

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SILENCERCO WEAPONS RESEARCH, LLC

Petitioner,

v.

HUXWRX SAFETY CO. LLC,

Patent Owner.

IPR2024-01214

Patent 8,286,750 B1

PETITIONER'S REPLY TO PATENT OWNER'S RESPONSE

TABLE OF CONTENTS

I.	Introduction.....	1
II.	Patent Owner’s Expert.....	2
III.	Claim Construction	3
A.	The ’750 Patent.....	3
1.	The Disclosure (EX1001).....	3
2.	The Prosecution History (EX1004).....	7
B.	Construction Of Each Challenged Claim	9
1.	“a serpentine fluid pathway which is . . . radially serpentine”.....	9
2.	“a common off axis chamber”.....	16
3.	“a plurality of deflectors . . . configured to deflect the energy from the high energy material to the common off axis chamber”	17
4.	“fluid outlet”	17
5.	“a serpentine fluid pathway which is at least one of axially serpentine and radially serpentine.”.....	18
C.	Grounds Of Unpatentability For Each Challenged Claim	18
1.	GROUND 1.	18
2.	GROUND 2.	19
3.	GROUND 3.	22
4.	GROUND 4–8.	24

IV.	Conclusion	25
A.	Appendix: Exhibits Listing	27

I. INTRODUCTION

The Board was right to institute *inter partes* review of the challenged claims. PO makes no effort to defend a majority of the challenged claims, thereby conceding their unpatentability. With respect to the claims PO attempts to save, Claims 2, 3, 6, 9, 12–14, 18, and 20, PO's arguments against the instituted grounds fail for multiple reasons.

First, while PO states that it agrees with the Board's construction of "radially serpentine" [PO's Response ("Response"), 10], PO nevertheless proposes a wholly different construction for this term and in turn, bases its arguments on that proposed construction. PO's proposed construction lacks support from the intrinsic evidence and fails to align with the patent's own definition for this term.

Second, with respect to PO's substantive arguments against invalidation, PO fails to establish that challenged claims are neither anticipated nor rendered obvious by the identified prior art. As reflected in the prior art of record, the techniques and energy suppression devices ("ESDs")¹ claimed in the '750-Patent were neither novel nor nonobvious on February 11, 2010, the patent's earliest possible filing date—and, in fact, have been around for over a century. Indeed, the concept of a central chamber in fluid communication with an off-axis chamber designed to dissipate energy from high-energy materials was a known, common

¹ Referred to as an "energy capture and control" device in the '750-Patent.

feature in numerous historical ESDs.² Additionally, the use of multiple deflectors within a central chamber to establish separate and direct fluid connections with a common off-axis chamber was well-established long before the filing of the '750-Patent.³ Furthermore, incorporating a variety of fluid pathways—be they axially serpentine, helical⁴, etc.—into an off-axis chamber was a known method for energy dissipation.⁵ These elements, collectively, underscore the patent's lack of innovation, as it merely echoes longstanding practices in the field rather than offering any patentable advancement in the art.

II. PATENT OWNER'S EXPERT

In support of its Response, PO submits the declaration of Dr. G. Paul Neitzel. EX2001. PO's expert, Dr. Neitzel, admittedly lacks any experience in the analysis, design, research, or manufacturing of firearm suppressors or mufflers—experience which he himself acknowledges is required to meet the definition of a person of ordinary skill in the art. EX1037, ¶¶20–6. Despite this admitted

² See e.g., EX1015, FIG. 1; EX1017, FIG. 1; EX1019, FIG. 1; EX1021, FIG. 1; EX1022, 1; EX1023, 14; EX1024, FIG. 1; EX1027, FIGs. 1, 10, 14.

³ See e.g., EX1015, FIG. 1; EX1017, FIG. 1; EX1021, FIG. 1; EX1027, FIGs. 1, 10, 14.

⁴ Indeed, PO's current position characterizes a helical coil that reverses direction as a "radially serpentine" fluid pathway. However, had PO advanced that interpretation during prosecution of the '750-Patent, the application would likely have been rejected as anticipated or rendered obvious in view of U.S. Patent No. 3,667,570 to WerBell. See EX1004, 127; EX1038.

⁵ See fn. 2; see also, e.g., EX1008, FIGs. 5-7; EX1009, FIG. 1; EX1016, FIG. 2; EX1025, FIG. 1; EX1026, FIGs. 1, 4, 5.

deficiency, Dr. Neitzel offers claim construction opinions premised on his belief that PO selected inappropriate terminology when defining “radially serpentine.” EX1036, 21:4–15. Furthermore, Dr. Neitzel acknowledged that he provided no supporting evidence or authority for his opinions regarding analogous art and other substantive sections of his declaration, undermining the reliability and foundation of his expert testimony. EX1036, 49:9–51:13. As such, the Board should afford Dr. Neitzel's opinions little to no weight. EX1037, ¶¶20–6

III. CLAIM CONSTRUCTION

While PO agrees with Petitioner that no term needs construction to resolve the issues in this IPR, PO's Response proposes its own interpretation of the ordinary and customary meaning (“OCM”) of several terms at issue in this IPR. Response, 9–21. For the reasons set forth in the Petition and as further clarified below, PO's proposed OCMs for the terms at issue should be rejected.

A. The '750 Patent

1. *The Disclosure (EX1001)*

As more fully detailed in the Petition, the '750-Patent discloses ESDs that include a central chamber in fluid communication with an off-axis chamber that includes a fluid outlet and internal walls that produce a serpentine fluid pathway. EX1001, 4:10–18. Specifically, the '750-Patent discloses three examples of such ESDs in the illustrations and descriptions of FIGs. 1a and 1b, FIG. 14, and FIG. 16.

