

**SECOND EXPERT DECLARATION OF EUR ING JOHN NIXON
IN SUPPORT OF PETITIONER’S REPLY
TO PATENT OWNER’S RESPONSE AND
PETITIONER’S OPPOSITION TO PATENT OWNER’S
MOTION TO AMEND**

I, John Nixon, declare as follows:

I. INTRODUCTION

1. I have been retained by Holland & Hart LLP on behalf of SILENCERCO WEAPONS RESEARCH, LLC (“Petitioner” or “SilencerCo”) regarding IPR2024-01214 (“IPR”). I have been retained to provide my independent expert opinions and expert knowledge regarding U.S. Patent No. 8,286,750 (“the ’750 Patent”) entitled, “Energy Capture and Control Device” and Patent Owner’s (“PO”) Motion to Amend certain claims of the ’750 Patent.
2. I have previously provided a Declaration in this IPR, signed on July 23, 2024, in which I provided my independent expert opinions and expert knowledge regarding (1) the level of skill of a person of ordinary skill in the art (“POSITA”) for the invention claimed in the ’750 Patent; (2) the general knowledge of such a person at the time of the invention; (3) what one of ordinary skill in the art before the priority date of the ’750 Patent would have understood, including scientific and technical knowledge related to the ’750 Patent; (4) and whether the grounds and references cited by the Petition render the invention claimed by the ’750

Patent anticipated and/or obvious. I understand my prior Declaration was submitted as EX1013 in this IPR proceeding. When making reference to my prior Declaration herein, I may refer to it as “Original Declaration” or “EX1013.”

3. I have been retained by Holland & Hart LLP on behalf of Petitioner. In this Declaration, I have been asked to provide information and opinions in response to Patent Owner’s Response to the Petition as well as Patent Owner’s Motion to Amend certain claims of the ’750 Patent, including information and opinions in response to PO’s designated expert witness, Dr. G. Paul Neitzel.
4. I am being compensated at my standard rate of \$525.00 per hour for my work on this case. My compensation is in no way dependent upon the outcome of this IPR or any issue therein, nor is it contingent upon the results of my study or the substance of my testimony. I have no stake in the outcome of this IPR.
5. This Declaration supplements aspects of my Original Declaration, and as such, I do not repeat all materials included therein. However, it is understood that such materials are incorporated by reference as if set forth herein in full.

II. SUMMARY OF OPINIONS

6. It is my opinion that a POSITA would understand the ordinary and customary meaning of “a common off axis chamber” to be an off-axis chamber into which at least two deflectors separately and directly deflect energy transferred from a high

energy material (*i.e.*, hot gases and/or small high velocity particulate and/or vaporous products of propellant combustion) received by the central chamber.

7. It is my opinion that a POSITA would understand the ordinary and customary meaning of “a plurality of deflectors . . . configured to deflect the energy from the high energy material to the common off axis chamber” to be at least two deflectors each configured to deflect energy from a high energy material (*i.e.*, hot gases and/or small high velocity particulate and/or vaporous products of propellant combustion) into a common off-axis chamber via respective separate and direct fluid connections.

8. It is my opinion that a POSITA would understand the ordinary and customary meaning of “a fluid outlet” to be an orifice through which gas flows out of the common off-axis chamber.

9. It is my opinion that a POSITA would understand the ordinary and customary meaning of “a serpentine fluid pathway which is . . . radially serpentine” to be a fluid pathway that causes fluids to flow back (*e.g.*, counterclockwise) and forth (*e.g.*, clockwise) in alternate rotational directions, changing direction at least twice, around a radius of the off-axis chamber. It is my opinion that PO and Dr. Neitzel apply a definition of “radially serpentine” that goes against the ’750 Patent’s own definition of “radially serpentine” and advocate for a construction of this term that no POSITA would apply in light of the ’750 Patent’s definition

of “radially serpentine”, and when considering the context of the ’750 Patent in its entirety, including the figures contained therein.

10. It is my opinion that the claims subject to Grounds 1-8 of the Petition, that PO addresses in its Response, are invalid as anticipated and/or obvious as detailed in my Original Declaration.

11. It is my opinion that each of PO’s proposed amended claims in PO’s Motion to Amend are invalid as obvious over the Grounds set forth in Petitioner’s Opposition to PO’s Motion to Amend.

III. BASIS FOR OPINIONS

12. My opinions and analysis set forth in this Declaration are based on my personal knowledge and experience, including my education, training, and work experience in firearms, firearm components/accessories, suppressors/silencers, ballistics, wound ballistics and the analysis, design, research and manufacturing of the same. I have reviewed the ’750 Patent, its prosecution history, and the references identified by Petitioner in this IPR proceeding. I have further reviewed the Board’s Institution Decision (Paper 7) (“ID”), PO’s Response to Petition, PO’s Motion to Amend and the documents cited in and/or accompanying the same.

IV. MATERIALS CONSIDERED

13. In addition to the documents mentioned above, and those I listed as having reviewed and analyzed in my Original Declaration, I am familiar with or have

reviewed each of the listed documents below as part of conducting my analysis and forming my opinions in this IPR proceeding and this Declaration.

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
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 O.S.S. Holdings, LLC v. Thermal Defense Solutions, LLC
1036	July 9, 2025, Neitzel Deposition Transcript
1038	U.S. Patent No. US 3,667,570 to WerBell
1039	U.S. Patent No. US 1,017,003 to Kenney

V. QUALIFICATIONS

14. My qualifications relevant to this IPR and Declaration are summarized in Section V of my Original Declaration, with additional detail provided in my curriculum vitae, which is attached as EX1014, thereto, and as such, are not reproduced here.

VI. LEGAL PRINCIPLES

15. I have been asked to provide my opinions in response to the positions set forth in PO's Response to Petition and PO's Motion to Amend, including my opinions as to those set forth by Dr. Neitzel (EX2001, EX1036), and whether the proposed amended claims are patentable over the relevant prior art. I offer my opinions from the perspective of a POSITA, as defined in my Original Declaration.

16. As stated in my Original Declaration, I am not a legal expert and offer no opinions of the law. I incorporate the relevant legal principles set forth in my Original Declaration as they apply to my opinions detailed in this Declaration.

VII. THE '750 PATENT

A. Overview

17. I have reviewed and analyzed the '750 Patent, and provided an overview of the '750 Patent, its priority applications and prosecution in my Original Declaration, which I incorporate herein in full. *See* EX1013 at Section VII.A.

18. In addition to this background, and of particular note to my opinions regarding the motivations to modify Thurler set forth below, as noted by Dr. Neitzel (EX2001 at ¶26; EX1036 at 13:11–14:10) the '750 Patent concludes by asserting that:

Although the devices described are exemplified in terms of firearms, and more specifically in terms of silencer devices for sniper rifles used in counter-terrorism efforts, other applications can also benefit from these configurations. *Id.* at 10:22–24.

19. In my opinion, the '750 Patent's specific disclosure of silencers designed for use with sniper rifles necessarily contemplates mounting configurations that accommodate magnifying scopes, which are standard equipment on such firearms. At the time of the alleged invention of the '750 Patent, the central sighting axis of magnifying scopes sat substantially higher above the barrel than traditional iron sights, creating different clearance requirements and mounting considerations for suppressors. This inherent characteristic of sniper rifle configurations, with their elevated optical systems, would have been well understood by a POSITA at the time of the invention. The patent's explicit reference to sniper rifle applications,

in my opinion, therefore discloses suppressor designs that account for the higher mounting profile necessitated by magnifying scope sighting systems, contrary to any suggestion that such considerations were not contemplated by the prior art. *See* EX2001 at ¶26; EX1036 at 13:11–14:10.

B. Relevant Technology

20. I have reviewed and analyzed the '750 Patent, and relevant technology relating to the '750 Patent, and provided an overview of such technology and the knowledge a POSITA would have had at the time of the alleged invention of the '750 Patent in my Original Declaration, which I incorporate herein in full. *See* EX1013 at Section VII.B.

21. In his declaration, I understand that Dr. Neitzel put forth his opinions regarding the technology background of the '750 Patent. EX2001, Section VIII. Specifically, Dr. Neitzel, without citing any source, without any experience whatsoever with respect to silencers or mufflers, and without conducting any tests on silencers or mufflers, sets forth his opinions on the differences in and between silencers and mufflers. *Id.*; EX1036 at 9:9–11:11, 14:18–15:5, 49:9–51:13.

22. Dr. Neitzel admits he has no relevant experience with silencers or suppressors, has performed no testing or experimentation with such devices, and has conducted no analysis comparing firearm silencers to automotive or industrial mufflers. *Id.* Moreover, Section VIII of his Declaration, which purports to address the

technology background, contains no citations to supporting sources, technical literature, or empirical data. *Id.* Most significantly, Dr. Neitzel fails to provide any opinion on the critical question of whether automotive muffler technology constitutes analogous prior art to firearm silencers. *Id.* Nor can he, as the shared principles and complementary designs of silencers and mufflers render them analogous. *See* EX1013 at ¶¶58–63; EX1015, 1:10–19; EX1016 at 1:8–10; EX1038, entitled “Silencers for Firearms, Internal Combustion Engines, or the Like”. In my opinion, without foundational experience, supporting research, or analysis of the analogous art question, Dr. Neitzel’s opinions and conclusions regarding the ’750 Patent’s technology background lack any reliable basis.

C. Person Of Ordinary Skill In the Art

23. I have reviewed and analyzed the relevant legal standards and the disclosures of the ’750 Patent, and provided my opinion as to the level of skill in the art as it pertains to the claimed invention. *See* EX1013 at Section VII.C.
24. Specifically, in my Original Declaration, I noted that it is my opinion that a person of ordinary skill in the art of the ’750 Patent at the time of the alleged invention would have had a relevant technical degree in mechanical engineering, fluid mechanics, thermodynamics, physics, or the like, and 2-3 years of experience researching, designing, manufacturing, or assessing energy suppression devices, though less education may be sufficient with additional experience and vice versa.

25. In Section VI of his report, I note that Dr. Neitzel applied the same definition of a POSITA, and he states that he would have met or exceeded the qualifications of a POSITA at the time of the alleged invention of the '750 Patent. *See* EX2001 at ¶¶38–43; EX1036 at 14:11–15:5.

26. Although Dr. Neitzel asserts that he met or exceeded the accepted qualifications of a POSITA at the time of the alleged invention of the '750 Patent, his own admissions demonstrate that he fell significantly short of this standard in terms of appropriate experience. Dr. Neitzel acknowledges that he has no experience researching, designing, manufacturing, or assessing energy suppression devices of any kind, including both firearm silencers and automotive or industrial mufflers. EX1036 at 9:9–11:11, 49:9–51:13. A POSITA would necessarily possess practical knowledge and experience with the design principles, manufacturing considerations, performance and use characteristics of sound suppression technologies.

