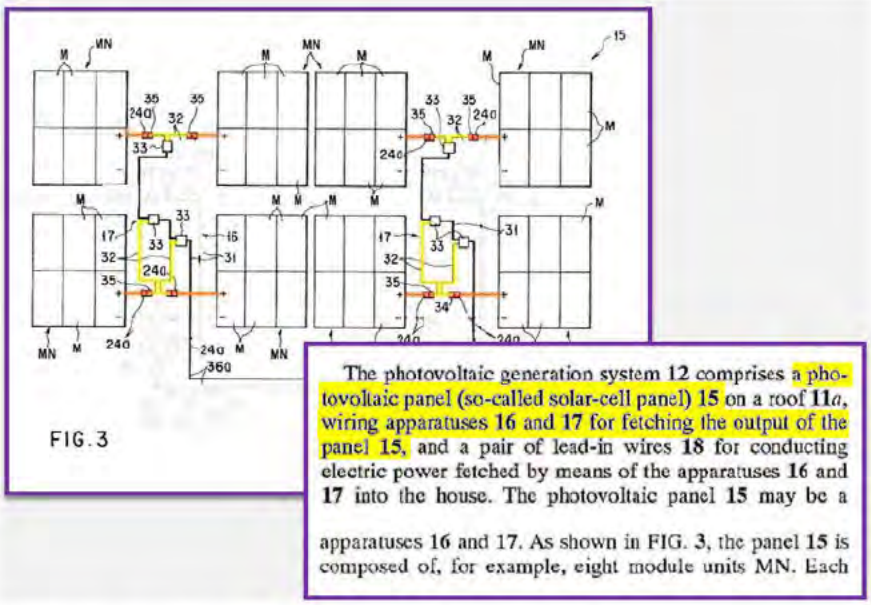


FIG. 3

The photovoltaic generation system **12** comprises a photovoltaic panel (so-called solar-cell panel) **15** on a roof **11***a*, wiring apparatuses **16** and **17** for fetching the output of the panel **15**, and a pair of lead-in wires **18** for conducting electric power fetched by means of the apparatuses **16** and **17** into the house. The photovoltaic panel **15** may be a

apparatuses **16** and **17**. As shown in FIG. **3**, the panel **15** is composed of, for example, eight module units MN. Each

RDX-0003.0060; RIB at 114-116. Voltage also argues that Shoals' argument that Yamawaki teaches a "wire harness," but not a "lead assembly," has been waived and that, further, Yamawaki does disclose a "lead assembly." *See* RRB at 55-57.

Shoals argues that "there is a difference between a wire harness and a lead assembly of the sort described in the '153 patent." CIB at 117. As argued by Shoals, a "wire harness" connects components of an "array" while a "lead assembly" connects different arrays. *See* CIB at 117; *see* '153 patent at 4:38-40, 44-46 (referencing "a plurality of solar panels 30, that are electrically coupled to form solar arrays 32a, 32b, and so forth" where "[e]ach wire harness includes a plurality of branches each connecting to one solar panel"). Shoals contends that, as "strictly defined" in the NEC, "a group of ***solar modules*** makes up a ***solar panel*** and a group of ***solar panels*** makes up a ***solar array***." CIB at 117 (emphasis added). Thus, as the undersigned understands Shoals' argument, Voltage's asserted "lead assembly" in Yamawaki is actually a "wire harness" connecting different components of an "array" (rather than a "lead assembly" joining different arrays) because the "M" units of Yamawaki are solar "modules" and thus the "MN" units of Yamawaki must be solar "panels," not solar "arrays." *See* CRB at 53-54. Shoals

contends that Yamawaki discloses a wire harness but not a "lead assembly" and that (except for certain adjustability factors), "the functionality of the wire harness in Yamawaki was already contemplated in the '153 patent as prior art." *Id.* at 119.

The undersigned agrees with Voltage that Shoals' Prehearing Brief did not include an argument that Yamawaki fails to include a "lead assembly" or that the asserted lead assembly was a "wire harness," not a "lead assembly. *See* CPHB at 195-197. However, Mr. Weiner testified without objection that Yamawaki does not teach connecting "drop lines" to a wire harness based on the argument that Yamawaki shows a wire harness, not a lead assembly. *See* Tr. (Weiner) at 1277:19-1278:7. Accordingly, this argument will be considered in determining whether Voltage has met its burden of proof.

The evidence shows that Yamawaki discloses a "lead assembly." Shoals' argument that Yamawaki's MN units cannot be considered "arrays" (which would be connected to each other by a "lead assembly") is unpersuasive. This argument relies on the contention that solar panels necessarily comprise solar modules for purposes of the '153 patent. *See* CRB at 53-54; discussion *supra*. However, the '153 patent refers to "arrays" with "solar panel" building blocks and Shoals has not shown any reference in the '153 patent to a requirement for "solar modules." *See, e.g.,* '153 patent at 1:25-31 (Fig. 1 shows "a plurality of solar panels 30); *id.* at 1:37-40 (wire harnesses 34 connect multiple solar panels 30 in an array 32 . . . so each array has a single input via wire harness 34"); *id.* at 4:38-41 (Fig. 3 shows "a plurality of solar panels 30 that are electrically coupled to form solar arrays 32a, 32b, and so forth"). Mr. Weiner further acknowledged that while the terms solar module and solar panel may be "strictly defined" in the