The first ESD described of the '750-Patent is illustrated in FIGs. 1a and 1b (reproduced *infra*).

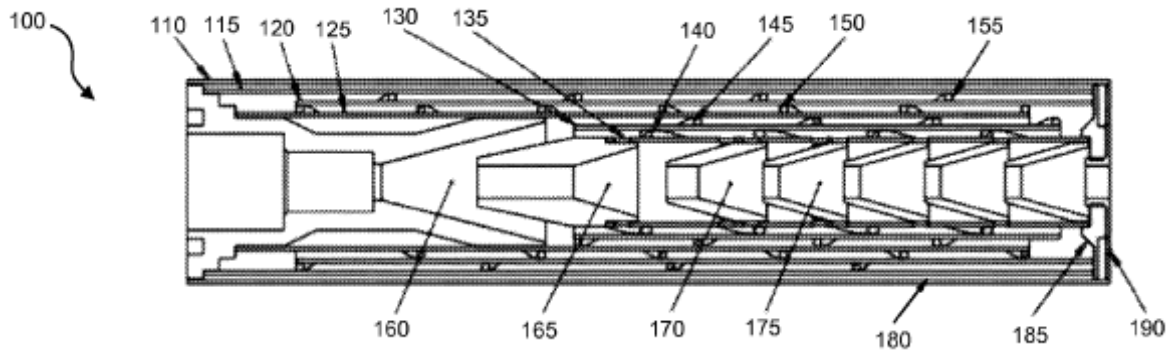


FIG. 1a

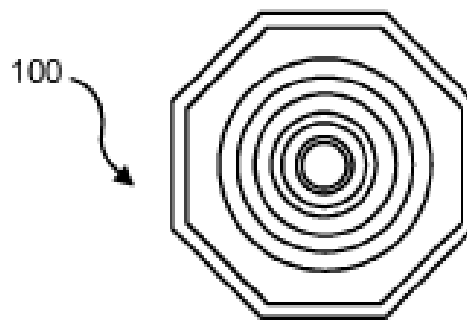


FIG. 1b

Specifically, the '750-Patent describes that:

The off axis chamber can include multiple internal walls 115, 120, 125, 130, 140, 145, 150, and/or 155 defining a serpentine or winding fluid pathway. The multiple internal walls can provide an increased volume for fluid expansion and increased acoustic absorbent path length. The fluid pathway can be:]

an *axially serpentine* fluid pathway which causes fluids received in the off axis chamber to travel back and forth *along a length of the off axis chamber*.

... a *radially serpentine* fluid pathway which causes the fluids received in the off axis chamber to flow back and forth *around a radius of the off axis chamber.*

. . . a *radially serpentine* pathway which causes the fluids to flow back and forth around a radius of the off axis chamber while also traversing a length of the off axis chamber.

. . . a *helical* fluid pathway which causes the fluids to spiral around the central chamber within the off axis chamber *along a length of the off axis chamber*.

The various configurations can be integrated into various combinations as well to produce more complex flow paths. *Id.*, 4:27–45 (formatting added).

As further explained in the '750-Patent:

FIG. 1a illustrates an example configuration where the internal walls define an *axially serpentine fluid pathway which helically spirals around the central chamber* along a length of the off axis chamber. *Id.*, 4:60–63.⁶

After the first ESD illustrated in FIG. 1a, the second ESD of the '750-Patent is illustrated in FIG. 14:

⁶ During the prosecution of the '750-Patent's application, PO stated that it agreed with the Office that a cited reference, Latka, "discloses and [sic] 'axially helical fluid pathway'... but emphasize[d] that axially helical is substantially different from axially serpentine." See EX1004, 094.

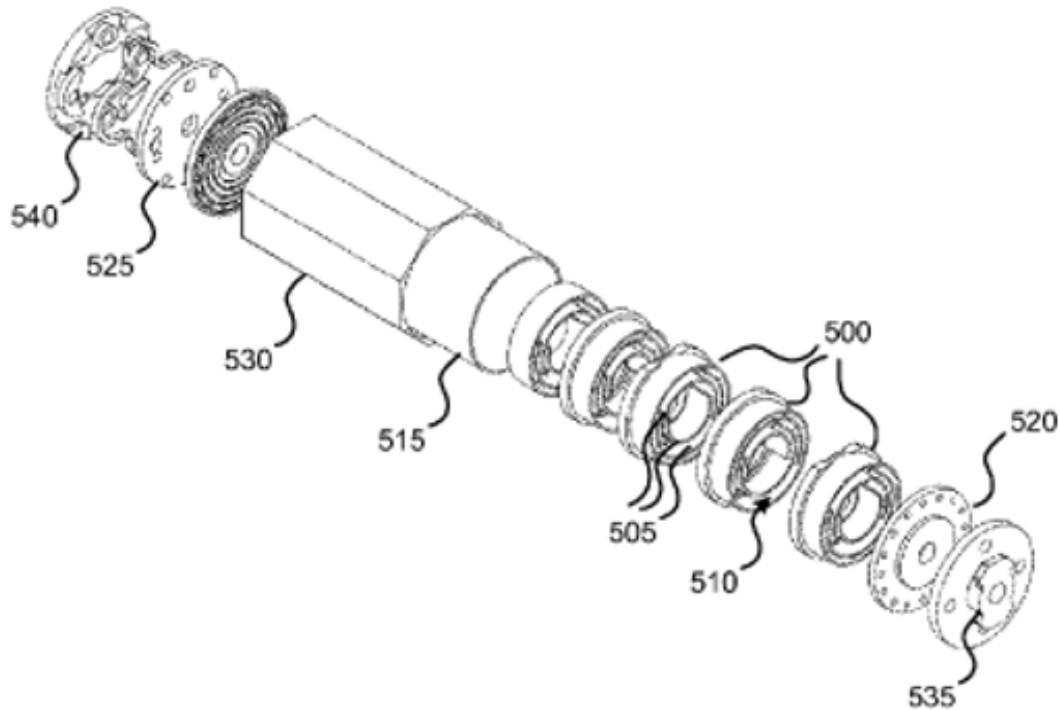


FIG. 14

Specifically, the '750-Patent describes that:

Another alternative configuration for the internal walls to form *the serpentine pathway* can be concentric incomplete cylinders . . . *One example of such a configuration is shown in FIG. 14.* In this configuration, the device includes multiple segments 500 which *each* have concentric offset cylinders 505. Gases flow into a serpentine path 510 created by the offset and spaced cylinders. *The serpentine path in this case is a series of annular spaces which are connected and progressively larger. Id., 9:1–13.*

The third ESD in the '750-Patent is illustrated in FIG. 16:

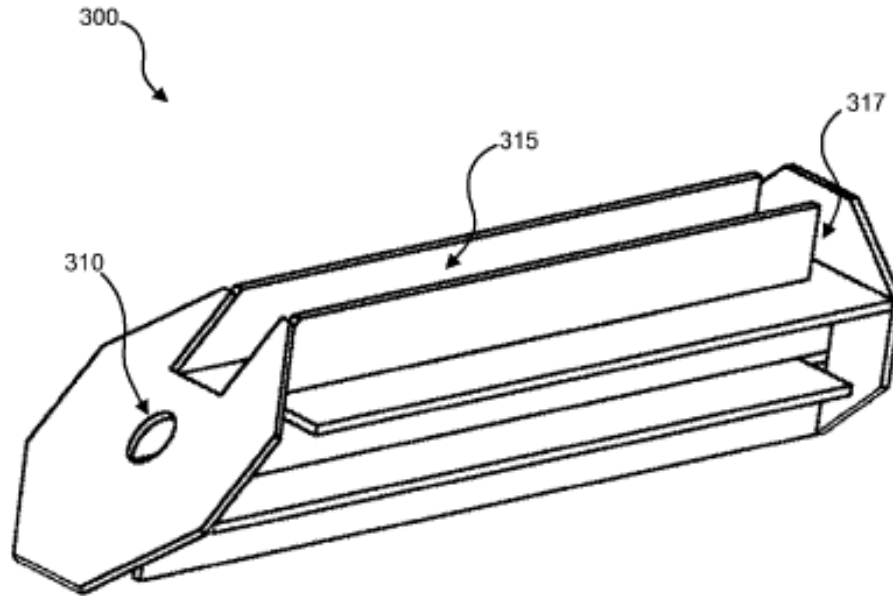


FIG. 16

Specifically, the '750-Patent describes that:

[A]nother optional configuration for the multiple internal walls which form a plurality of longitudinal chambers. For purposes of illustration, the outer shell shown in previous figures is not shown. The *longitudinal* chambers can be each off set from the central axis and fluidly connected to [form] *the axially serpentine fluid pathway*. *Id.*, 9:50–55.

2. The Prosecution History (EX1004)

In its response to the first Non-Final Office Action mailed September 30, 2011, PO amended independent Claim 1 (and similarly amended independent Claim 17⁷) to include “an off axis chamber . . . having a fluid outlet and multiple internal walls configured to produce a serpentine fluid pathway which is at least one of axially serpentine and radially serpentine.” EX1004, 088, 090 (amendment

⁷ Compare with EX1001, Claim 18.

markings therein). PO also amended independent Claim 20⁸ to include a common off-axis chamber comprising “~~a winding~~ an axially serpentine fluid pathway and a fluid outlet.” *Id.*, 091 (amendment markings therein).

In support of these amendments, and despite never describing the fluid pathway of Fig. 14 as radially serpentine in the written description, PO represented that “each of the independent claims requires ‘at least one of an axially serpentine and radially serpentine’ fluid pathway” representing that, for “radially serpentine flow . . . fluid would flow *back and forth from clockwise to counter-clockwise around the axis* as described in page 7, lines 20–22 and shown in Figure 14 (See units 500, 505 and 510) [of the ’750 Patent’s specification as filed].” *Id.*, 093.

After failing to persuade the Examiner of the amended claims’ patentability, PO amended, in its response to the subsequent Final Office Action, PO further amended independent Claim 1 to include “a common off axis chamber” and “c) a plurality of deflectors oriented in series along the central axis of the central chamber and configured to deflect the energy from the high energy material to the common off axis chamber.” *Id.*, 048 (amendment markings therein). In support of these amendments, PO represented that “the off axis chamber is a ‘*common*’ off axis chamber into which *a plurality of deflectors* direct energy.” EX1004, 54. PO further represented that “the [claimed] off axis chamber *spans and is connected to*

⁸ Compare with EX1001, Claim 22.

multiple deflectors.” Id., 54. The Notice of Allowance was then issued on June 12, 2012. *Id.*, 31.