VIII. CLAIM CONSTRUCTION

27. I provided a thorough analysis and discussion section regarding my opinions as to the ordinary and customary meaning (“OCM”) of several claim terms of the '750 Patent in my Original Declaration, which I reaffirm but do not produce here. I understand the Board, in its ID, discusses several of the terms I addressed in my Original Declaration. I also understand that PO and Dr. Neitzel discuss their

positions with respect to several of these terms. I discuss these terms and my analysis and opinions relating to the same below.

A. The '750 Patent's Ordinary And Customary Meanings

28. For the sake of clarity, I explained the ordinary and customary meanings of the following claim limitations, as would have been understood by a POSITA at the time of the invention in light of the entire '750 Patent, in more detail in my Original Declaration, including: (1) "a common off axis chamber;" (2) "a plurality of deflectors . . . configured to deflect the energy from the high energy material to the common off axis chamber;" (3) "a fluid outlet;" (4) "radially serpentine;" and (5) "a serpentine fluid pathway which is at least one of axially serpentine and radially serpentine."

1. *"a common off axis chamber"*

29. As noted in Section VIII.A.1. of my Original Declaration, given PO's explanation for its amendments regarding this term during the prosecution of the '750 Patent, and considering the entire patent (including, the claims, the specification, and the prosecution history) and the knowledge of a POSITA, it is my opinion that the ordinary and customary meaning of "a common off-axis chamber" is "an off axis chamber into which at least two deflectors separately and directly deflect energy transferred from a high energy material received by the central chamber." In other words, a common off-axis chamber excludes off-axis

chambers that are fluidly connected with a central chamber via a single fluid connection.

30. In its Response, PO offers no material argument against this OCM and instead, suggests that construction of this term is not addressed to any issue in this IPR and, as such, requires no construction. Response at 17. I note, however, that this term is implicated in the grounds of the Petition challenging at least Claims 2, 5, and 6, as those claims relate to the configuration of the common off-axis chamber and/or the plurality of deflectors directing fluid into said common off-axis chamber.

31. Despite this position, both PO and Dr. Neitzel disagree with my opinions regarding the OCM of this term, namely the prosecution history's requirement that a plurality of deflectors separately and directly direct energy into the common off-axis chamber. I note however, that neither PO nor Dr. Neitzel state their own understanding of the OCM of this term. *Id.*; EX2001 at ¶¶64–5; EX1036 at 45:10–46:4. Because the PO and their expert Dr. Neitzel have failed to provide their own understanding as to the meaning of this claim term, and for the reasons detailed in my Original Declaration, the Board should accept my opinion as the only substantive construction analysis presented in this proceeding.

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

32. As noted in Section VIII.A.2. of my Original Declaration, considering the entire patent (including, the claims, the specification, and the prosecution history) and the knowledge of a POSITA, it is my opinion that the ordinary and customary meaning of “a plurality of deflectors...” requires each of “the plurality of deflectors” in independent Claim 1 to directly deflect energy from a high energy material to the common off-axis chamber via respective direct fluid connections.
33. In its Response, PO offers no material argument against this OCM and instead, suggests that construction of this term is not addressed to any issue in this IPR and, as such, requires no construction. Response at 17. I note, however, that this term is implicated in the grounds of the Petition challenging at least Claims 2, 5, and 6, as those claims relate to the configuration of the common off axis chamber and/or the plurality of deflectors directing fluid into said common off-axis chamber.
34. Despite this position, both PO and Dr. Neitzel disagree with my opinions regarding the OCM of this term, namely the prosecution history’s requirement that a plurality of deflectors separately and directly direct energy into the common off-axis chamber, but do not state their own understanding of the OCM of this term. *Id.*; EX2001 at ¶¶64–5; EX1036 at 45:10–46:4. Because the PO and their expert Dr. Neitzel have failed to provide their own understanding as to the

meaning of this claim term, and for the reasons detailed in my Original Declaration, the Board should accept my opinion as the only substantive construction analysis presented in this proceeding.

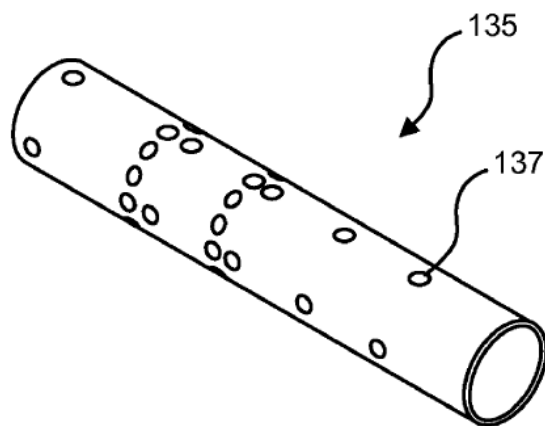
3. “a fluid outlet”

35. As noted in Section VIII.A.3. of my Original Declaration, considering the entire patent (including, the claims, the specification, and the prosecution history) and the knowledge of a POSITA, it is my opinion that the ordinary and customary meaning of “a fluid outlet” is “an orifice through which gas flows out of the common off-axis chamber.”

36. In Response to my opinions as to this term (EX1013 at ¶¶115–117), I understand Patent Owner has clarified its proposed OCM of “fluid outlet.” Response at 17–21. Specifically, Patent Owner 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 at 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 doing so) the parties appear to have agreement on the OCM of this term.

37. Of particular note, however, is the difference between the “fluid outlet” language in Claims 1, 19 and 22 (independent claims) of the ’750 Patent and Claim 18. Particularly, and as agreed by Dr. Neitzel, Claim 18 includes a negative limitation that does not appear in Claims 1, 19 and 22. *See* EX1036 at 53:8–54:4. Specifically, Claim 18 includes the limitation that “the fluid outlet being only accessible to the fluid in the common off axis chamber,” whereas Claims 1, 19 and 22 do not include this limitation. *See* EX1001 at Claims 1, 18, 19, and 22. Thus, the fluid outlet in Claim 18 is only accessible to fluids in the common off-axis chamber, whereas the fluid outlet in Claims 1, 19 and 22 would be accessible to fluids in both the common off-axis chamber and the central chambers. *Id.*; EX1036 at 53:8–54:4.

38. I do note, however, in its Response, PO states that “there is no embodiment in the specification in which the fluids necessarily return from the off axis chamber to the central chamber before leaving the device.” Response at 20. In my opinion, this is not correct. For instance, Fig. 2 of the ’750 Patent includes a plurality of orifices spanning a length of the ESD for the fluid communication between the central chamber and the off-axis chamber:



'750 Patent at FIG. 2

39. Imagine an embodiment that also includes multiple internal walls defining an axially serpentine fluid pathway. In this embodiment, it would be clear to a POSITA that the fluid in the off-axis chamber would be traveling back and forth along a length of the off-axis chamber, and as such, would necessarily present a situation in which the fluid in the off-axis chamber passes over these coaxially located orifices and returns to the central chamber. This fundamental understanding of fluid dynamics within suppressor chambers is basic to anyone skilled in the art of firearm suppressors. When combustion gases enter an off-axis chamber through an orifice, they do not simply remain static or flow in a single direction. Instead, the gases follow the walls within the off-axis chamber and cause the gases to move past and over any additional orifices present in that chamber space. The presence of multiple internal walls creating serpentine

pathways only enhances this effect, as the gases are forced to change direction multiple times, increasing the likelihood of interaction with all orifices within the chamber. This circulation and re-circulation of gases within the off-axis chamber naturally results in the gases eventually encountering and passing through return orifices to re-enter the central bore. This is not a complex or non-obvious concept. It is simply the predictable behavior of pressurized gases within a confined chamber space. Thus, PO is simply incorrect as to this point, as their position ignores the basic principles of gas flow and pressure dynamics that would be immediately apparent to any person of ordinary skill in the art.

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

40. I provided a thorough analysis and discussion section regarding my opinions and reasoning for the definition a POSITA would apply for the “radially serpentine” claim term, considering the entire patent (including, the claims, the specification, and the prosecution history) and the knowledge of a POSITA, which I reaffirm here but do not reproduce here. See EX1013 at Section VIII.A.4.

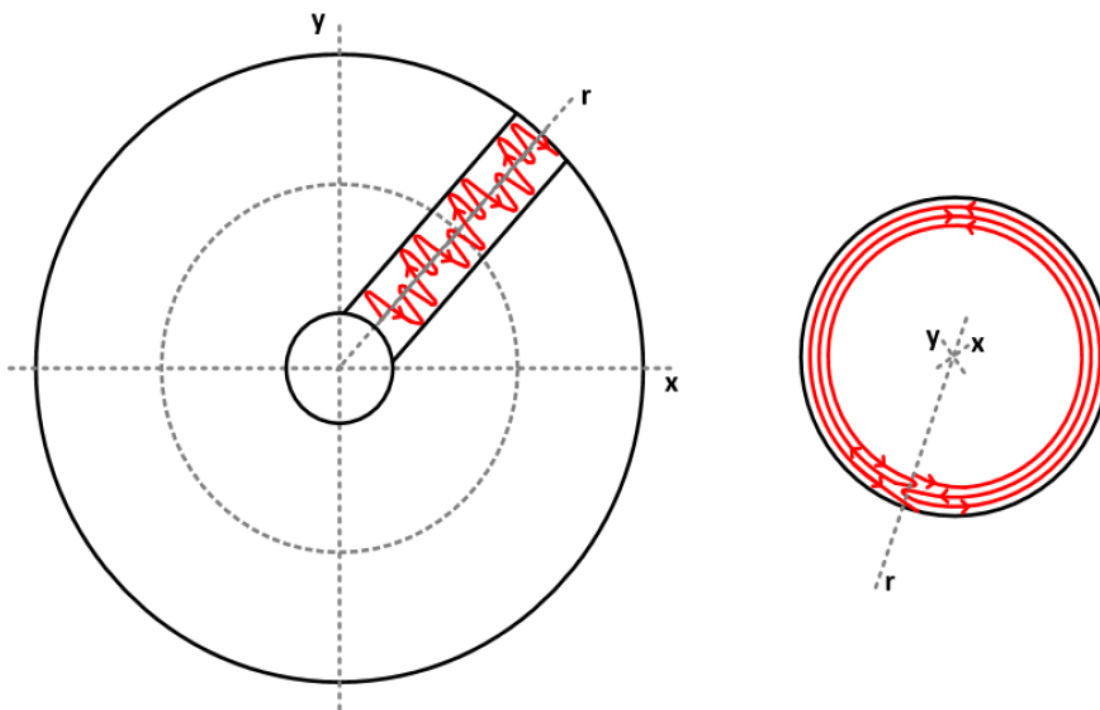
41. As detailed in my Original Declaration, and as preliminarily defined by the Board, I understand that both PO and Dr. Neitzel agree that “radially serpentine” means “a back and forth flow around a radius of the off axis chamber.” ID at 14; Response at 10; EX2001 at Section VII.A. I understand that PO agrees that this construction is consistent with the ’750 Patent’s 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 at 4:34–41; Response at 10; EX2001 at Section VII.A. I further understand that PO agrees that this construction is consistent with the prosecution history. *Id.*

42. I note however, that despite stating that they agree with the Board’s preliminary construction, both PO and Dr. Neitzel then state that they “clarify some of Petitioner’s characterizations” of this claim term. However, what PO and Dr. Neitzel actually do is attempt to fundamentally alter and broaden the scope of the “radially serpentine” term in a manner that lacks support from the intrinsic evidence. This purported “clarification” goes well beyond simply correcting any alleged mischaracterizations and instead represents a substantive effort to redefine the term’s meaning. PO’s approach improperly attempts to distance itself from the Board’s preliminary construction while simultaneously expanding the term’s scope beyond what the specification discloses, what the prosecution history supports, or what a person of ordinary skill in the art would understand. As detailed below, such “clarification” is nothing more than an attempt to expand the

scope of this term—an expansion unsupported by the '750 Patent's own definitions and the prosecution history.