NEC, both professionals and lay people conflate the terms. *See* Tr. (Weiner) at 1264:21-25 ("we do mince the words a bit like solar panel, solar module").[127]

Moreover, Mr. Weiner's assertion that each individual block shown in the arrays of Fig. 2 of the '153 patent refers to a "solar module" while 4 blocks refer to a "solar panel" (thus allegedly showing that the patent discloses solar "modules" apart from solar "panels") is not supported by the patent's description.[128] Rather, the '153 patent refers to each individual block 30 as a "panel," not a group of four blocks. *See* '153 patent at 4:32 (part 30 is "solar panel"); *id.* at Fig. 1 (showing "solar panel" 30 in prior art).[129] The depictions of "arrays" in the '153 patent closely resembles the "MN" units in Yamawaki, which Yamawaki describes as a "matrix." *See* RX-0052 at 7:66-67 ("[e]ach module unit MN includes a plurality of modules 34 that are arranged in a matrix"); RIB at 115-116.[130] During prosecution of the '153 patent, the Examiner similarly viewed each MN unit as an array. *See* JX-0088.0251 (SHOALS 00001602) ('153 File History) (Yamawaki teaches "a plurality of solar panels M each electrically coupled to one of a plurality of branches . . . to form a first solar array MN").

In view of the above, the evidence clearly and convincingly shows that Yamawaki discloses a "lead assembly." Shoals' argument that no "lead assembly" is disclosed relies on an interpretation of the '153 patent not supported by the intrinsic evidence.

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[127] Mr. Weiner did not show any portions of the NEC as part of his testimony. And in any case, the key issue concerns the meaning of these terms within the context of the '153 patent. *See* RRB at 55 n.23.

[128] *See* Tr. (Weiner) at 1264:6-17; CDX-0016.7 (depicting blue squares as "modules" and red rectangle as "panel").

[129] Mr. Weiner appears to contend that each "branch" of a wire harness defines a "solar panel." *See* Tr. (Weiner) at 1265:15-19. But Figure 1 of the '153 patent shows individual solar panels in the prior art without any wire harness. Similarly, Figs. 9 and 10 of the '153 patent show multiple "30" (*i.e.,* panel) units without any depiction of "modules." *See* '153 patent, Figs. 9-10.

[130] Yamawaki states that each "M" unit 34 "includes a plurality of photovoltaic cells." RX-0052 at 7:64-67.

ii. Claim Limitation [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;"

The evidence clearly and convincingly shows that Yamawaki discloses this claim limitation. *See* RIB at 115; RDX-0003.0059; RX-0052 at 9:65-66, 11:3-7, Fig. 8A. Apart from Shoals' arguments regarding the distinction between a "wire harness" and "lead assembly" (discussed and rejected above), Shoals does not dispute that this limitation is met by Yamawaki. *See* CIB at 117-125. [131]

iii. Claim Limitation [1.b]: "a feeder cable electrically coupled to the drop line at a nexus;"

Voltage argues that Yamawaki discloses the claimed feeder cable, drop line, and nexus pointing to Figure 8A. *See* RX-0052 at 9:65-66, 10:30-32, Fig. 8A.

[131] This conclusion is also consistent with the Examiner's view during prosecution that Yamawaki discloses a drop line connector configured to connect with a wire harness. *See* JX-0088 ('153 File History) at SHOALS00001607 ("The drop line connector 34 [of Yamawaki] connects to a wiring harness (one of the elements 25 in Fig. 5, 26 in Fig. 6, 27 in Fig. 7) connecting to a plurality of solar panels M.").

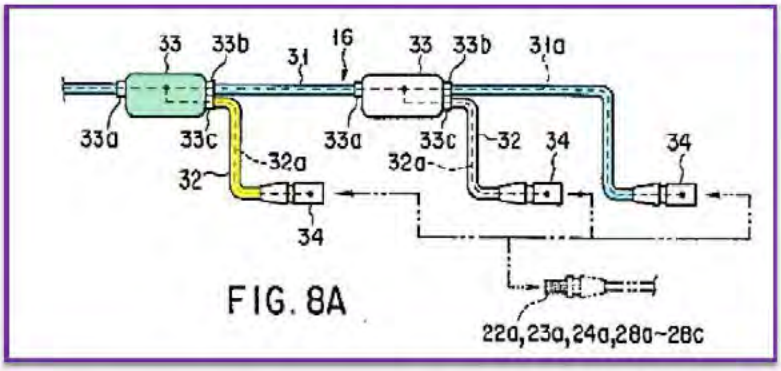


FIG. 8A

The one wiring apparatus **16** serves for a negative electrode, for example. The apparatus **16** comprises one trunk cable **31** and a plurality of branch cables **32**. As shown in FIG. **9A**, the trunk cable **31** is composed of an insulated connecting portion **33***c*. In each branch junction **33**, the trunk conductor **31***a* and the branch conductor **32***a* are connected electrically to each other.