B. Construction Of Each Challenged Claim

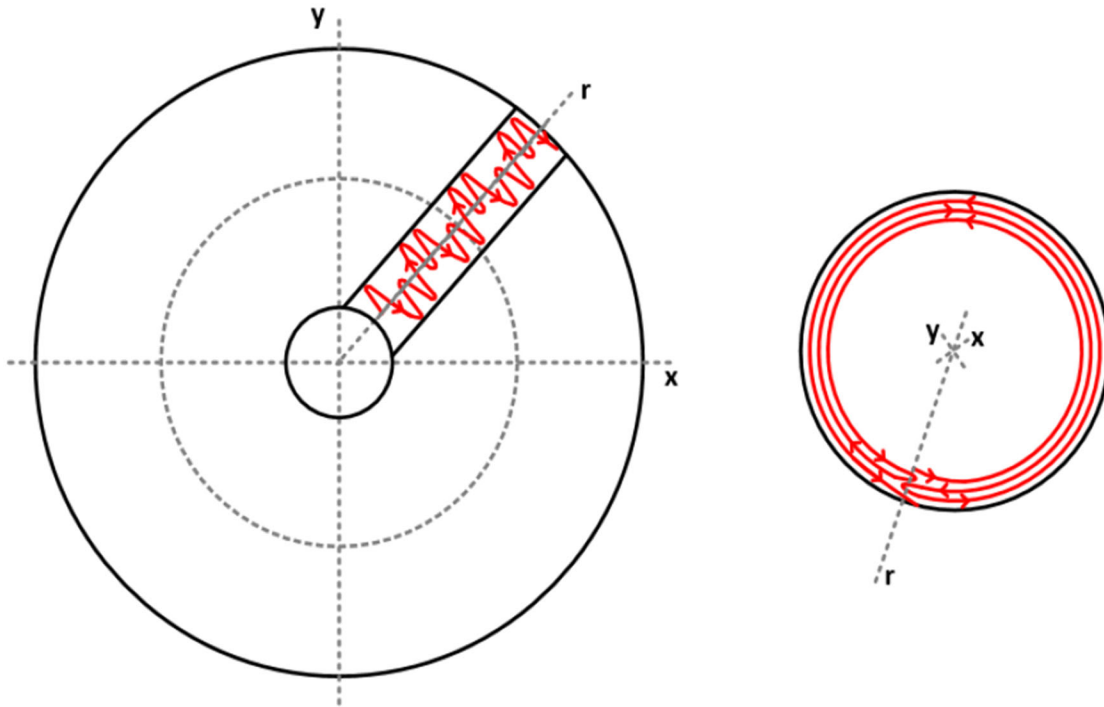
1. “a serpentine fluid pathway which is . . . radially serpentine”

As proposed by Petitioner, and as preliminarily defined by the Board, PO agrees that “radially serpentine” means “a back and forth flow around a radius of the off axis chamber.” Paper 7 (“ID”), 14; Response, 10. PO agrees that this construction is consistent with the ’750-Patent’s own definition of “radially serpentine,” specifically that “a radially serpentine fluid pathway [] causes the fluids received in the off axis chamber to flow back and forth around a radius of the off axis chamber” and that “in another aspect . . . a radially serpentine fluid pathway [] causes the fluids . . . to flow back and forth around a radius of the off axis chamber while also traversing a length of the off axis chamber.” EX1001, 4:34–41; Response, 10. PO further agrees that this construction is consistent with the prosecution history. Response, 10.

Despite “agreeing” with the Board’s preliminary construction, PO then seeks to “clarify some of Petitioner’s characterizations” of this term. Under the guise of clarification, however, PO seeks to change and expand the scope of “radially serpentine” in a way that is unsupported by the intrinsic evidence.

In the Petition, based upon the ’750-Patent’s disclosures and definitions, Petitioner proposed two examples of fluid flows that fit within the definition of

“radially serpentine.” EX1013, ¶¶127–28; Figs. 1, 2. First, Petitioner identified that a “radially serpentine fluid pathway . . . causes the fluids received in the off-axis chamber to flow *back and forth around a radius of the off axis chamber.*” EX1001, 4:34–37. A depiction of this fluid flow is shown below:

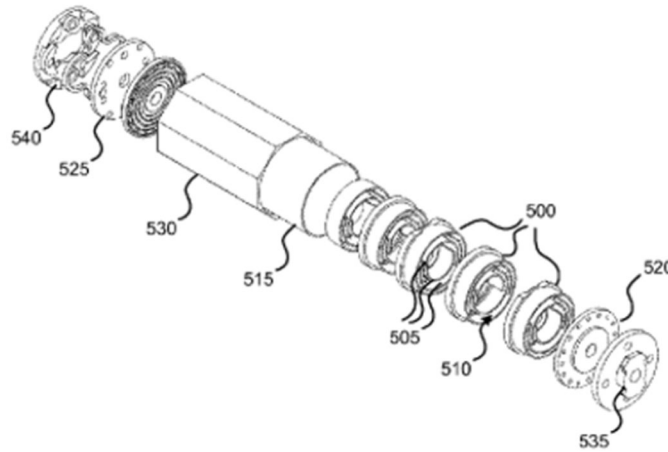


EX1013, 53, Figure 1 (Depiction of “radially serpentine” given in lines 34-37 of column 4 of the ’750-Patent)

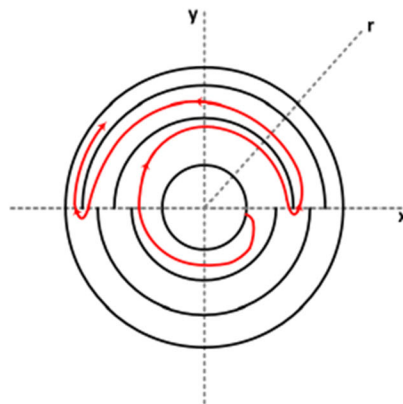
Petition, 14–16.