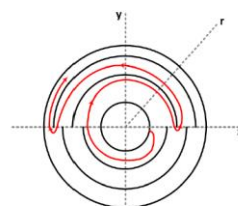
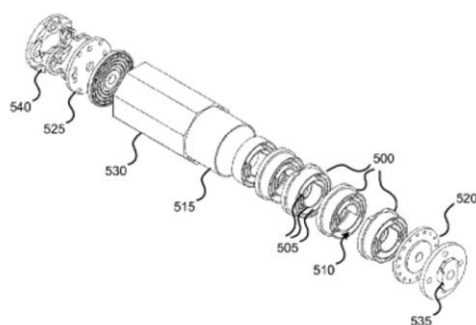
43. Specifically, and as noted in my Original Declaration, based upon the '750 Patent's disclosures and definitions, I proposed two examples of fluid flows that fit within the definition of “radially serpentine.” EX1013 at ¶¶127–28; Figs. 1, 2; *see also* Petition at 2, 15, 17. First, as defined by the '750 Patent, 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 at 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)

See also, Petition at 14–16.

44. Next, I identified a second example of “radially serpentine” flow as it relates specifically to Fig. 14 of the ’750 Patent—this example being only applicable to silencers having annular spaces between concentric cylinders positioned within the off axis chamber of an ESD. Specifically, I identified a radially serpentine fluid pathway illustrated in Fig. 14 that flows 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. EX1013 at ¶128. A depiction of this fluid flow is exemplified by Fig. 14 of the ’750 Patent and Fig. 2 of the Petition:



45. Importantly, with respect to my second example, the Board disagreed 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 at 14. Based on my review of the ID, I understand that 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 at 259:11–19 (corresponding to Ex. 1001 at 9:1–13). Thus, the flow described here flows *circumferentially* about the central chamber, not radially.” ID at 14.

46. The Board’s note that the ’750 Patent does not describe the fluid flow of Fig. 14 as “radially serpentine” is significant when viewed in light of the entirety of the ’750 Patent’s disclosure. Specifically, I note that the ’750 Patent expressly defines the fluid flow of its other figures. For example, the ’750 Patent explicitly describes Figs. 1a and 16 as axially serpentine. EX1001 at 4:60–63, 9:50–55. Given this explicit description of the other disclosed fluid flows when referencing the ’750 Patent’s figures, a POSITA would assume that if PO really did understand Fig. 14 to depict a “radially serpentine” fluid flow at the time of filing, PO would have described it as such. In my opinion, PO’s failure to do so is telling, especially when viewed in light of the ’750 Patent’s express labeling of the fluid flow in its other figures.

47. Since filing the Petition, it is my understanding that 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. I do too. Specifically, I agree that my second example, found in Fig. 14 of the '750 Patent, discloses a “circumferential” fluid flow, not a radially serpentine fluid flow with respect to ESDs having annular spaces between concentric cylinders positioned within the off-axis chamber. I also agree with the Board as to this point for the reasons stated above, in the ID and in Petitioner’s Reply.

48. I understand that PO disagrees with the Board as to this point, and relies on the opinions of Dr. Neitzel in support of its position—without citation to any support from the '750 Patent. However, in my opinion, Dr. Neitzel’s opinions regarding Fig. 14’s disclosure of a “radially serpentine” fluid flow are fundamentally flawed for several reasons. First, Dr. Neitzel believes PO simply chose the wrong language when defining the term (EX1036 at 21:4–15 (discussing the meaning of “radially serpentine” and stating, “I would not have chosen that language had I drafted this patent language, but it’s what I would call circumferentially serpentine”)), an approach that ignores established claim construction principles. Second, Dr. Neitzel disregards the plain language of the patent by suggesting that “radially serpentine” requires fluid to flow **across a** radius rather than **around a radius** as defined by the '750 Patent. EX1036 at 22:24–25:25 (stating that rotating around a radius (as depicted in Fig. 1 of EX1013) is not required to meet the definition of “radially serpentine”); 21:4–

22:23 (when asked whether to be radially serpentine fluid has to flow around a radius, “It’s crossing the radius”); 26:4–28:23 (“Yes, but as I said, the fluid need not move out radially in order to be radially serpentine.”); 29:27–36:19 (“Q: So to be radially serpentine, you just have to cross a radius in your mind with a change of direction? A: With a change of direction, yes.”). Third, Dr. Neitzel ignores how the ’750 Patent 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. *See* EX1036 at 32:2–35:8; 38:23–39:15; 43:24–44:1. Fourth, Dr. Neitzel proposes a definition of “radially serpentine” that would require reference to multiple radii at different locations, which would essentially render any flow “radial,” despite the complete absence of support in the ’750 Patent that the patentee understood radially or axially serpentine flow to involve multiple radii or axes. *Id.* at 32:24–33:11. Finally, Dr. Neitzel’s admitted lack of experience with suppressors undermines any credibility he might have as an expert in this field. EX1036 at 9:9–11:11.

49. In addition, I understand that PO argues that this construction is “inconsistent with the flow also being ‘radially serpentine’” and 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 at 16. However, PO cites to no support from the '750 Patent or its prosecution history to support this argument. I also find no support in the '750 Patent as to PO's position. Indeed, if PO advanced this argument during the prosecution of the '750 Patent, U.S. Patent No. 3,667,570 to WerBell (EX1038) cited by the examiner, disclosed this alleged "radially serpentine" flow as PO attempts to define that term here, and would have likely prevented the '750 Patent from ever issuing. See EX1004 at 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.

50. In addition, if this position were correct (that the fluid flow of Fig. 14 is "helical' if there were no changes of direction, but 'radially serpentine' when there is at least one change of direction"), this would contradict the disclosed composition of the ESD disclosed in Fig. 14 and PO's own definition of both "serpentine" and "helical." Simply put, PO's argument is that the only difference between a radially serpentine fluid flow and a helical fluid flow is a change in direction. In my opinion, such an interpretation is inconsistent with and not disclosed in the '750 Patent. Instead, the '750 Patent's plain language requires that to be "radially serpentine" the fluid flows **back and forth around a radius of the**

off axis chamber, while to be “helical” the fluid **spirals around the central chamber**. See EX1001 at 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.

51. I understand that PO’s attempt to change the meaning of “radially serpentine” to suit its current needs is nothing new. For example, I understand that 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 at 10; EX1033 at 4. I note that Dr. Neitzel disagrees with this position and the plain language of the ’750 Patent, opining that radially serpentine refers to fluid flowing across a radius. See *supra*, at ¶48.

52. I further understand that in another litigation where it was asserting the ’750 Patent, PO attempted to change the meaning of “radially serpentine” yet again. See EX1035 (“Upon 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”).

53. With respect to the specific example of Fig. 14, which requires a series of concentric cylinders positioned within the off-axis chamber and describes the fluid flowing through the annular spaces between these concentric cylinders, the ’750 Patent expressly states that the fluid flows “in a serpentine path created by the offset and spaced cylinders” regardless of whether or not a change in direction occurs. EX1001 at 9:1–13; *see also*, Response at 11 (stating that “a single change from one direction to another direction” is “consistent with the ordinary meaning of ‘serpentine’”). As such, a POSITA would not understand the fluid flow described with respect to Fig. 14 to be helical without a change in direction as PO argues. *Id.* at 4:41–44 (“In yet another aspect, the fluid pathway can be 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.”).

54. In addition, during his deposition, Dr. Neitzel confirms that he is applying a meaning of “radially serpentine” untethered from the definitions of the ’750 Patent and in a way no POSITA would understand. For instance, Dr. Neitzel notes that he would have defined “radially serpentine” as “circumferentially serpentine,” because in his opinion, to be radially serpentine, a fluid does not even need to flow around a radius of the off-axis chamber, as the ’750 Patent requires. EX1036 at

18:13–21:3 (discussing the meaning of “radially serpentine” and opining, “[the fluid] does not need to advance radially. It just means moving circumferentially in a clockwise to counterclockwise direction, changing direction”); 21:4–15 (discussing the meaning of “radially serpentine” and stating, “I would not have chosen that language had I drafted this patent language, but it’s what I would call circumferentially serpentine”); 22:24–25:25 (stating that rotating around a radius (as depicted in Fig. 1 of EX1013 is not required to meet the definition of “radially serpentine”); 39:10–15 (“Q: Are there any other differences in your opinion between a helical fluid flow and a radially serpentine fluid flow other than the lack of change in direction in the helical fluid flow? A: No.”); 40:19–44:1 (stating that radial movement is not required for the fluid flow to be defined as “radially serpentine”). Instead, he reads out the phrase “around a radius” and replaces it with “crosses a radius” in the ’750 Patent’s definition of radially serpentine—an improper attempt to redefine this term, which exemplifies the unreliability of his opinions. EX1036 at 21:4–22:23 (when asked whether to be radially serpentine fluid has to flow around a radius, “It’s crossing the radius”); 26:4–28:23 (“Yes, but as I said, the fluid need not move out radially in order to be radially serpentine.”); 29:27–36:19 (“Q: So to be radially serpentine, you just have to cross a radius in your mind with a change of direction? A: With a change of direction, yes.”).

55. Because both Dr. Neitzel's and PO's definition ignores the text of the '750 Patent, including the '750 Patent's own definitions, a POSITA would not understand the "radially serpentine" term in the way PO or Dr. Neitzel propose.

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

56. In my Original Declaration, I understood from counsel that, Petitioner's position was that under *SuperGuide*¹, when "[t]he phrase 'at least one of' precedes a series of categories of criteria, and . . . the term 'and' [is used] to separate the categories of criteria," "a conjunctive list" is connoted such that "at least one of" is applied to each member in the list — *e.g.*, at least one of A, at least one of B, etc.

57. I now understand that, upon review of the reasoning provided by the Board [ID at 14–16], Petitioner agrees with the Board's interpretation of this claim term. Specifically, the Board's position clarifies that this claim language requires the presence of *either* an axially serpentine *or* a radially serpentine fluid pathway, and as such, a prior art reference need only show one or the other, not both.

¹ *SuperGuide Corp. v. DirecTV Enters.*, 358 F.3d 870, 886 (Fed. Cir. 2004).

IX. APPLICATION OF THE PRIOR ART REFERENCES TO THE CLAIMS

58. As detailed in my Original Declaration, in my opinion, in view of the prior art references, claims 1-22 of the '750 Patent are unpatentable under 35 U.S.C. § 102 (pre-AIA) and/or 35 U.S.C. § 103 (pre-AIA).