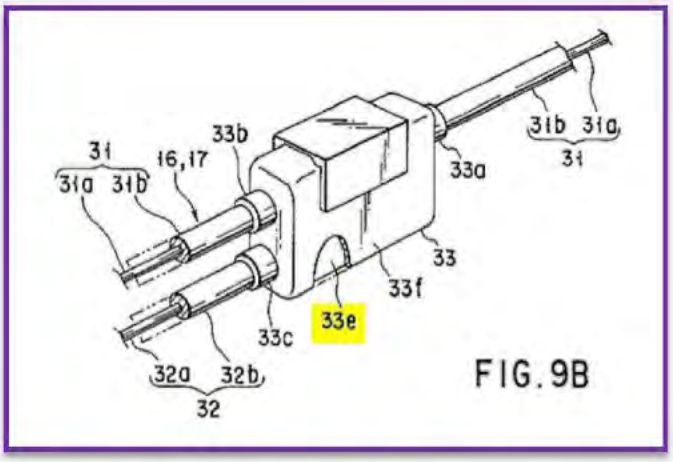
RDX-0003.0061; Tr. (Kenny) at 1204:7-12; '153 patent at 10:30-32 ("In each branch junction 33, the trunk conductor 31a and the branch conductor 32a are connected electrically to each other"). Voltage identifies trunk cable 31 as the claimed "feeder cable," branch cable 32 as the claimed "drop line," and branch junction 33 as the claimed "nexus." *See* RIB at 116. Mr. Weiner agreed that "junction 33" includes an electrical connection. Tr. (Weiner) at 1281:12-17.

This evidence clearly and convincingly shows trunk cable 31 electrically coupled to branch cable 32 at branch junction 33. Apart from Shoals' arguments regarding the distinction between a "wire harness" and "lead assembly" (discussed and rejected above), Shoals does not dispute that this limitation is met by Yamawaki. *See* CIB at 117-125. Accordingly, the evidence clearly and convincingly shows that Yamawaki meets this limitation.

iv. Claim Limitation [1.c]: "an undermold that fully encases the nexus, the undermold further comprising:"

Voltage contends that this limitation is met by Yamawaki, and that part 33e constitutes an "undermold that fully encases the nexus." RIB at 117 (citing Tr. (Kenny) at 1204:14-20, RX-0052 at 10:19-32, Fig. 9B). Shoals does not contest that this limitation is met. *See* CIB at 124 (contesting whether there are "apertures" because "the branch junction (33) is not molded over the trunk and branch cables" but not disputing existence of "undermold").[132] Staff also does not contest this limitation. *See* SIB at 59-63.

The patent refers to part 33e as "a molded body" that forms part of junction 33, as shown in Fig. 9B:



cable 31. As shown in FIGS. 9A and 9B, each junction **33** includes a molded body **33***e* of an electrically insulating synthetic resin material and a cover member **33***f* that covers the outer surface of the body **33***e*. A cylindrical trunk cable connecting portion **33***a* protrudes integrally from one end face of the cover member **33***f*. A cylindrical trunk cable

RDX-0003.0062; Tr. (Kenny) at 1204:14-20; *see also* Tr. (Weiner) at 1279:5-7.

[132] Although Shoals' sub-section heading reads "Yamawaki does not teach apertures or an undermold/overmold as required by the claims of the '153 patent," there is no argument in that section about the absence of an "undermold that fully encases the nexus." *See* CIB at 121-124.

The evidence shows, clearly and convincingly, that undermold 33e fully surrounds the electrical connection between the trunk cable and the branch line. No party disputes that part 33e "encases" the nexus. The evidence clearly and convincingly shows that this claim limitation is met by Yamawaki.

v. **The "Aperture" Limitations: Claim Limitation [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"; Claim Limitation [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"; Claim Limitation [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:"**

Voltage claims that these limitations are met by Yamawaki, in combination with Shao. Voltage claims that Yamawaki discloses the claimed first aperture based on feeder cable 31 extending through the "undermold" and the claimed "second aperture" based on the drop line 32 extending partially through the undermold. Voltage argues that, to the extent Yamawaki "does not expressly describe 'having a second diameter different than the first diameter,' a POSA would have understood that it could use branch cables with smaller diameter than the trunk cable because the trunk would carry more current than the branch." RIB at 118. Voltage argues that to the extent Yamawaki does not disclose the claimed "second aperture," then Shao discloses this limitation. *See Id.* at 121. Voltage argues that one of skill in the art would have reason to combine Yamawaki with Shao because "it would have been both obvious to try and simple, requiring nothing more than a simple substitution of one known element for another to obtain

predictable results," that it "represents a choice among a finite number of identified, predictable solutions," and that it would "improve Yamawaki." *Id.* at 110-111. Voltage argues that the "object" of Shao's "branch connector is similar to Yamawaki" in that it "has few branch joints and multiple out-leads," is "easy to mount and use" and provides a "joint which is moisture-proof, waterproof, and maintenance-free." *Id.* at 111. Voltage argues that the Examiner's combination of Yamawaki and Vander Ploog during prosecution of the '153 patent corroborates the motivation to combine. *See id.* at 111-114; *see also* RRB at 52 ("[a]s Dr. Kenny notes, had the Examiner known of Shao, he likely would have similarly considered Shao"). Voltage further argues that to the extent Yamawaki does not disclose the claimed "third aperture," Shao discloses this and a "POSA would have been motivated to combine Yamawaki with Shao." RIB at 122. Voltage argues that Mr. Weiner's testimony regarding the "flexibility" of Yamawaki does not affect the technical viability of the modification proposed by Dr. Kenny. *See* RRB at 53-54. Voltage argues that the argument that Yamawaki does not teach "apertures" is waived because it was not in Shoals' pre-hearing brief or in Mr. Weiner's expert report. *Id.* at 57. Voltage argues that the argument that Yamawaki is "chiefly related to an adjustable wire harness" and the 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" is "new and unsupported" and premised on embodiments that Voltage does not rely upon. *Id.* at 58-59. Voltage argues that the contentions that Yamawaki does not teach "apertures," and that Yamawaki's trunk cable is not one continuous cable are also waived because they were not in Shoals' pre-hearing brief or in Mr. Weiner's expert report. *Id.* at 57, 59.