Second, Petitioner identified a second example of “radially serpentine” flow as it relates to Fig. 14 of the ’750-Patent—an example only applicable to silencers having annular spaces between concentric cylinders positioned within the off axis chamber of an ESD. Specifically, Petitioner identified a radially serpentine fluid pathway illustrated in Fig. 14 that serpentine back (*i.e.*, counterclockwise) and

forth (*i.e.*, clockwise) while advancing radially outward through a series of annular spaces that are connected and progressively larger. Petition, 16–17; EX1013, ¶128. A depiction of this fluid flow is exemplified by Fig. 14 of the '750-Patent and Fig. 2 of the Mr. Nixon's Original Declaration:



EX1001, FIG. 14



EX1013, 55, Figure 2 (Depiction of “radially serpentine” in FIG. 14 and prosecution history context)

Importantly, with respect to Petitioner's second example, the Board disagreed with Petitioner that such example discloses a “radially serpentine” fluid pathway and instead found that this example discloses a fluid flow that is

“circumferentially about the central chamber.” ID, 14. The Board noted that the “portion of the specification discussing the embodiment illustrated in Figure 14 does not mention a ‘radially’ serpentine flow, instead describing flow through the annular spaces between concentric cylinders positioned within the off axis chamber. *See* Ex. 1004, 259:11–19 (corresponding to Ex. 1001, 9:1–13). Thus, the flow described here flows *circumferentially* about the central chamber, not radially.” *Id.*

Since filing the Petition, Petitioner has reviewed the Board's ID and the reasons supporting the Board's preliminary construction of the fluid flow of Fig. 14 as “circumferential.” In view of the Board's reasoning for the distinction between “radially serpentine” and “circumferential” fluid flow, Petitioner agrees with the Board. The '750-Patent's failure to describe Fig. 14 as “radially serpentine” is telling, especially in light of the patent's explicit description of Figs. 1a and 16 as axially serpentine. EX1001, 4:60–63, 9:50–55; EX1037, ¶46.

Consequently, Petitioner agrees that this second example, found in Fig. 14 of the '750-Patent and the disclosures related to the same, discloses a “circumferential” fluid flow, not a radially serpentine fluid flow.

PO disagrees, asserting that what the Board “appears to characterize as circumferential flow while traversing the length of the chamber in the context of the '750 Patent would be ‘helical’ if there were no changes of direction, but

‘radially serpentine’ when there is at least one change of direction.” Response, 16.

The intrinsic evidence does not support PO’s proposed OCM, however, and indeed, PO makes no effort to cite the ’750-Patent or its prosecution history for support, relying instead upon Dr. Neitzel. *Id.*

But Dr. Neitzel’s opinions on this topic are fundamentally flawed, for several reasons. First, Dr. Neitzel believes PO simply chose the wrong language when defining the term, an approach that ignores established claim construction principles. EX1037, ¶48. Second, Dr. Neitzel disregards the patent’s plain language by suggesting that “radially serpentine” requires fluid to flow *across*, rather than *around*, a radius. *Id.* Third, Dr. Neitzel ignores how the patentee uses directional modifiers with the word “serpentine,” incorrectly asserting, without any support from the ’750-Patent, that a helically serpentine flow is actually a radially serpentine flow, rather than recognizing that radially serpentine flow is defined with reference to a radial direction—just as axially serpentine flow is defined with reference to the axial direction. *Id.* Fourth, Dr. Neitzel’s proposed definition of “radially serpentine” would require reference to multiple radii at different locations, essentially rendering any serpentine flow (including axially serpentine flow) “radially serpentine,” despite the complete absence of support in the patent for defining radially or axially serpentine flow with reference to multiple radii or

axes, respectively. *Id.* Finally, Dr. Neitzel's admitted lack of experience with suppressors undermines any credibility he might have as an expert in this field. *Id.*

PO also fails to acknowledge that the helically serpentine flow that it attempts to characterize as "radially serpentine" is amply disclosed in the prior art. U.S. Patent No. 3,667,570 to WerBell, cited by the Examiner during prosecution of the '750-Patent, disclosed such flow and would have prevented the '750-Patent from ever issuing had PO advanced the same argument during prosecution. *See* EX1004, 127 (citing WerBell); EX1038, Abstract ("A plurality of helical suppressor elements are axially disposed in the suppression chamber and arranged in opposition to each other."), FIGs. 2, 6; *see also* EX1018; EX1036 at 62:16–63:16 (Q: What fluid flow is depicted in that off axis chamber in Barlowatz? A: If the flow follows those walls, that would be radially serpentine."); EX1037, ¶¶49–50.

Additionally, PO's (and Dr. Neitzel's, *see* EX1036 at 32:2–35:8; 38:23–39:15) position contradicts the plain language of the '750-Patent, which defines "radially serpentine" flow as fluid flow ***back and forth around a radius of the off axis chamber***, while "helical" flow is flow in which the fluid ***spirals around the central chamber***. *See* EX1001, 4:34–44. Indeed, using PO's own naming convention, the flow described by PO would be "helically serpentine," not

“radially serpentine.” These flows are entirely different and are not differentiated merely by a change in direction. EX1037, ¶¶49–50.

PO's attempt to change the meaning of “radially serpentine” to suit its current needs is nothing new. In the related litigation, PO has taken the position that the OCM of a “radially serpentine” fluid pathway is simply *a pathway that causes fluid to change direction (e.g., from clockwise to counterclockwise)* without any mention of its agreed construction here, where PO stated that “‘radially serpentine’ as recited in the claims of the '750 patent [] mean[s] a back and forth flow *around a radius* of the off axis chamber”. See Response, 10; EX1033, 4. PO's own expert disagrees with this position, and importantly, with the plain language of the '750-Patent, opining that radially serpentine refers to fluid flowing across a radius. EX1037, ¶¶48–51.