Grounds	35 U.S.C.
GROUND 1: Thurler anticipates Claims 1, 4, 5, 7-9, 15-17, 19, and 22.	102 (pre-AIA)
GROUND 2: Thurler renders obvious Claims 1, 4-11, 15-17, 19, 21, and 22.	103 (pre-AIA)
GROUND 3: Thurler in view of Bouton renders Claim 18 obvious.	103 (pre-AIA)
GROUND 4: Thurler in view of Barlowatz renders Claims 1, 4-17, and 19-22 obvious.	103 (pre-AIA)
GROUND 5: Barlowatz anticipates Claims 1, 9, 19, and 20.	102 (pre-AIA)
GROUND 6: Barlowatz renders Claims 1, 9, 19, and 20 obvious.	103 (pre-AIA)
GROUND 7: Barlowatz in view of Reeves renders Claim 2 obvious.	103 (pre-AIA)
GROUND 8: Eichenseher in view of Barlowatz renders obvious Claims 1, 3, 4, 5, 8, 9, 18, and 19.	103 (pre-AIA)

A. GROUND 1: Thurler anticipates Claims 1, 4, 5, 7-9, 15-17, 19, and 22.

59. In my Original Declaration, I provided my opinion and analysis that Thurler discloses all the limitations of Claims 1, 4, 5, 7-9, 15-17, 19, and 22.

60. I understand that, in the ID, the Board found that Thurler discloses all elements of the '750 Patent's independent claims, claims 1, 19 and 22. See ID at 22-28. Specifically, the Board found that Thurler disclosed 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.* Dr. Neitzel agrees. *See* EX1036 at 54:5– 58:24.

61. I understand that the Board did not address Ground 1 with respect to the challenged dependent claims under this ground.

62. Rather than contest the disclosure of Thurler for Claims 1, 4, 5, 7, 8, 15–17, 19 and 22, I understand that instead, PO seeks to amend these claims, only contesting Ground 1 with respect to claim 9.

63. Claim 9 depends on claim 1 and further requires that the claimed multiple internal walls are formed to produce a radially serpentine fluid pathway. *See* EX1001 at cl. 9. With respect to the “radially serpentine” claim element, in the context of claim 1, the Board found that Thurler did not disclose a “radially serpentine” fluid pathway as the gases in Thurler did not flow back and forth around a radius of the disclosed tubes, but found that Thurler’s failure to disclose such was not fatal to Ground 1 as claim 1 only requires a showing of either radially serpentine or axially serpentine fluid pathways. *ID* at 25–26.

64. As noted above, under the Board’s interpretation of *SuperGuide*, 358 F.3d at 886, claim 1 only requires the presence of either an axially serpentine or a radially serpentine fluid pathway, not both. In addition, and as noted above, I also understand that Petitioner agrees with the Board as to the interpretation of the fluid flow depicted in Fig. 14 of the ’750 Patent as “circumferential” fluid flow, not

“radially serpentine flow.” As such, “radially serpentine” fluid flow is only that which flows back and forth around a radius of the off-axis chamber. See ID at 12–14. Under this definition, I understand that Petitioner concedes that Thurler fails to disclose a radially serpentine fluid flow, as required by Claim 9 of the ’750 Patent. I further understand however, this if it is found that “radially serpentine” fluid flow encompasses this “circumferential” fluid flow, then Thurler under this interpretation, anticipates Claim 9 of the ’750 Patent.

B. GROUND 2: Thurler renders obvious Claims 1, 4-11, 15-17, 19, 21, and 22.

1. Claims 1, 4, 5, 7-9, 15-17, 19, and 22.

65. In my Original Declaration, I provided my opinion and analysis that, should it be found that Thurler fails to disclose any limitations of Claims 1, 4, 5, 7-9, 11, 15-17, 19, and 22, it is my opinion that Thurler renders obvious any such limitations. In my opinion, Thurler further renders obvious all the limitations of Claims 6, 10, 11, and 21.

66. I understand that rather than contest these assertions for Claims 1, 4–5, 7–8, 10–11, 15–17, 19, 21, and 22, PO instead seeks to non-contingently amend these claims, only contesting Ground 2 with respect to Claims 6 and 9.

67. 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,” It is my

opinion that Thurler renders this claim obvious. For example, 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 at Claim 1. Given this disclosure, it is my opinion that Thurler contemplates other lengths of perforations but opted to use a perforation configuration that extends two thirds of the length. EX1013 at ¶212.

68. I understand that, in its 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. Response at 35–37. 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* perforated at its rear part for one-third of its length...” See EX1015 at 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.

69. I also note that a POSITA would understand that having perforations along two-thirds versus only one-third of the length of the tube results in fluid being deflected by a different number of deflectors.

70. It is my opinion that 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*. Thurler's specification clearly describes different perforation arrangements across various disclosures and elements, demonstrating that the inventor contemplated and disclosed multiple configurations of perforated lengths. A person of ordinary skill in the art would understand that these varying perforation disclosures are not merely coincidental variations, but rather represent deliberate design choices that teach the concept of selectively controlling the axial extent of fluid communication between chambers. When Thurler describes perforations in some sleeves but not others, or when it illustrates different perforation patterns/lengths in different figures, it teaches that the length of the perforated section can be varied to achieve different performance characteristics. This understanding would be particularly clear to a POSITA familiar with suppressor design principles, who would recognize that limiting perforations to only certain axial sections (such as the first three sleeves *d*) would create different gas flow dynamics and pressure relief characteristics compared to perforating the entire length of the tube. In my opinion, the different perforation disclosures relating to the tubes and deflectors throughout Thurler's specification thus clearly teach that

different lengths of perforations are contemplated and disclosed, providing explicit guidance for implementing shorter perforation configurations as design alternatives within the scope of Thurler's teachings.

71. I understand that PO also 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 at 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 at 212–13. This is because the '750 Patent teaches no benefit to limiting the fluid communication to just the first, second, and third deflectors. Instead, the '750 Patent teaches that “any desired number of deflectors may be used.” EX1015 at 6:23–24. Given that the disclosed purpose of a deflector is to “enable passage of a high energy material therethrough while redirecting at least a portion of gases, sound/shock waves, and/or particulates into the off-axis chamber,” (*id.* at 4:23–26), the teaching that any desired number of deflectors may be used indicates that the number ultimately used is a simply matter of design choice.

72. I note that the '750 Patent does not disclose any reason or benefit for the fluid communication to occur only at the first, second, and a first tertiary deflector.

73. As noted in my Original Declaration, 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. 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. Beyond these considerations, a person of ordinary skill in the art would recognize several additional compelling reasons to implement such a modification. First, limiting perforations to the initial sleeves would create a more controlled pressure gradient within the suppressor, allowing for optimized gas expansion in the early chambers while maintaining higher pressure in subsequent chambers for enhanced sound suppression. Second, reducing the total perforated area would decrease the complexity of the machining process, reducing manufacturing time and associated costs while improving quality control and consistency across production runs. Third, concentrating the fluid communication at the front of the device would allow for more predictable gas flow patterns, enabling designers to more precisely tune the suppressor's performance characteristics. Fourth, from a maintenance and durability standpoint, fewer perforations mean fewer potential points of residual or fouling buildup, leading to

improved long-term performance and reduced cleaning requirements. These multiple technical, economic, and practical advantages would provide strong motivation for a POSITA to modify Thurler in exactly this manner, making such a modification not merely obvious but highly desirable from performance, engineering, and commercial perspectives.

74. Indeed, Thurler itself teaches benefits to increasing the fluid path length.

EX1015 at 1:10–17 (“the energy with which the gases of combustion travel is destroyed by guiding said gases through a certain number of chambers which are arranged at a certain distance apart the one before the other and which have passages for the projectile”); 1:102–105 (“The more elongated the form of the sleeves the less the gas will endeavor to penetrate into the passage for the projectile”).

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. Furthermore, the simplified perforation pattern would allow for improved durability, more consistent manufacturing tolerances and reduce the likelihood of manufacturing defects such as burrs or incomplete holes that could affect performance. As such, it is my opinion that Thurler renders claim 6 of the ’750 Patent obvious. Even in the absence of such motivations, however, a POSITA

would have opted to limit fluid communication to the first three sleeves as a simple matter of design choice.

76. Claim 9 depends on Claim 1 and further requires that the claimed multiple internal walls are formed to produce a radially serpentine fluid pathway. See EX1001 at Claim 9. With respect to the “radially serpentine” claim element, in the context of Claim 1, the Board found that Thurler did not disclose a “radially serpentine” fluid pathway as the gases in Thurler did not flow back and forth around a radius of the disclosed tubes, but found that Thurler’s failure to disclose such was not fatal to Ground 1 as Claim 1 only requires a showing of either radially serpentine or axially serpentine fluid pathways. ID at 25–26.

77. As noted above, under the Board’s interpretation of *SuperGuide*, 358 F.3d at 886, Claim 1 only requires the presence of either an axially serpentine or a radially serpentine fluid pathway, not both. In addition, and as noted above, I also understand that Petitioner agrees with the Board as to the interpretation of the fluid flow depicted in Fig. 14 of the ’750 Patent as “circumferential” fluid flow, not “radially serpentine flow.” As such, “radially serpentine” fluid flow is only that which flows back and forth around a radius of the off-axis chamber. See ID at 12–14. Under this definition, I understand that Petitioner concedes that Thurler fails to disclose a radially serpentine fluid flow, as required by Claim 9 of the ’750 Patent. I further understand however, this if it is found that “radially serpentine”

fluid flow encompasses this “circumferential” fluid flow, then Thurler under this interpretation, anticipates Claim 9 of the ’750 Patent.

C. GROUND 3: Thurler in view of Bouton renders Claim 18 obvious.

1. Claim 18.

78. In my Original Declaration, I provided my opinion and analysis that, Thurler in view of Bouton renders Claim 18 obvious.
79. As noted in my Original Declaration, 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. EX1013 at Section X.A.3.
80. As also noted in my Original Declaration, Bouton discloses a muffler ESD having concentric tubes of progressively larger diameters that are used to form an axially serpentine fluid pathway that directs fluids to exhaust out of a front end cap (referred to in Bouton as head 9). *Id.* at ¶128.
81. Thus, in view of Bouton, it is my opinion that 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 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 at 2:99–3:8; EX1001 at 4:29–31.

82. I understand that, in its Response, PO and Dr. Neitzel argue that a POSITA would not be motivated to modify Thurler in light of Bouton to reach the alleged invention of claim 18. Response at 38-41; EX2001 at ¶¶117–124. But, as noted in my Original Declaration, 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. EX1013 at ¶¶42–44; ¶¶58–63. Thurler’s firearm suppressor discloses an additional tube to enhance and optimize sound suppression by creating a longer axially serpentine fluid pathway. EX1013 at ¶¶138–142. This was a common principle at the time, to improve noise suppression by increasing a path length and expansion area for the deflected energy. See EX1016 at 2:99–3:8; EX1001 at 4:29-31; EX1013 at 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. EX1013 at ¶¶226–31. 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.