Shoals argues that the evidence fails to show that Yamawaki discloses the claimed apertures. Shoals argues that each cable portion is connected to the junction at 33a, 33b, and 33c

(as shown in Fig. 9B) and there is no cable 31 running through the part 33. *See* CIB at 123 ("Yamawaki teaches that the branch cables and trunk cables are all inserted into the branch junction (33) via branch cable connecting portions (33a), (33b), and (33c)."). Shoals further argues that there are no "apertures" because "the branch junction (33) is not molded over the trunk and branch cables." *Id.* at 124 ("[T]he branch junction (33) seems to be a plastic box into which the cables are inserted."). With respect to the proposed combination with Shao, Shoals argues that incorporating the Shao connector with Yamawaki would "obviate the utility taught in Yamawaki; namely, the flexible and adaptable nature of the wire harnesses." *Id.* at 112. Shoals contends that the crimped wire of Shao would "fix branch junctions along the trunk" rather than allowing flexibility and adaptability. Shoals also contends that there would be no reason to modify Yamawaki to have different sized trunk cables or branch cables because the wire harness in Yamawaki seeks to standardize all the cables. With respect to adding a second drop line and/or third aperture, Shoals contends that this conflicts with Yamawaki's purpose of having shorter branch cables and of distributing joints. *Id.* at 115-116 (citing Tr. (Weiner) at 1288:2-6). Shoals contends that there is no reasonable expectation of success because the combination of Yamawaki and Shao "is not technically viable." *Id.* at 110. Shoals further argues that Voltage's "obvious to try" theory lacks factual support and was waived. *See* CRB at 50-51.

Staff agrees with Shoals that this limitation is not disclosed or rendered obvious. Staff argues that Yamawaki does not show branch and trunk cables of different thicknesses and that there is no clear and convincing evidence to modify Yamawaki in this manner. See SIB at 62. Staff also argues that Mr. Weiner convincingly testified regarding the lack of apertures and that there would "have been no motivation to combine Yamawaki with Shao where Yamawaki's

principal benefit of flexible on-site, field assembly and operation would, in effect, be eliminated." *See id.* at 61, 62.

The undersigned finds that the evidence fails to clearly and convincingly show that Yamawaki discloses the claimed "first aperture" and "second aperture." As Voltage acknowledges, Yamawaki provides little detail about the internal structure of the claimed "undermold" 33e. *See* RIB at 111; RRB at 52 ("Yamawaki's disclosures were less than detailed"). Moreover, Yamawaki indicates that the trunk cable and branch cables are inserted into "connecting portions" 33a, 33b, and 33c, which are in turn part of cover member 33f, but it is unclear whether these elements extend into "molded body 33e" to form apertures,[133] whether electrical connections are made in some other manner, and thus whether there is a "first aperture" extending "completely through" the undermold. *See* RX-0052 at 10:40-50 (stating that "cover member 33f" is formed "integrally with the connection portions 33a, 33b and 33c"); *id.* at 10:17-32 ("A cylindrical trunk cable connecting portion 33a protrudes integrally from one end face of the cover member 33f. The trunk cable 31 is inserted in each of the trunk cable connection portions 33a and 33b."); Tr. (Weiner) at 1279:1-10 (no apertures in Yamawaki because there is no "molding over" and Yamawaki teaches inserting cables from the outside into protrusions); *id.* at 1281:1-17; Tr. (Kenny) at 1209:6-7 ("Yamawaki provides sort of limited description of the interior structure of the cable junction"); CIB at 124.[134] This is consistent with the prosecution history. During prosecution of the parent '254 patent and the '153 patent, the Examiner noted

[133] As discussed *supra*, the term "aperture" refers to a pathway within the undermold structure that corresponds to the placement of the feeder cable or drop line. *See* Part V.E.1 *supra*.

[134] Voltage's waiver arguments regarding "no apertures" is rejected. Voltage raised no objection to Mr. Weiner's testimony on these issues (*see* Tr. (Weiner) at 1279:1-21, *id.* at 1280:21-1281:17) and this argument is within the scope of Complainant's Pre-Hearing Brief. *See* CPHB at 197 (Yamawaki does not show the "internal structure" of the molded body).

that Yamawaki teaches "apertures" in the overmold 33f but does not show them in undermold 33e. *See* JX-0085.0163 ('254 File history) (part 33f overmold defines apertures); JX-0088.0081 ('153 File History) ("The undermold 33e is described as having rigidity . . . but is not specifically shown to have a first aperture and second aperture.").