This is not the first time PO has taken liberty with the meaning of “radially serpentine.” See EX1035 (asserting, in another litigation, that “[u]pon information and belief, the Accused Products also comprise an off axis chamber *with multiple internal walls configured in the shape of a helix which creates a radially serpentine path that spirals around the central chamber* dispersing high energy material”). EX1037, ¶52.

PO's ever-changing definitions further undermine the credibility of PO's proposed OCM of "radially serpentine," which has no legitimate basis in the '750-Patent, the prosecution history, or Dr. Neitzel's opinions.

For all these reasons, the Board should reject PO's proposed OCM of "radially serpentine" detailed above.⁹ EX1037, ¶¶48–54.

2. ***a common off axis chamber***

PO offers no material argument against Petitioner's OCM for this claim term. Instead, PO suggests that construction of this term is not addressed to any issue in this IPR and, as such, requires no construction. Response, 17. However, this term is implicated in the grounds challenging at least Claims 2, 5 and 6 (with respect to the configuration of the common off-axis chamber and/or the plurality of deflectors directing fluid into the common off-axis chamber). Despite its implication in the challenges to these claims, PO fails to offer its own meaning of this term, but instead, simply notes its disagreement with Petitioner's, thus putting it in controversy. In addition, and to the extent PO attempts to argue that any prior art reference fails to disclose this claim element based on PO's noted disagreement,

⁹ Petitioner maintains its position that a serpentine flow requires two or more changes in direction [Petition at 17; EX1013, ¶130], yet withdraws its position, in light of the Board's reasoning [ID, 13-14], that a radially serpentine fluid pathway only flows outwardly along a radius of the off axis chamber.

Petitioner respectfully requests that the Board adopt Petitioner's proposed OCM for this claim term. EX1037, ¶¶29–31.

3. “a plurality of deflectors . . . configured to deflect the energy from the high energy material to the common off axis chamber”

As with “a common off axis chamber,” PO offers no material argument against Petitioner's OCM for this claim term. Instead, PO suggests that construction of this term is not addressed to any issue in this IPR and, as such, requires no construction. Response, 17. However, as with the “common off axis chamber” term, this term is implicated in the grounds challenging at least Claims 2, 5 and 6. Yet PO fails to offer its own meaning of this term, instead simply noting its disagreement with Petitioner's proposed construction. The term is thus in controversy. To the extent PO relies upon its noted disagreement in attempting to argue that any prior art reference fails to disclose this claim term, Petitioner respectfully requests that the Board adopt Petitioner's proposed OCM. EX1037, ¶¶32–34.

4. “fluid outlet”

In response to Petitioner's expert's opinions as to this claim element [EX1013, ¶¶115–17] PO has clarified its proposed OCM of “fluid outlet.” Response, 17–21. Specifically, PO admits that the “‘fluid outlet’ must simply *allow* fluids to escape the off axis chamber without returning to the central chamber,” [Response, 21, emphasis in original] rather than requiring it to do so.

See EX1004, 093–094 (“an outlet for fluids to escape the off axis chamber and the device *without* returning to the central chamber”). With this clarification, and the understanding that the “fluid outlet” *allows* for fluids to return to the central chamber (rather than *prohibiting* them from returning to the central chamber) the parties appear to have agreement on the OCM of this term. EX1037, ¶¶35–9.

5. “a serpentine fluid pathway which is at least one of axially serpentine and radially serpentine.”

Upon review of the Board's reasoning regarding this term [ID at 14–16], Petitioner agrees with the Board's interpretation. By clarifying that this claim language requires the presence of *either* an axially serpentine *or* a radially serpentine fluid pathway, the Board's interpretation provides a more coherent understanding of how the claim should be applied.

C. Grounds Of Unpatentability For Each Challenged Claim

1. GROUND 1.

The Petition asserts that Thurler discloses all limitations of Claims 1, 4, 5, 7–9, 15–17, 19, and 22.

In the ID, the Board found that Thurler disclosed all elements of the '750-Patent's independent claims, Claims 1, 19 and 22. See ID, 22-28; EX1036, 54:5–58:24 (Dr. Neitzel agreeing). Specifically, the Board found that Thurler discloses at least: (1) an energy capture and control device; (2) a central chamber element; (3) an off axis chamber element; (4) an axially serpentine fluid pathway element; (5) a plurality of deflectors element; (6) a fluid communication element; and (7) a

plurality of orifices. *Id.* The Board did not address Ground 1 with respect to the challenged dependent claims under this ground. *Id.*

Rather than contest the disclosure of Thurler for most challenged claims, Patent Owner concedes that Thurler anticipates these claims by failing to respond to Petitioner's assertions and, instead, seeks to amend these claims, only contesting Ground 1 with respect to Claim 9.

Claim 9 depends on Claim 1 and further recites that the claimed multiple internal walls are formed to produce a radially serpentine fluid pathway. *See* EX1001, Claim 9. Regarding “radially serpentine,” the Board found that Thurler did not disclose a “radially serpentine” fluid pathway, (ID, 25–2), based on the Board's conclusion that “radially serpentine” fluid flow is only that which flows back and forth around a radius of the off axis chamber. *See* ID, 12–14. Under this definition, Petitioner concedes that Thurler fails to disclose a radially serpentine fluid flow, as required by Claim 9 of the '750-Patent. If, however, the Board agrees with PO and concludes that “radially serpentine” fluid flow encompasses the “circumferential” fluid flow depicted in the '750-Patent's Fig. 14, then Thurler anticipates Claim 9 of the '750-Patent. *See* Petition, Ground 1.