83. In addition, Dr. Netzel opined that mufflers (such as Bouton's) discharges gas out of the front end of the muffler because it is noxious gas and should be discharged away from an operator. *See* EX2001 at ¶83. The same reasoning applies to suppressors for firearms. EX1036 at 51:14–52:22.

84. As Dr. Neitzel acknowledges, the '750 Patent is directed primarily to ESDs for sniper rifles, which characteristically employ magnifying scope sights mounted at sufficient height above the breech and barrel to preclude any interference with the sight picture or optical alignment from an additional tube extension. This elevated mounting position of magnifying scopes typically ranges from 1.5 to 2 inches above the bore centerline for bolt action rifles², providing ample clearance for the Thurler/Bouton end cap tube configuration without sight obstruction concerns. In my professional experience, AR15, AK47-type and similar rifles used by snipers exhibit sight heights in excess of other rifles

² This height would be well-known to a POSITA with even the most limited experience with sniper rifles and other firearms using scope sights. For example, in the DTAC Reticle Instruction Manual, Copyright 2008 to Superior Shooting Systems, Inc., the manual notes the scope is centered 2.5 inches over the bore centerline. *See* (https://www.davidtubb.com/catalog/view/theme/davidtubb/pdf/product_information/reticle_rev6.pdf), p. 6.

employed in sniper applications. To quantify these dimensions, I measured representative semiautomatic firearms: an AR15 rifle with standard iron sights which I measured to have the sighting line positioned 2.75 inches above the bore centerline, and an AK47-style rifle with standard iron sights which I measured to have the sighting line positioned 2.25 inches above the bore centerline. Additionally, many sniper rifle platforms incorporate carrying handles or rail systems upon which magnifying scopes are mounted (AR15/M16 and Steyr AUG, for example), resulting in even greater sighting line heights of well over 3 inches that can easily accommodate concentric tube extensions without optical interference. Moreover, sniper rifles differ fundamentally from fully automatic weapons in that they are typically bolt-action or semi-automatic platforms where rapid cyclic rate considerations are not critical. Consequently, any minimal impact on gas system timing would be inconsequential to the rifle's intended long-range precision shooting application and, in any event, could easily and economically be tailored to suppressor equipped gas system parameters.³ A POSITA would recognize that the controlled directional venting provided by Bouton's design offers significant tactical advantages for sniper applications, including reduced

³ It is common for such rifles to incorporate either user adjustable gas systems or systems that can easily be modified by an armorer using alternate gas system parts.

muzzle flash signature and elimination of downward gas deflection that could disturb ground debris and compromise the shooter's concealment. The integration of Thurler's effective internal suppression with Bouton's controlled exit flow would yield a superior suppressor design specifically optimized for the precision shooting applications that define the '750 Patent's disclosures. This combination would be not only obvious but highly desirable to those skilled in the relevant art.

85. To the extent Dr. Neitzel argues that adding a front plate as taught by Bouton would interfere with the sight of Thurler, such arguments go against what a POSITA would understand for at least the reasons above and these following reasons: (1) a front plate as taught by Bouton could be added to the eccentric suppressor taught by Thurler; (2) Thurler contemplates adding "one or more mantles" over the inner casing, suggesting that Thurler itself contemplated adding more tubes than depicted in its drawings and (3) US Patent No. 3,667,570 to WerBell (cited in the '750 Patent's prosecution history) relates to "silencers for firearms, internal combustion engines, or the like," discloses a rifle with a tall sight (Fig. 1), and further discloses that the suppressor can be attached to the rifle using an adapter that secures to the rifle sight (Fig. 7), in exactly the same manner taught by Thurler (*see* Thurler Fig. 3). WerBell therefore provides multiple motivations to combine the teachings of Thurler and Bouton, and demonstrates

that a larger rifle sight can be used to see over a suppressor without changing the attachment mechanism of the silencer to the rifle.

86. As such, it is my opinion that 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 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 at 2:99–3:8; EX1001 at 4:29–31.

D. GROUNDS 4–8.

87. With respect to Grounds 4–8 of the Petition, and as noted above, it is my understanding that Petitioner agrees with the Board as to the interpretation of *SuperGlide* and the fluid flow depicted in Fig. 14 of the '750 Patent as “circumferential” fluid flow, not “radially serpentine flow.” As such, 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 at 12–14. If however, it is found that “radially serpentine” fluid flow encompasses this “circumferential” fluid flow, as PO suggests, it is my understanding that Petitioner will rely on its Petition, my opinions set forth in my Original Declaration, and arguments and exhibits supporting the same with respect to Grounds 4–8.

Contingent upon the Board's holding with respect to the definition of "radially serpentine," I understand that Petitioner withdraws Grounds 4–8 of its Petition.

X. PATENT OWNER'S MOTION TO AMEND

88. I understand that in addition to its Response to Petitioner's Petition, PO has also filed a Motion to Amend certain claims of the '750 Patent, a listing of which Appendix A thereto.

89. Specifically, I understand that PO seeks to amend the relevant claims by adding the requirements that: (1) "energy capture and control device" be "for use with a weapon"; (2) that the outer shell be "oriented along the central axis," which is the same central axis that the central chamber is oriented along; (3) that the "high energy material" comprise a "projectile and gases," and that the "high energy material" is received from a high energy outlet "of the weapon"; and (4) that "the fluid outlet is located at an opposite end of the energy capture and control device as the inlet."

90. I understand that PO's Motion to Amend ("MTA") is contingent as to Claims 2, 3, 6, 9, 12-14, and 20, and non-contingent as to Claims 1, 4, 5, 7, 8, 10, 11, 15-17, 19, 21, and 22. PO does not seek to amend Claim 18 in its MTA.

91. It is my opinion that these proposed amended claims are rendered obvious for the reasons set forth below, and additionally set forth in my Original Declaration, because even with these amendments, the proposed amended claims are still

directed to decades-old ideas that have long been in the public domain, and are rendered obvious by the below prior art references.

XI. NEWLY RELIED UPON PRIOR ART REFERENCES

92. In addition to Thurler, Barlowatz, Eichenseher, and Reeves, which are described in detail in my Original Declaration and further relied upon in this Declaration, the following patents, which are also relied upon in this Declaration, were publicly available long before the '750 Patent's earliest possible effective filing date. As such, it is my understanding that they qualify as prior art under 35 U.S.C. § 102 (pre-AIA) as shown in the following table.

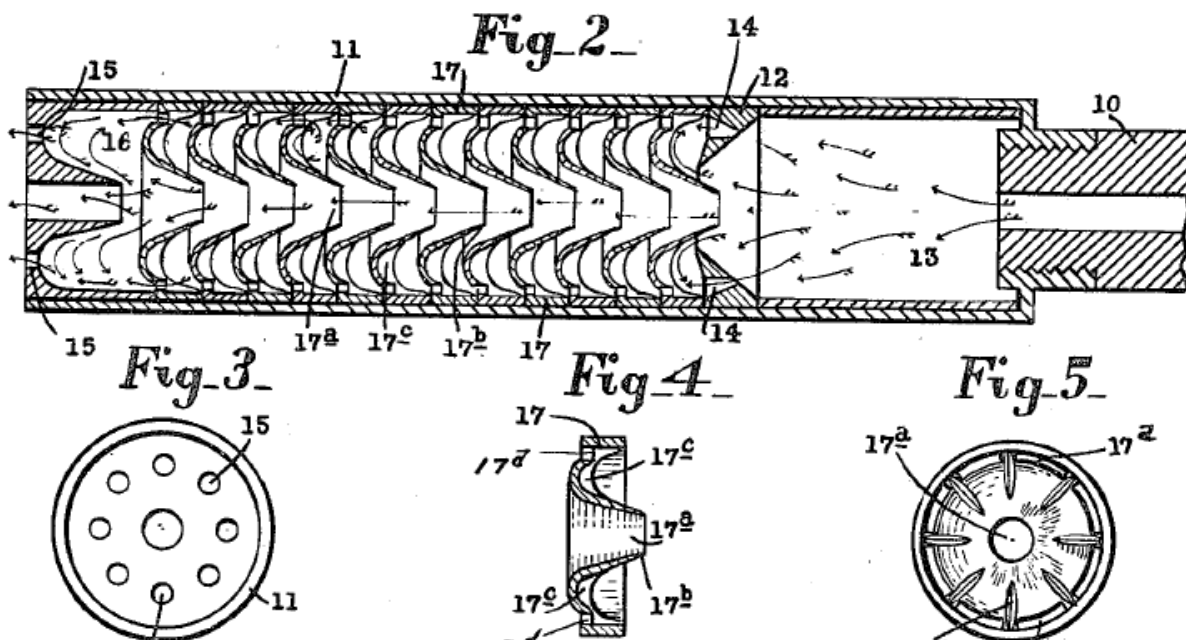
RELIED-UPON PRIOR ART REFERENCES					
Exhibit	Name	Serial No.	Published	Filed	§ 102
EX1039	Kenney	US 1,017,003	02/13/1912	05/16/1910	(a), (b), (e)
EX1038	WerBell	US 3,667,570	06/06/1972	03/16/1972	(a), (b), (e)

a) Kenney (EX1039)

93. U.S. Patent Application No. 561,610 was filed on May 16, 1910, and issued as U.S. Patent No. 1,017,003 on February 13, 1912 (“Kenney”). Thus, I understand that Kenney qualifies as prior art under 35 U.S.C. § 102(a), (b), and (e).

94. Kenney discloses a silencer for firearms that are “symmetrical and reasonably cheap.” EX1039 at 1:1–18. Of the features described by Kenney, important features “consist of means for so controlling and directing the exhaust and

discharge of the gases that a jacket of said gases, substantially concentric with the axial center of the path of the bullet, is provided around said path, thus preventing, or rather retarding, the rapid destruction of the vacuum in the atmosphere incident to the discharge of the arm.” *Id.* at 1:20–28.



Id. at FIGs. 2–5.