Further, even if the evidence showed that Yamawaki discloses a "first aperture" and "second aperture" the evidence fails to clearly and convincingly show that the apertures have different diameters, with the aperture of a branch cable being smaller than the diameter of the feeder cable. Dr. Kenny does not assert that Yamawaki actually discloses different diameters but rather argues that one of ordinary skill would understand "it's often convenient" to have the branch cables be smaller. Tr. (Kenny) at 1205:12-17. However, Mr. Weiner testified that "Yamawaki doesn't teach cables of different diameters or different sizes" but "the opposite of that" and that Yamawaki teaches "standardize all cables" for ease of use in a residential setting. Tr. (Weiner) at 1275:21-24; *id.* at 1269:19-1270:4; CRB at 114-115. Mr. Weiner's testimony appears consistent with Figure 8A of Yamawaki, which shows the same "connector 34" used both at the end of the trunk cable 31 as well as the end of branch cables 32. RX-0052 at 11:48-58 (referring to "connectors 34" attached to the distal ends of trunk cable 31 and "the connectors 34" attached to "distal ends of the branch cables 32"); *id.* Fig. 8A (showing same); *id.* at 11:3-9 ("connectors 34 are attached individually to at least one end, or preferably two opposite ends, of the trunk cable 31 and the respective distal ends of the branch cables 32 . . . The connectors 34 have the same construction and are arranged in the manner shown in Fig. 8C, for example"); *see also* Figs. 8C and 8D (showing connector design that can be used for either cables 31 or 32).

The use of same-sized connectors and cables also appears consistent with Yamawaki's continued reference to ease of use and installation. *See, e.g., id.* at 5:45-50 ("According to the

invention, wiring operation for the photovoltaic generation system is easy . . . Further, the possibility of misconnection is lowered . . . "); *id.* at 2:5-8 (conventional systems require "use of many wiring apparatuses, so that the installation of the photovoltaic generation system on a roof or the like costs much labor. Accordingly, there is a high possibility of misconnection."). In view of the evidence and testimony of record, the evidence does not clearly and convincingly show that any first and second apertures (to the extent they exist) have different diameters or that one of skill in the art would have reason to modify Yamawaki to use differently sized cables. Dr. Kenny's testimony that it's "often convenient" to use smaller branch cables (even if considered) does not clearly and convincingly take into account the context of Yamawaki. *See* CIB at 114-115.[135] Similarly, while the Examiner during prosecution concluded that Yamawaki does not "specifically describe[]" different diameters, but that this would be "obvious to try," the Examiner did not have the expert testimony of record here indicating that Yamawaki indicates equal-sized cables, and was not applying a clear and convincing standard of proof. *See* JX-0088.0080; *In re Epstein*, 32 F.3d 1559, 1564 (Fed. Cir. 1994) ("[p]reponderance of the evidence is the standard that must be met by the PTO in making rejections") (internal quotation omitted); SIB at 62.

In addition, the evidence does not show clearly and convincingly that one of ordinary skill would add a second branch cable to the junctions of Yamawaki to correspond to the claimed "third aperture" using the interior structure of Shao, or use the interior of Shao for any of the first or second apertures. It is undisputed that Yamawaki does not disclose a "third aperture." *See* Tr. (Kenny) at 1204:21-1206:22. Dr. Kenny testified that one of skill in the art would look to Shao

[135] To the extent Dr. Kenny's testimony is considered, his lack of experience with solar installations weighs against the persuasive value of his opinions in assessing a reason to modify Yamawaki.

because "Yamawaki provides sort of limited description of the interior structure of the cable junction" and Shao shows a "crimping and molding process . . . that could be applied in improving the interior structure of Yamawaki." Tr. (Kenny) at 1209:6-12; *see also* RRB at 51 (Shao would be considered "to fill in the details left open in Yamawaki"). However, the evidence fails to show clearly and convincingly that Shao would provide an improved interior structure or that it would fit within the exterior structure provided by Yamawaki.[136] While Dr. Kenny references moisture proofing and water proofing as benefits of Shao (Tr. (Kenny) at 1208:1-3), this is already disclosed as a benefit of Yamawaki's outdoor junctions. *See* RX-0052 at 13:5-18 (noting the thermowelded connections of the junctions and stating that "[e]ven though the branch junctions 33 are located outdoors, therefore, it is so water-resistant that the reliability of wiring apparatuses 16 and 17 to resist penetration of moisture can be improved"). Dr. Kenny's testimony that one of ordinary skill in the art would add a second branch cable to the junctions of Yamawaki was insufficiently persuasive[137] and is contradicted by Mr. Weiner's testimony that "Shao is consolidating two joints together" whereas "Yamawaki wants them distributed." Tr. (Weiner) at 1288:2-10[138]; SRB at 36; CIB at 110. Voltage's additional "obvious to try" argument

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[136] Voltage's proposed combination does not rely on a wholesale substitution of Shao's connectors for Yamawaki's junctions. *See* Tr. (Kenny) at 1209:6-10 (referring to use of Shao to "improv[e] the interior structure of Yamawaki"). For example, in discussing the "overmold" limitation [Limitation 1.d], Dr. Kenny relied upon the outermold structure of Yamawaki, not that of Shao. *See* Tr. (Kenny) at 1205:18-24. Voltage argues that the substitution of Shao is essentially equivalent to the Examiner's combination of Vander Ploog in combination with Yamawaki, but there is little expert discussion of Vander Ploog and its disclosures other than its lack of solar context. *See* RRB at 113; CRB at 51 ("the examiner's combination of Yamawaki with Vander Ploog is not probative of a motivation to combine Yamawaki with Shao").