2. GROUND 2.

The Petition asserts that Thurler's ESD renders obvious all limitations recited in Claims 1, 4–11, 15–17, 19, 21, and 22. Rather than contest these

assertions for most challenged claims, PO concedes that Thurler renders these claims obvious by failing to respond to Petitioner's assertions and, instead, seeks to non-contingently amend these claims, only contesting Ground 2 with respect to Claims 6 and 9.

With respect to Claim 6, which requires that the “the fluid communication between the common off axis chamber and the central chamber occurs only at the primary deflector, the secondary deflector and a first tertiary deflector,” Thurler renders this claim obvious. Specifically, Thurler discloses that the tube *e* (which separates the central chamber in Thurler from the off-axis chamber in Thurler) is “perforated for two thirds of its length.” *See* EX1015, Claim 1. Given this disclosure, Petitioner asserts that Thurler contemplates other lengths of perforations but opted to use a perforation configuration that extends two thirds of the length. EX1013, ¶¶212-13.

In response, PO argues that Thurler's disclosure of perforations for two thirds of its length does not contemplate other lengths of perforations, and thus, does not render this claim obvious by teaching or suggesting any other length of perforations. However, Thurler does indeed disclose other lengths of perforations with respect to the disclosed tubes. For example, Thurler discloses that “tube *g* is perforated at the first part *g'* for one-third of its length...[a] third tube *h* [is] perforated at its rear part for one-third of its length...” *See* EX1015, 1:73–76. As

such, contrary to PO's assertions, Thurler does disclose other lengths of perforations, albeit with respect to its additional tubes rather than the deflectors. A POSITA would appreciate this disclosure as teaching or suggesting shorter or longer lengths of perforation for the tube *e*, including a shorter perforation configuration that limits fluid communication between the central chamber and common off-axis chamber of Thurler to the first three sleeves *d*. EX1037, ¶¶65–75.

Next, PO argues that Petitioner has failed to show that it would have been obvious to a POSITA to modify Thurler's ESD to achieve such a configuration. Response, 36–37. However, as noted in the Petition, modifying Thurler's ESD to achieve such a configuration would have been a simple matter of design choice resulting from a finite number of possibilities: ***permitting fluid communication from one, two, . . . or all of Thurler's deflectors***. See EX1013, ¶¶212–13. As originally noted by Mr. Nixon, some of the motivations for modifying Thurler's ESD to limit the fluid communication to the first three sleeves *d* include, at least, seeking to increase the fluid path length, to limit the amount of fluid transferred to Thurler's off-axis chamber, or both. See *id.* In addition, a POSITA would appreciate that, from a cost and manufacturing perspective, minimizing perforations to necessary areas (like deflectors) reduces material usage and potential manufacturing complications, making this option not only obvious but potentially advantageous. EX1037, ¶¶65–75. By limiting the length of perforations,

the complexity of the component is reduced, which can lead to easier manufacturing processes and maintenance procedures, again making this variation a likely consideration for a skilled artisan. *Id.* As such, Thurler renders Claim 6 of the '750-Patent obvious.

With respect to Claim 9, and as noted above, Petitioner agrees with the Board's interpretation regarding the fluid flow depicted in Fig. 14 of the '750-Patent. As such, "radially serpentine" fluid flow is only that which flows back and forth around a radius of the off axis chamber. *See ID*, 12–14. Under this definition, Petitioner concedes that Thurler fails to disclose a radially serpentine fluid flow, as required by Claim 9 of the '750-Patent. If, however, the Board agrees with PO and concludes that "radially serpentine" fluid flow encompasses this "circumferential" fluid flow, Thurler discloses all elements of Claim 9 of the '750-Patent, and anticipates Claim 9 under Ground 1. Contingent upon the Board's holding with respect to the definition of "radially serpentine," Petitioner withdraws Ground 2 with respect to Claim 9.

3. GROUND 3.

As detailed in the Petition, Thurler discloses an ESD having three tubes, with the innermost tube *e* forming the central chamber, and the intermediate tube *g* and outermost tube *h* forming the off-axis chamber. *See EX1015*, FIG. 1; *EX1013*, ¶227.

Additionally, Bouton discloses a muffler device including concentric tubes of progressively larger diameters that are used to at least form an axially serpentine fluid pathway that directs fluids to exhaust out of a front end cap (referred to in Bouton as head 9). *See* EX1016, FIG. 2; EX1013, ¶228.

PO argues that a POSITA would not be motivated to modify Thurler in light of Bouton to reach the alleged invention of Claim 18. Response, 38–41. But, as noted in the Petition, a POSITA would indeed find it obvious to combine the teachings of Thurler, a firearm suppressor patent, with those of Bouton, a muffler patent, due to the shared principles and complementary designs present in both inventions. EX1037, ¶¶78–86. Thurler's firearm suppressor discloses one or more additional tubes (or "mantles") to enhance and optimize sound suppression by creating a longer axially serpentine fluid pathway. EX1013, ¶¶138–42. This was a common principle at the time, to improve noise suppression by increasing the path length and expansion area for the deflected energy. *See* EX1016, 1:99–2:8; EX1001, 4:29-31; EX1013, ¶229. Likewise, Bouton's muffler patent teaches the same serpentine pathway but incorporates an end cap through which fluid escapes at the distal end, enhancing not only the efficiency of exhaust and noise reduction but also ensuring directed fluid flow. EX1037, ¶¶78–86. A POSITA would be motivated to integrate Bouton's end cap design into Thurler's suppressor design due to the benefits provided by more controlled fluid exit, directing the fluid flow