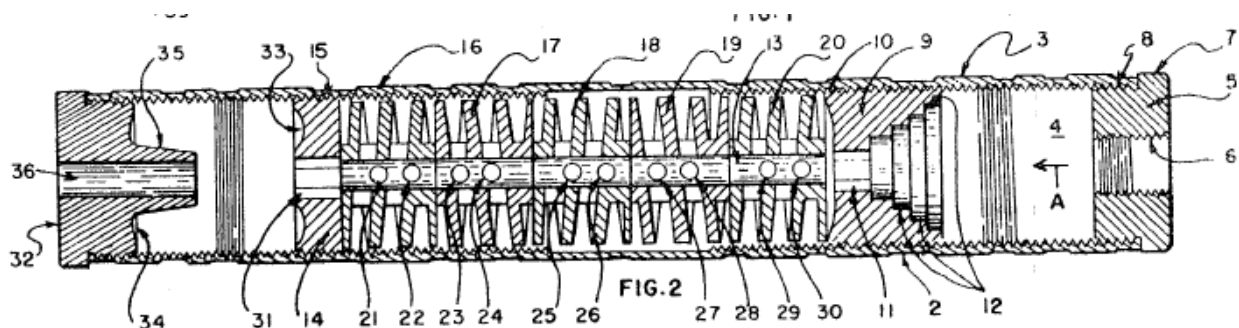
95. Kenney further discloses a plurality of discs orientated along a central axis that “separate portions of the gases and direct the same radially from the bore, and then direct the said gases forwardly and discharge them into the free atmosphere through openings 15, in the muzzle end of the silencer; said openings 15 being arranged substantially concentric with the normal bore of the arm and with the path of the bullet.” *Id.* at 1:91–103. Kenney discloses an end cap (FIG. 3) at the

opposite end of the gun's muzzle through which a majority of the gases escape the silencer. *Id.* at 1:104–108.

b) WerBell (EX1038)

96. U.S. Patent Application No. 19,829 was filed on March 16, 1970, and issued as U.S. Patent No. 3,667,570 on June 6, 1972 (“WerBell”). Thus, I understand that WerBell qualifies as prior art under 35 U.S.C. § 102(a), (b), and (e).

97. WerBell, which is entitled, “Silencers for Firearms, Internal Combustion Engines, or the Like” discloses silencers with entry, suppression and resonant chambers arranged coaxially within a tubular housing. EX1038 at Abstract. WerBell discloses a plurality of helical suppressor elements axially disposed in the suppression chamber and arranged in opposition to each other, and that the entry and resonate chambers may be provided with baffles. *Id.*



***Id.* at FIG. 2**

98. WerBell further discloses a “silencer constructed according to one embodiment of this invention may comprise a plurality of helical suppressor elements disposed about an axial passageway together with a plurality of radially

disposed ports arranged to establish communication from the passageway to the suppressor elements so that out-of-phase vibrations are supplied from the axial passageway to the suppressor units in such manner as substantially to neutralize each other.” *Id.* at 1:12–20.

99. WerBell provides that “In order to provide for the application of out-of-phase vibrations to the oppositely disposed reversely wound helical suppressor elements 16-20 inclusive, a plurality of radial ports designated by the numerals 21-30 are spaced along passageway 13 so that these ports are progressively uncovered. Fluid is thus admitted first through radial port 30 and subsequently through radial port 29 and so on as the fluid proceeds from right to left as viewed in FIG. 2.” *Id.* at 3:32–39. WerBell discloses a suppressor with a concentric orientation for use with a rifle, including one with a tall sight (Fig. 1), and further discloses that the suppressor can be attached to the rifle using an adapter that secures to the rifle sight (Fig. 7, 4:37–66). In light of these disclosures, WerBell demonstrates that a larger/higher rifle sight can be used to see over a concentric suppressor without changing the attachment mechanism orientation of the silencer to the rifle.

XII. SPECIFIC STATUTORY GROUNDS WITH REFERENCE TO RELIED-UPON PRIOR ART REFERENCES

100. Below, I have provided a chart detailing the obviousness opinions I have with respect to each proposed amended claim, including the specific statutory grounds

under 35 U.S.C. § 103 (pre-AIA) on which each proposed amended claim is challenged, and the patents relied upon for each ground:

Grounds	35 U.S.C. §
GROUND 1: Proposed Amended Claims 23, 26, 27–30, 32, 33, 37–39, 40, and 43 are rendered obvious by Thurler in view of Kenney and WerBell.	103 (pre-AIA)
GROUND 2: Proposed Amended Claims 34–36, 41 and 42 are rendered obvious by Thurler in view of Kenney, WerBell, and Barlowatz.	103 (pre-AIA)
GROUND 3: Proposed Amended Claim 24 is rendered obvious by Thurler in view of Kenney, WerBell, Barlowatz and Reeves.	103 (pre-AIA)
GROUND 4: Proposed Amended Claims 25 and 31 are rendered obvious by Thurler in view of Kenney, WerBell, Barlowatz and Eichenseher.	103 (pre-AIA)

101. I provide, with specificity, textual mappings between the limitations of the claims and the applied prior art references below, which, when viewed in light of my textual and pictorial mappings in my Original Declaration (specifically with respect to Thurler, Barlowatz, Eichenseher and Reeves), support my opinions.

A. Grounds Of Unpatentability For Each Proposed Amended Claim With Specificity

1. GROUND 1: Proposed Amended Claims 23, 26, 27–30, 32, 33, 37–39, 40, and 43 are rendered obvious by Thurler in view of Kenney and WerBell.

102. As detailed below, it is my opinion that Thurler in view of Kenney and WerBell disclose all limitations of Proposed Amended Claims 23, 26, 27–30, 32, 33, 37–39, 40, and 43.

a) Proposed Amended Claim 23 (Independent)

103. As detailed above, I understand that, in the ID, the Board found that Thurler discloses all elements of the '750 Patent's independent claims, claims 1, 19 and 22. *See* ID at 22-28. Specifically, the Board found that Thurler disclosed at least: (1) an energy capture and control device; (2) central chamber oriented along a central axis within an outer shell, said central chamber having an inlet configured to receive a high energy material from a high energy outlet; (3) a common off-axis chamber oriented within the outer shell in fluid communication with the central chamber and having a fluid outlet and multiple internal walls defining a serpentine fluid pathway which is at least one of axially serpentine and radially serpentine and which dissipates energy transferred from the high energy material; and (4) 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. *See* ID at 22–27. Dr. Neitzel agrees. *See* EX2001 at 54:5–58:24.

104. As such, it is my understanding that the only elements at issue with respect to Proposed Amended Claim 23, apart from the claim construction issues detailed in my opinions related to the Petition, are the amendments thereto.

[23Pre] “An energy capture and control device for use with a weapon”

105. Thurler is entitled “Device for the Suppression of the Report of Firearms” and “relates to devices for lessening the report of fire-arms.” EX1015 at 1:9–10. Both Kenney and WerBell are also directed to energy capture and control devices for use with a weapon. EX1038, entitled “Silencers for Firearms, Internal Combustion Engines, or the Like”, Abstract; EX1039, entitled “Silencer for Firearms”, 1:9–12. As such, the combination of Thurler, Kenney and WerBell disclose this amended claim element.

[23A] “a central chamber oriented along a central axis within an outer shell oriented along the central axis, said central chamber having an inlet configured to receive a high energy material comprising a projectile and gases from a high energy outlet of the weapon”

106. As detailed in the underlined language above with respect to this claim limitation, PO’s proposed amendments add the requirements that the outer shell be oriented along the central axis and that the high energy material comprise a projectile and gases from the outlet of a weapon. See MTA at Appendix A, Claim 23. However, it is my opinion that Thurler in view of Kenney and WerBell discloses these limitations.

107. PO has argued that Thurler fails to disclose “a central chamber” due to the eccentric configuration of the tubes in the energy suppression device (“ESD”) disclosed in Thurler. However, when viewed in light of the teachings of both Kenney and WerBell, a POSITA would have been motivated to modify Thurler’s

eccentric outer shell to be oriented along the central axis, *i.e.*, in a concentric orientation. Specifically, Thurler teaches an ESD configuration that includes “a central chamber” concentric with the barrel of a firearm that is surrounded by two tubes, which are eccentric to the central chamber for one reason only: “so that the sight *c* projects over the device for a few millimeters.” EX1015, 1:70–81; Fig. 2.

108. Moreover, even if Thurler fails to disclose, teach, or suggest concentric configurations for an ESD, it is my opinion that it would have been obvious to a POSITA to modify Thurler’s ESD to achieve such a configuration, especially in light of Kenney’s and WerBell’s teachings. EX1013 at ¶210.

109. Kenney explains that a centered housing for a suppressor is desirable so that the exhaust forms “a jacket of the gases, substantially concentric with the axial center of the path of the bullet” to retard vacuum collapse after the shot. EX1039, 1:19–28. Kenney thus teaches that concentricity is linked directly to predictable, symmetric gas expansion. Meanwhile, WerBell teaches rifles with high sights useable even with a concentric suppressor, and that such a suppressor may still be attached in precisely the same manner as taught by Thurler. EX1038, FIGs. 1–3; *compare id.*, Fig. 7, 4:37–66, *with* EX1015, Fig. 3, 1:50–53.

110. In addition, the offset in Thurler merely solves a sight-clearance problem intrinsic to iron sights without any stated additional benefit. Thurler offers no other reasons, including no mention of acoustic or ballistic benefit, and introduces

unnecessary asymmetry that is easily modifiable. EX1015, 1:50–53. At the time of the '750 Patent, however, scopes and/or high iron sights, not low iron sights, were standard on high-powered rifles used with silencers, and those scopes and high iron sights typically sit about 2.5 inches above the bore. *See* ¶84, fn.2, *supra*. Because a typical scope already clears the barrel by that margin, a POSITA would understand that a concentric suppressor like WerBell's or Kenney's would not obstruct the line of sight, eliminating Thurler's only rationale for eccentricity. As such, it is my opinion that a POSITA would have been motivated to modify Thurler by re-centering the outer shell, expecting at least two advantages: (1) optical clearance, as concentric placement avoids conflict with a typical scope height; and (2) symmetric gas flow resulting from concentricity, as taught by Kenney, promotes an even, protective gas jacket. *See also*, EX1013 at ¶¶209–10. Additionally, were it considered desirable to attach a silencer to an existing scoped rifle, it is an easy matter to replace the scope mounts with taller ones that are readily and economically available from multiple sources.

111. Because WerBell explicitly depicts a configuration in which a concentric orientation will not interfere with high sights, Kenney demonstrates the functional benefits of concentric orientations, and scope height for sniper rifles made eccentric mounting unnecessary, it is my opinion that a POSITA would have had a reasonable expectation of success in converting Thurler's eccentric shell to a

concentric one. As such, the combination of these references therefore renders this amended claim element obvious.

112. With respect to the remaining proposed amendments to Proposed Amended Calim 23 (underlined above), namely that the high energy material comprise a projectile and gases from a weapon, Thurler, Kenney and WerBell discloses such limitations, as all are directed to firearms. *See* EX1015 at 1:9–37, 1:64–91; *see also*, EX1038; EX1039. Dr. Neitzel agrees. EX1036 at 55:11–19.

[23B] “a common off axis chamber oriented within the outer shell in fluid communication with the central chamber and having a fluid outlet and multiple internal walls defining a serpentine fluid pathway which is at least one of axially serpentine and radially serpentine and which dissipates energy transferred from the high energy material, wherein the fluid outlet is located at an opposite end of the energy capture and control device as the inlet; and”

113. As detailed in the underlined language above with respect to this claim limitation, PO’s proposed amendments add the requirements that the fluid outlet is located at an opposite end of the energy capture and control device as the inlet. *See* MTA at Appendix A, Claim 23. In my opinion, Thurler’s ESD, in view of Kenney and WerBell, further renders this proposed amended claim limitation obvious.