[137] *See, e.g.,* Tr. (Kenny) at 1246:24-1247:1 ("[t]he overall interest in motivations of Yamawaki and Shao lead me to believe that it's reasonable to consider those together, and it's Shao that brings that second drop line"); *id.* at 1248:2-6 ("Yamawaki is, in general, describing the benefits of simplifying the cable structure, and . . . it might be possible to have multiple drops from a single drop . . . Shao brings some ideas about how to accomplish that").

[138] Voltage's waiver argument regarding this testimony (RRB at 58) is rejected. Mr. Weiner provided the testimony without objection and Complainant's Pre-Hearing Brief challenged the obviousness of adding

(*see* RIB at 110, RRB at 52) fails to provide sufficient support for the contention that the use of Shao for Yamawaki's inner structure would be obvious to try. *See* CRB at 50-51 (discussing relevant authorities).[139]

For at least these reasons, and particularly in view of the secondary considerations of non-obviousness, the evidence does not show clearly and convincingly that the "aperture" limitations of claim 1 are met by Yamawaki in combination with Shao.

vi. Claim Limitation [1.d]: "an overmold surrounding the undermold and forming an undermold-overmold interface at an outer surface of the undermold."

Voltage contends that this limitation is met by Yamawaki. In particular, Voltage contends that Yamawaki "discloses an overmold 33f surrounding the undermold 33e at an outer surface of the undermold 33e." RIB at 122 (citing RX-0052 at 10:19-32). The specification of Yamawaki discloses that "each junction 33 includes a molded body 33e of an electrically insulating synthetic resin material and a cover member 33f that covers the outer surface of the body 33e." RX-0052 at 10:19-32. Shoals does not provide a specific argument regarding this limitation.

Upon consideration of the parties' arguments and the lack of specific objection, the evidence clearly and convincingly shows an "overmold surrounding the undermold and forming an undermold-overmold interface at an outer surface of the undermold." *See* RX-0052, Fig. 9B (showing parts 33f and 33e).

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an aperture to Yamawaki. *See* CPHB at 195-96. Moreover, this testimony by Mr. Weiner does not appear to exclude the first embodiment of Yamawaki.

[139] Yamawaki's "less than detailed disclosures" (RRB at 52) do not provide persuasive evidence of a "design or market need," as required for an obvious to try analysis. *See* CRB at 51. In addition, Voltage's argument that Yamawaki's description of apertures in Figs. 9A and 9B is "not different from the description of apertures" in the '153 patent (RRB at 58) is unpersuasive given the information set forth in the '153 patent regarding the undermold and overmold, as well as Figure 7. *See, e.g.,* '153 patent at 5:60-6:10.

b. Claim 12

Claim 12 depends from claim 1, requiring "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."

As discussed *supra* regarding claim 1, the evidence fails to clearly and convincingly show that the combination of Yamawaki and Shao renders claim 1 obvious. For these same reasons dependent claim 12 has not been proven obvious.

c. Claim 13

Claim 13 depends from claim 1, requiring "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."

As discussed *supra* regarding claim 1, the evidence fails to clearly and convincingly show that the combination of Yamawaki and Shao renders claim 1 obvious. For these same reasons dependent claim 13 has not been proven obvious.

d. Claim 14

Claim 14 depends from claim 13, requiring "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."

As discussed *supra* regarding claim 13, the evidence fails to clearly and convincingly show that the combination of Yamawaki and Shao renders claim 13 obvious. For these same reasons dependent claim 14 has not been proven obvious.

e. Claim 21

i. Claim Limitation [21.p]: "A solar power system comprising:"

To the extent the preamble is limiting, the evidence shows that Yamawaki discloses a solar power system. *See* RIB at 124; Tr. (Kenny) at 1212:10-14; RX-0052, at 1:7-12.

ii. Claim Limitation [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;"

The evidence shows that Yamawaki discloses this limitation. *See* RIB at 125-26. Shoals does not dispute that this limitation is met by Yamawaki, and the evidence clearly and convincingly shows that Yamawaki discloses this limitation.

iii. Claim Limitation [21.b]: "a lead assembly comprising:"

The parties dispute whether Yamawaki discloses a "lead assembly." For the reasons discussed above regarding the preamble of claim 1, the evidence clearly and convincingly shows that Yamawaki discloses a lead assembly.

iv. Claim Limitation [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;"

The evidence clearly and convincingly shows that Yamawaki discloses this claim limitation for the reasons discussed for Claim Limitation [1a]. For the reasons discussed above, Shoals' and Mr. Weiner's argument that Yamawaki does not disclose a "lead assembly" (and does not disclose any "drop line" connected to a "wire harness") is not persuasive.

v. Claim Limitation [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;" and Claim Limitation [21.b.iii]: "a feeder cable, the feeder cable electrically connected to the drop line and the second drop line at a nexus; and"