out of the end of Thurler's ESD rather than downward. *Id.* Importantly, this modification would neither interfere with automatic reloading nor obstruct the sight line, as PO argues, due to Thurler's adaptable tube configurations, which can accommodate changes without compromising fundamental operational aspects. *Id.* In addition, modifying Thurler in this way would neither interfere with the line of sight or the automatic reloading of the firearm, and in fact would provide numerous practical advantages. *Id.* As such, it would have been obvious to a POSITA at the time of the invention of the '750-Patent to modify Thurler's ESD to include an additional outermost tube (as Thurler itself discloses) and to implement an endcap that allows the energy to escape from the outlet end of the central chamber — *e.g.*, to at least improve noise suppression by increasing a path length and expansion area for the deflected fluid. *See e.g.*, EX1016, 2:99–3:8; EX1001, 4:29–31; EX1037, ¶¶78–86.

4. GROUNDS 4–8.

With respect to Grounds 4–8, and as noted above, Petitioner agrees with the Board as to the interpretation of *SuperGlide* and the fluid flow depicted in Fig. 14 of the '750-Patent. Based on the ID, Petitioner must only show either axially serpentine or radially serpentine fluid flows, not both, and, importantly, “radially serpentine” fluid flow is only that which flows back and forth around a radius of the off axis chamber. *See ID*, 12–14. If, however, the Board agrees with PO and

concludes that “radially serpentine” fluid flow encompasses this “circumferential” fluid flow, Petitioner will rely on its Petition, and the arguments and exhibits supporting the same with respect to Grounds 4–8, including the arguments set forth above with respect to Grounds 1–3. Contingent upon the Board’s holding with respect to the definition of “radially serpentine,” Petitioner withdraws Grounds 4–8 of its Petition.

IV. CONCLUSION

Petitioner respectfully requests that the Board find Claims 1–22 of the ’750-Patent invalid and unpatentable for the reasons set forth above.

SIGNATURE PAGE

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On: July 22, 2025

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A. APPENDIX: EXHIBITS LISTING

Exhibit No.	Description
1001	US Pat. No. 8,286,750 to Oliver
1002	US Prov. App. No. 61/303,553 for U.S. Pat. No. 8,286,750
1003	US Prov. App. No. 61/418,285 for U.S. Pat. No. 8,286,750
1004	US Pat. No. 8,286,750 Prosecution History
1005	US Pat. No. 7,987,944 to Brittingham
1006	US Pat. No. 6,425,310 to Champion
1007	US Pat. No. 7,207,258 to Scanlon
1008	US Pat. No. 5,952,625 to Huff
1009	US Pat. No. 5,029,512 to Latka
1010	US Pat. No. 6,796,214 to Hausken
1011	US Pat. No. 5,078,043 to Stephens
1012	US Pat. No. 1,341,363 to Fiala
1013	Declaration of Mr. Nixon
1014	Curriculum Vitae of Mr. Nixon
1015	US Pat. No. 1,000,702 to Thurler
1016	US Pat. No. 748,157 to Bouton
1017	FR Pat. No. 493,462 to Barlowatz
1018	FR Pat. No. 493,462 to Barlowatz (Certified Translation)
1019	US Pat. No. 582,485 to Reeves
1020	DE Pat. No. 305,012 to Eichenseher
1021	DE Pat. No. 305,012 to Eichenseher (Certified Translation)
1022	Sound Suppressor for the MP40
1023	A MAC History Lesson
1024	US Pat. No. 3,500,955 to Werbell
1025	US Pat. No. 1,797,310 to Wright
1026	US Pat. No. 3,913,703 to Parker
1027	US Pat. No. 5,659,158 to Browning
1028	US Pat. No. 5,136,923 to Walsh
1029	US Pat. No. 8,096,222 to Silvers
1030	US Pat. No. 9,347,727 to Cler
1031	Compact Thermoelectric Converter by NASA
1032	Complaint in <i>HuxWrx Safety Co. LLC v. SilencerCo, LLC</i>
1033	Exhibit C of Complaint in <i>HuxWrx Safety Co. LLC v. SilencerCo, LLC</i>

1034	HuxWrx Initial Infringement Contentions in <i>HuxWrx Safety Co. LLC v. SilencerCo, LLC</i>
1035	Amended Complaint in <i>O.S.S. Holdings, LLC v. Thermal Defense Solutions, LLC</i>
1036	July 9, 2025, Neitzel Deposition Transcript
1037	Second Declaration of Mr. Nixon
1038	U.S. Patent No. US 3,667,570 to WerBell

CERTIFICATE OF COMPLIANCE

Under 37 CFRs 42.24(d) and 104, the undersigned certifies that this Reply to Patent Owner's Response complies with the type-volume limitation of 37 CFR 42.24(c)(1) of 5,600 words as the word count application of the word processing program used to prepare this Petition indicates that this Petition¹ contains 5,048 words.

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¹ Excluding the cover page, signature page, and portions exempted under 37 CFR § 42.24(a), which include a table of contents, a table of authorities, mandatory notices, a certificate of service or word count, and appendix of exhibits.

CERTIFICATE OF SERVICE

Under 37 CFRs 42.6, 104, and 105, the undersigned certifies that a copy of this Reply to Patent Owner's Response and all associated exhibits have been electronically¹ served, as of the date noted below on counsel for Patent Owner as follows:

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¹ Pursuant to 37 CFR 42.105, the parties have agreed to electronic service.