114. For example, as noted above, 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 at FIG. 1; EX1013 at ¶227.

115. In addition, Kenney discloses a plurality of discs orientated along a central axis that “separate portions of the gases and direct the same radially from the bore, and then direct the said gases forwardly and discharge them into the free atmosphere through openings 15, in the muzzle end of the silencer; said openings 15 being arranged substantially concentric with the normal bore of the arm and with the path of the bullet.” EX1039 at 1:95–103. Kenney discloses an end cap (FIG. 3) through which a majority of the gases escape the silencer. *Id.* at 1:104–108. Kenney further explains why keeping the gases concentric throughout the device is desirable, describing exhaust control that forms “a jacket of the gases, substantially concentric with the axial center of the path of the bullet” to retard vacuum collapse after the shot. *Id.* at 1:19–28. Kenney thus teaches that concentricity, throughout the device, including upon the gases’ exit, is linked directly to predictable, symmetric gas expansion.

116. Importantly, Dr. Neitzel notes that modifying Thurler to direct the fluid out of the end of the suppressor does not interfere with automatic reloading. EX1036 at 69:25–73:4.

117. Thus, it is my opinion that, in view of Kenney’s disclosures, it would have been obvious to a POSITA to modify Thurler’s ESD (previously modified with a

concentric configuration, as noted above) to include an additional outermost tube (which is similarly disclosed within Thurler itself (EX1015 at 1:27-30)) and to implement an endcap that allows the energy to escape from the outlet end of the central chamber. Doing so would have improved predictable symmetric gas expansion, noise suppression by increasing a path length, and expansion area for the deflected energy. *See* EX1001 at 4:29–31. As detailed above, directing gases to escape from the distal end of the suppressor rather than through downward ports provides significant tactical advantages, particularly for sniper rifle applications. This forward-directed gas flow would minimize muzzle flash visibility, which is critical for maintaining concealment during tactical precision shooting operations. Moreover, modifying Thurler’s design to push gases forward instead of downward would eliminate the problematic downward gas deflection that could disturb ground debris, leaves, vegetation, or other environmental materials that would reveal a sniper’s position to enemy forces. The downward gas venting inherent in Thurler’s original design creates an obvious tactical disadvantage by potentially creating visible disturbances in the immediate area around the muzzle. This has been a well-recognized problem for decades, and US military AR15/M16 rifles include muzzle devices that minimize flash and direct gases away from the ground. By implementing Kenney’s forward-directed gas exit approach, the modified Thurler design would not only provide the acoustic suppression benefits

of increased path length and expansion volume, but would also deliver the critical operational advantages of reduced flash signature and elimination of ground disturbance—making this modification not merely obvious from a technical standpoint, but highly desirable from a tactical effectiveness perspective that would be immediately apparent to any person of ordinary skill in the art of suppressors.

118. In addition, Dr. Netizel opined that mufflers (such as Bouton’s) discharges gas out of the front end of the muffler because it is noxious gas and should be discharged away from an operator. See EX2001 at ¶83. The same reasoning applies to suppressors for firearms, and would further provide a POSITA with the motivation to modify Thurler to direct these noxious gases away from a shooter. EX1036 at 51:14–52:22.

b) Proposed Amended Claim 26: “The device of claim 23, wherein the plurality of deflectors each comprise a frustoconical shape having a hollow interior along the central axis and a flared exit portion.”

119. Proposed Amended Claim 26 is identical to Claim 4 of the ’750 Patent other than its dependence from Proposed Amended Claim 23. As such, I incorporate my opinions and analysis with respect to Claim 4 from my Original Declaration as if set forth herein in full. See Petition at 37–38; EX1013 at Grounds 1 and 2, Claim 4; *supra* at Proposed Amended Claim 23. As such, it is my opinion that Proposed Amended Claim 26 is rendered obvious by this combination.

c) Proposed Amended Claim 27: “The device of claim 26, wherein the plurality of deflectors include a primary deflector, a secondary deflector, and a first tertiary deflector”

120. Proposed Amended Claim 27 is identical to Claim 5 of the '750 Patent other than its dependence from Proposed Amended Claims 23 and 26. As such, I incorporate my opinions and analysis with respect to Claim 5 from my Original Declaration as if set forth herein in full. See Petition at 38; EX1013 at Grounds 1 and 2, Claim 5; *supra* at Proposed Amended Claims 23, 26. As such, it is my opinion that Proposed Amended Claim 27 is rendered obvious by this combination.

d) Proposed Amended Claim 28: “The device of claim 27, wherein 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.”

121. Proposed Amended Claim 28 is identical to Claim 6 of the '750 Patent other than its dependence from Proposed Amended Claims 23, 26 and 27. As such, I incorporate my opinions and analysis with respect to Claim 6 from my Original Declaration as if set forth herein in full. See Petition at 38; EX1013 at Grounds 1 and 2, Claim 6; *supra* at Proposed Amended Claims 23, 26, 27; *supra* at Ground 1 from Petition, Claim 6. As such, it is my opinion that Proposed Amended Claim 28 is rendered obvious by this combination.

e) Proposed Amended Claim 29: “The device of claim 27, wherein at least one tertiary deflector is at least partially engaged within the flared exit portion of an adjacent deflector.”

122. Proposed Amended Claim 29 is identical to Claim 7 of the '750 Patent other than its dependence from Proposed Amended Claims 23, 26 and 27. As such, I incorporate my opinions and analysis with respect to Claim 7 from my Original Declaration as if set forth herein in full. See Petition at 39; EX1013 at Grounds 1 and 2, Claim 7; *supra* at Proposed Amended Claims 23, 26, 27. As such, it is my opinion that Proposed Amended Claim 29 is rendered obvious by this combination.

f) Proposed Amended Claim 30: “The device of claim 26, wherein the plurality of deflectors span substantially the entire central axis along the central chamber.”

123. Proposed Amended Claim 30 is identical to Claim 8 of the '750 Patent other than its dependence from Proposed Amended Claims 23 and 26. As such, I incorporate my opinions and analysis with respect to Claim 8 from my Original Declaration as if set forth herein in full. See Petition at 39–40; EX1013 at Grounds 1 and 2, Claim 8; *supra* at Proposed Amended Claims 23, 26. As such, it is my opinion that Proposed Amended Claim 30 is rendered obvious by this combination.

g) Proposed Amended Claim 32: “The device of claim 23, wherein the multiple internal walls are formed by multiple concentric tubes having progressively larger diameters so as to form annular spaces between

each adjacent tube, and having alternating ends offset so as to produce the axially serpentine fluid annular pathway.”

124. Proposed Amended Claim 32 is identical to Claim 10 of the '750 Patent other than its dependence from Proposed Amended Claim 23. As such, I incorporate my opinions and analysis with respect to Claim 10 from my Original Declaration as if set forth herein in full. See Petition at 51-2; EX1013 at Ground 2, Claim 10; *supra* at Proposed Amended Claim 23. As such, it is my opinion that Proposed Amended Claim 32 is rendered obvious by this combination.

h) Proposed Amended Claim 33: “The device of claim 23, wherein the multiple internal walls are formed by multiple concentric tubes having progressively larger diameters so as to form annular spaces between each adjacent tube, and having alternating ends offset so as to produce the axially serpentine fluid annular pathway.”

125. Proposed Amended Claim 33 is identical to Claim 11 of the '750 Patent other than its dependence from Proposed Amended Claim 23. As such, I incorporate my opinions and analysis with respect to Claim 11 from my Original Declaration as if set forth herein in full. See Petition at 52-3; EX1013 at Ground 2, Claim 11; *supra* at Proposed Amended Claim 23. As such, it is my opinion that Proposed Amended Claim 33 is rendered obvious by this combination.

i) Proposed Amended Claim 37: “The device of claim 23, wherein the common off axis chamber further includes an annular dampening chamber oriented about the central chamber and being filled with an energy absorbent material.”

126. Proposed Amended Claim 37 is identical to Claim 15 of the '750 Patent other than its dependence from Proposed Amended Claim 23. As such, I incorporate my

opinions and analysis with respect to Claim 15 from my Original Declaration as if set forth herein in full. See Petition at 40-1; EX1013 at Grounds 1 and 2, Claim 15; *supra* at Proposed Amended Claim 23. As such, it is my opinion that Proposed Amended Claim 37 is rendered obvious by this combination.

j) Proposed Amended Claim 38: “The device of claim 37, wherein the dampening chamber is oriented adjacent the outer shell.”

127. Proposed Amended Claim 38 is identical to Claim 16 of the '750 Patent other than its dependence from Proposed Amended Claims 23 and 37. As such, I incorporate my opinions and analysis with respect to Claim 16 from my Original Declaration as if set forth herein in full. See Petition at 41-2; EX1013 at Grounds 1 and 2, Claim 16; *supra* at Proposed Amended Claims 23, 37. As such, it is my opinion that Proposed Amended Claim 38 is rendered obvious by this combination.

k) Proposed Amended Claim 39: “The device of claim 37, wherein the energy absorbent material is selected from the group consisting of powder tungsten filament, heavy metal powder, graphite, polymer, aluminum, stainless steel, carbon steels, iron, copper, tantalum, titanium, vanadium, chromium, zirconium, carbides of these, alloys of these, and combinations thereof.”

128. Proposed Amended Claim 39 is identical to Claim 17 of the '750 Patent other than its dependence from Proposed Amended Claims 23 and 37. As such, I incorporate my opinions and analysis with respect to Claim 17 from my Original Declaration as if set forth herein in full. See Petition at 42; EX1013 at Grounds 1

and 2, Claim 17; *supra* at Proposed Amended Claims 23, 37. As such, it is my opinion that Proposed Amended Claim 39 is rendered obvious by this combination.

l) Proposed Amended Claim 40 (Independent)

129. Proposed Amended Claim 40 is identical to Claim 19 of the '750 Patent other than the identical amendments proposed for Proposed Amended Claim 23. *See* PO's MTA at Appendix A, Claims 23, 40; *supra* at Proposed Amended Claim 23. As such, I incorporate my opinions and analysis with respect to Claim 19 from my Original Declaration as if set forth herein in full. *See* EX1013 at Grounds 1 and 2, Claim 19; *supra* at Proposed Amended Claim 23. As such, it is my opinion that Proposed Amended Claim 40 is rendered obvious by this combination.

m) Proposed Amended Claim 43 (Independent)

130. Proposed Amended Claim 43 is identical to Claim 22 of the '750 Patent other than the substantively identical amendments (differing slightly in wording because Proposed Amended Claim 43 is a method claim, *see* MTA at 4) proposed by PO for Proposed Amended Claim 23. *See* PO's MTA at Appendix A, Claims 23, 43; *supra* at Proposed Amended Claim 23. As such, I incorporate my opinions and analysis with respect to Claim 22 from my Original Declaration as if set forth herein in full. *See* EX1013 at Grounds 1 and 2, Claim 22; *supra* at Proposed

Amended Claim 23. As such, it is my opinion that Proposed Amended Claim 43 is rendered obvious by this combination.

2. GROUND 2: Proposed Amended Claims 34–36, 41 and 42 are rendered obvious by Thurler in view of Kenney, WerBell, and Barlowatz.