The evidence fails to show that Yamawaki discloses a lead assembly that includes a second drop line connected to the feeder cable at the same nexus as the first drop line. *See* RIB at 126 (noting that this limitation requires "the same nexus"); Tr. (Kenny) at 1213:25-1214:2 (feeder cable is not electrically connected to the two drop lines "at the same nexus"); *id.* at 1246:14-20 (Yamawaki does not disclose "two drop lines in one mold drop"). Voltage argues that one of ordinary skill in the art would have reason to add a second drop line because Shao discloses "two drop lines at a nexus." RIB at 126 (citing Tr. (Kenny) at 1215:4-9, 1246:7-1247:4). For the reasons discussed above in connection with the third "aperture" term of claim 1, the evidence fails to clearly and convincingly show that one of ordinary skill in the art would have reason to combine Yamawaki and Shao to obtain this limitation.

v. **<u>The Aperture limitations</u>: Claim Limitation [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:"; Claim Limitation [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;" Claim Limitation [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"; Claim Limitation [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."**

The evidence fails to show clearly and convincingly that the "aperture" limitations are met by a combination of Yamawaki and Shao. For the reasons discussed above regarding the claim 1 "aperture" terms, the evidence does not clearly and convincingly show a reason to modify Yamawaki to obtain the claimed "aperture" limitations, including the different diameters, the third aperture, and the internal mold structures.

f. Claim 23

Claim 23 depends from claim 21, requiring that the "solar power system of claim 21 . . . further comprise[s] a secondary mold surrounding the primary mold and forming an undermold-overmold interface at an outer surface of the primary mold."

As discussed *supra* regarding claim 21, the evidence fails to clearly and convincingly show that the combination of Yamawaki and Shao renders claim 21 obvious. For these same reasons dependent claim 23 has not been proven obvious.

g. Claim 24

With respect to claim 24, Voltage relies upon its analysis for claim 21. *See* Tr. (Kenny) at 1216:23-1217:8; RIB at 127-28. Claim 24, like claim 21, includes limitations requiring three apertures, and requiring the second and third apertures to have a smaller diameter than the first aperture. For at least the reasons discussed with respect to the aperture limitations of claim 1, the evidence fails to clearly and convincingly show a reason to combine Yamawaki and Shao to obtain these limitations.

4. Secondary Considerations of Non-Obviousness

Shoals contends that secondary considerations of non-obviousness support a finding of non-obviousness. *See* CIB at 125-132. In particular, Shoals contends that evidence of long-felt but unmet need (CIB at 125-27), industry skepticism (*id.* at 127), industry praise (*id.* at 127-28), commercial success (*id.* at 128-131), as well as evidence regarding nexus (*id.* at 131-132) support Shoals' position. Staff contends that, to the extent "Shoals' BLA products practice any claim of the '153 Patent, at least the secondary indicia of commercial success should weigh in Shoals' favor toward a finding of non-obviousness." SIB at 63-64; *see also* SRB at 36.

Voltage's post-hearing briefs provide no rebuttal to Shoals' contentions or evidence regarding secondary considerations.

As discussed *supra,* the undersigned finds that Shoals' BLA products practice claims 1 and 21 of the '153 patent.[140] The undersigned also finds that Shoals has presented strong *prima facie* evidence of secondary considerations of non-obviousness (including, in particular, industry skepticism, industry praise, and commercial success) linked to the BLA products and their

[140] An exception relates to BLA products that include only mold drops with one drop line. However, as discussed in connection with the economic prong, this does not appear to be a large proportion of Shoals' business.

implementation by customers, which Voltage has not rebutted. *See* CIB at 127-131 and evidence cited therein. The evidence shows that Shoals' BLA product has achieved significant success in the industry and has been viewed as providing significant contributions to the market solutions available. *See, e.g.*, CX-0256 at 7219 (PV Magazine award to Shoals BLA product "thanks to its proven potential for speeding up installation times and bringing down component costs by eliminating combiner boxes and simplifying this aspect of installation"); JX-0128C (GRAPH study); Tr. (Macias) at 130:14-131:2 and JX-0114 at 22 (SHOALS00005950) (Shoals Investor Presentation); Tr. (Voltage opening statement) at 78:6-8 (not doubting that "Shoals has done great things for the solar industry"); CIB at 127-129. As noted *supra*, Voltage does not address secondary considerations at all.

Further, with respect to claim 1, the undersigned finds there is a presumption of nexus because the record indicates that the BLA products are coextensive with the claims. *See Fox Factory, Inc. v. SRAM, LLC*, 944 F.3d 1366, 1373 (Fed. Cir. 2019) ("a patentee is entitled to a rebuttable presumption of nexus . . . if the patentee shows that the asserted evidence is tied to a specific product and that the product *is* the invention disclosed and claimed") (internal quotation omitted); *id.* ("That is, presuming nexus is appropriate when the patentee shows that the asserted objective evidence is tied to a specific product and that the product embodies the claimed features, and is coextensive with them"); CIB at 131 (arguing presumption of nexus). Voltage provided no rebuttal argument regarding nexus.

Claim 21 claims a solar power system comprising *inter alia* a "plurality of solar panels." Since the BLA products do not include solar panels, these products are not coextensive with the claims. *See Fox Factory*, 944 F.3d at 1373 (finding "coextensiveness" required to presume a nexus). The evidence does indicate, however, that Shoals' customers practice claim 21, and thus

a presumption of nexus would apply for industry praise and industry skepticism made in relation to the implementation of Shoals' products. *See* JX-0345C. Further, while a presumption of nexus does not apply for Shoals' commercial success, there is evidence of nexus between the commercial success of the Shoals' BLA products and the patent at issue. *See* CIB at 131-32; JX-0128C at 80 (indicating that a [redacted]); '153 patent at 1:44-60 (noting issues with "known power installations" with combiner boxes which "which are "clumsy . . . must be periodically maintained, and require extensive planning and skill for installation" and the need for a device that is "easy to use").[141]

Based on the evidence of record, and Voltage's lack of any argument on this issue, the evidence of secondary considerations weighs significantly against a finding of obviousness with respect to the claims at issue. *See, e.g., WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1328 (Fed. Cir. 2016) ("The objective indicia of non-obviousness play an important role as a guard against the statutorily proscribed hindsight reasoning in the obviousness analysis. Indeed, we have held that evidence of secondary considerations may often be the most probative and cogent evidence in the record.").

[141] While Shoals did not assert claim 24 to support a domestic industry, Voltage's invalidity analysis assumes that a product practicing claim 21 would also practice claim 24, thus indicating that the secondary considerations of obviousness would apply to claim 24 as well. And even if secondary considerations did not apply with respect to claim 24, the evidence fails to clearly and convincingly show obviousness based on the lack of sufficient evidence and expert testimony as discussed in prior sections.

B. Indefiniteness

As discussed above in Part V.E, the evidence does not show that the asserted claims of the '153 are indefinite.

C. Lack of Written Description/Enablement

Voltage's written description arguments essentially mirror its indefiniteness arguments. *See* RIB at 128-139. Moreover, Voltage's argument that "there is little to support . . . a written description of the claimed apertures, apart from the figures" (RIB at 128) fails to take into account the patent figures. *See Cooper Cameron Corp. v. Kvaerner Oilfield Prods., Inc.*, 291 F.3d 1317, 1322 (Fed. Cir. 2002) (drawings can "constitute an adequate description"). Moreover, the specification describes the creation of an assembly that applies an undermold and overmold to a joint that includes a drop line and feeder cable. *See* '153 patent at 5:60-6:13; Fig. 7. Staff refers to an alleged lack of enablement but provides no explanation or argument. *See* SIB at 65. The evidence fails to clearly and convincingly show invalidity based on lack of written description or lack of enablement.

X. CONCLUSIONS OF LAW

Based on the foregoing, and the record, it is the undersigned's final initial determination that there has been a violation of section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. § 1337, in the importation into the United States, the sale for importation, and/or the sale within the United States after importation of certain photovoltaic connectors and components thereof by reason of infringement of claims 1, 11-14, and 18 of U.S. Patent No. 11,689,153.

This determination is based on the following conclusions of law:

1. The Voltage Trunk Bus and Voltage AD Trunk Bus have been imported into the United States, sold for importation, and/or sold within the United States after importation.

2. Claims 1, 11-14, and 18 of the '153 patent are infringed by the Voltage Trunk Bus. Claims 21, 23, and 24 are not infringed by the Voltage Trunk Bus.

3. Claims 1, 11-14, 18, 21, 23, and 24 of the '153 patent are not infringed by the Voltage AD Trunk Bus.

4. The technical prong of the domestic industry requirement has been met for the '153 patent.

5. The economic prong of the domestic industry requirement has been satisfied for the '153 patent.

6. Claims 1, 11-14, 18, 21, 23, and 24 of the '153 patent have not been shown to be invalid.

The undersigned hereby certifies the record in this investigation to the Commission with the undersigned's final initial determination. Pursuant to Commission Rule 210.38, the record further comprises the complaint and exhibits thereto, and the exhibits attached to the parties' summary determination motions and the responses thereto. 19 C.F.R. § 210.38(a).

Pursuant to Commission Rule 210.42(h)(2), this initial determination shall become the determination of the Commission 60 days after the service thereof, unless a party files a petition for review pursuant to Commission Rule 210.43(a), the Commission orders its own review pursuant to Commission Rule 210.44. 19 C.F.R. § 210.42(h)(2).

This initial determination is being issued with a confidential designation pursuant to Commission Rule 210.5 and the protective order in this investigation. Within 10 days of the date of this document, the parties shall submit a joint statement as to whether or not they seek to have any portion of this document deleted from the public version. If the parties do seek to have portions of this document deleted from the public version, they must submit a single proposed public version of this final initial determination with any proposed redactions consistent with the

manner specified by Ground Rule 1.9.[142] The submission shall be made by email to Bhattacharyya337@usitc.gov and need not be filed with the Commission Secretary.

SO ORDERED.

Monica Bhattacharyya
Administrative Law Judge

[142] Redactions should be limited to avoid obscuring the reasoning underlying the decision. Parties who submit excessive redactions may be required to provide an additional written statement, supported by declarations from individuals with personal knowledge, explaining why each proposed redaction meets the definition for confidential business information in 19 C.F.R. § 201.6(a).