131. As I have noted above with respect to Ground 1, it is my opinion that Thurler in view of Kenney and WerBell renders all elements of Proposed Amended Claim 23 obvious.

132. In addition to that combination’s teachings, detailed above, Barlowatz discloses a fluid pathway formed by inner and outer helical coils. EX1018, 1. Each of the helical coils reverses direction about midway along the central chamber. *Id.* at 2; FIG. 1. While I understand Petitioner disagrees that this constitutes a “radially serpentine” fluid pathway, PO and Dr. Neitzel take the position that a reversing helical fluid pathway discloses a “radially serpentine” fluid pathway. 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.”). As such, under PO’s interpretation, Barlowatz discloses a “radially serpentine” fluid pathway. *Id.* Under this same reasoning, WerBell’s helical coils would also disclose a “radially serpentine” fluid pathway according to PO and Dr. Neitzel. *See generally*, EX1038.

133. Specifically, with respect to Barlowatz’s helical coils discussed by Dr. Neitzel, each of the helical coils is split at a midpoint by reinforcement strips *c1*

and *d1* such that each helical coil forms two helical ducts. *Id.* at 2; FIG. 1. Together the helical coils and strips form four helical ducts, one helical duct being formed within Barlowatz's central chamber, and the other three helical ducts being formed within Barlowatz's off-axis chamber. *Id.* at 2. Thus, Barlowatz's helical ducts form fluid pathways that would cause fluid to flow through progressively larger, and oppositely wound, helical ducts in clockwise and counterclockwise directions. EX1013 at ¶238.

134. In view of Barlowatz, it is my opinion that it would have been obvious to a POSITA to modify Thurler's ESD (further modified by Kenney and WerBell) to include one or more helical coils (*e.g.*, Barlowatz's inner coil *d*) in one or more exterior tubes (*e.g.*, Thurler's tube *g*), thereby forming a fluid pathway directed by Barlowatz's helical walls in Thurler's annular spaces. Doing so would have improved noise suppression by increasing the path length for the deflected energy and further slowing the velocity of the deflected energy. See EX1016 at 2:99–3:5; EX1018 at 2; EX1001 at 4:29–31.

135. A person of ordinary skill in the art would recognize that Barlowatz's helical coil configuration provides significant advantages that would naturally complement Thurler's existing suppressor design. The helical pathway created by Barlowatz's coils (which again, Dr. Neitzel opines discloses a radially serpentine fluid pathway) force gases to travel in a spiraling, screw-like path, dramatically

increasing the distance the gases must travel before exiting the suppressor, which directly correlates to improved sound attenuation. This extended path length allows more time for gas expansion and cooling, both critical factors in effective noise suppression. Additionally, the helical flow pattern creates turbulence that further dissipates the energy of the expanding gases, reducing the exit velocity and acoustic signature. The integration of Barlowatz's helical elements into Thurler's annular spaces would be particularly straightforward, as Thurler already provides the necessary exterior tube structure to house such coils. A POSITA would also appreciate that the helical design offers manufacturing advantages, as coils can be easily inserted into existing tube structures without requiring complex machining operations. Furthermore, the modular nature of helical coils would allow for customization of suppression characteristics by varying coil pitch, wall thickness, and/or number of turns to optimize performance for specific applications. The combination of Thurler's proven multi-tubular design with Barlowatz's path-lengthening helical elements would create a superior suppressor that addresses the fundamental acoustic suppression principles known to those skilled in the art, making this modification not only obvious but highly advantageous.

a) Proposed Amended Claim 34: "The device of claim 33, wherein the annular spaces further include a helical wall oriented within at least

one of the annular spaces to direct fluids along a helical path within the at least one annular space.”

136. Proposed Amended Claim 34 is identical to Claim 12 of the '750 Patent other than its dependence from Proposed Amended Claims 23 and 33. As such, I incorporate my opinions and analysis with respect to Claim 12 from my Original Declaration as if set forth herein in full. See Petition at 60-1; EX1013 at Ground 4, Claim 12; *supra* at Proposed Amended Claims 23, 33. As such, it is my opinion that Proposed Amended Claim 34 is rendered obvious by this combination.

b) Proposed Amended Claim 35: “The device of claim 34, wherein the helical wall has a quadrilateral cross-section or a circular cross-section.”

137. Proposed Amended Claim 35 is identical to Claim 13 of the '750 Patent other than its dependence from Proposed Amended Claims 23, 33 and 34. As such, I incorporate my opinions and analysis with respect to Claim 13 from my Original Declaration as if set forth herein in full. See Petition at 61; EX1013 at Ground 4, Claim 13; *supra* at Proposed Amended Claims 23, 33, 34. As such, it is my opinion that Proposed Amended Claim 35 is rendered obvious by this combination.

c) Proposed Amended Claim 36: “The device of claim 34, wherein the helical wall has a winding ratio (windings:diameter) of about 3:1 to about 8:1.”

138. Proposed Amended Claim 36 is identical to Claim 14 of the '750 Patent other than its dependence from Proposed Amended Claims 23, 33 and 34. As such, I

incorporate my opinions and analysis with respect to Claim 14 from my Original Declaration as if set forth herein in full. See Petition at 62; EX1013 at Ground 4, Claim 14; *supra* at Proposed Amended Claims 23, 33, 34. As such, it is my opinion that Proposed Amended Claim 36 is rendered obvious by this combination.

d) Proposed Amended Claim 41: “The device of claim 40, wherein the common off axis chamber further comprises at least one helical wall defining the axially serpentine fluid pathway, the at least one helical wall being configured to produce an axially serpentine fluid pathway which helically spirals around the central chamber and which dissipates energy transferred from the high energy material.”

139. Proposed Amended Claim 41 is identical to Claim 20 of the '750 Patent other than its dependence from Proposed Amended Claims 40. As such, I incorporate my opinions and analysis with respect to Claim 20 from my Original Declaration as if set forth herein in full. See Petition at 62-3; EX1013 at Grounds 4, 5 and 6, Claim 20; *supra* at Proposed Amended Claims 23, 40. As such, it is my opinion that Proposed Amended Claim 41 is rendered obvious by this combination.

e) Proposed Amended Claim 42: “The device of claim 40, further comprising multiple internal walls defining the axially serpentine fluid pathway, the multiple internal walls being formed by multiple concentric tubes having progressively larger diameters so as to form annular spaces between each adjacent tube, and having alternating ends offset so as to produce a serpentine fluid annular pathway.”

140. Proposed Amended Claim 42 is identical to Claim 21 of the '750 Patent other than its dependence from Proposed Amended Claims 40. As such, I incorporate

my opinions and analysis with respect to Claim 21 from my Original Declaration as if set forth herein in full. *See* Petition at 53; EX1013 at Grounds 2, 4, Claim 21; *supra* at Proposed Amended Claims 23, 40. As such, it is my opinion that Proposed Amended Claim 42 is rendered obvious by this combination.

3. GROUND 3: Proposed Amended Claim 24 is rendered obvious by Thurler in view of Kenney, WerBell, Barlowatz and Reeves.

141. As I have noted above with respect to Ground 1, it is my opinion that Thurler in view of Kenney and WerBell renders all elements of Proposed Amended Claim 23 obvious.

a) Proposed Amended Claim 24: “The device of claim 23, wherein the common off axis chamber comprises a plurality of sub-chambers defined by the plurality of deflectors, each with the radially serpentine fluid pathway, and wherein the radially serpentine fluid pathways of each of the deflectors are axially non-linearly interconnected along an outermost portion of the plurality of sub-chambers:”

142. Proposed Amended Claim 24 is identical to Claim 2 of the '750 Patent other than its dependence from Proposed Amended Claims 23. As such, I incorporate my opinions and analysis with respect to Claim 2 from my Original Declaration as if set forth herein in full. *See* Petition at 53; EX1013 at Ground 7, Claim 2; *supra* at Proposed Amended Claim 23, Ground 2. As such, it is my opinion that Proposed Amended Claim 24 is rendered obvious by this combination.

143. Specifically, in its MTA, I understand that PO attempts to argue that Fig. 14 of the '750 Patent discloses a radially serpentine pathway, despite the Board

previously defining such pathway as “circumferential.” MTA at 12–13; ID at 12–14. Dr. Neitzel does the same with respect to Barlowatz’s disclosures. 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.”). As such, under PO’s interpretation, Barlowatz discloses a “radially serpentine” fluid pathway. *Id.*

144. As I note above, it is my understanding that Petitioner agrees with the Board that Fig. 14 of the ’750 Patent and the related disclosures teach a circumferential flow, not a radially serpentine fluid flow, as Fig. 14 does not direct the fluid to flow around a radius. If, however, it is found that “radially serpentine” fluid flow encompasses this “circumferential” fluid flow, as PO and Dr. Netizel attempt to suggest, it is my understanding that Petitioner will rely on its Petition, and arguments and exhibits supporting the same with respect to Claim 2, which is identical to Claim 24 other than its dependence from Claim 23.

145. In addition to the combination detailed above, Reeves discloses a series of compartments that each include encapsulated shells forming “radially serpentine fluid pathways,” where the encapsulated are connected by an outermost opening 4. EX1019 at 2:40–53 & FIG. 1. Reeves also discloses partitions that are perforated at opposite ends to increase the path length. EX1019 at 2:85–93. Thus, it would have been obvious to a POSITA to modify Thurler’s ESD (further

modified by Kenney, WerBell and Barlowatz) to be partitioned into three chambers that are connected along alternating outermost points, thereby disclosing the above limitation. *See* Petition at 71; EX1013 at Ground 7, Claim 2; *see also* EX1036 at 69:1-24 (Dr. Neitzel agreeing that the configuration of Claims 2 and Proposed Amended Claim 24 are only achievable with a silencer having multiple concentric tubes).

146. In my opinion, a person of ordinary skill in the art would be motivated to incorporate Reeves' compartmentalized design into the already-modified Thurler suppressor because it provides additional opportunities for gas expansion and cooling through multiple discrete chambers. Reeves' teaching of connecting chambers at alternating outermost points creates a highly efficient serpentine flow pattern that maximizes the distance gases must travel while maintaining structural integrity of the suppressor. This alternating connection scheme forces gases to traverse the full circumferential extent of each chamber before proceeding to the next, creating the optimal pathway for maximum sound suppression. The perforated partitions disclosed by Reeves would complement the existing modifications from Kenney, WerBell, and Barlowatz by providing controlled flow restrictions that further enhance the path lengthening effect. Moreover, as Dr. Neitzel himself acknowledges, achieving the claimed configuration requires multiple concentric tubes—exactly what Reeves provides through its

compartmentalized shell design. EX1036 at 69:1-24. The integration of Reeves' partitioned chamber approach would create a complimentary effect with the previously disclosed modifications, resulting in a suppressor that combines Thurler's proven multi-chamber foundation, Kenney's forward gas direction and concentric alignment, WerBell's concentric alignment, Barlowatz's helical path lengthening (which PO and Dr. Neitzel call "radially serpentine"), and Reeves' optimized flow pattern. This combination that would be immediately apparent to those skilled in the art as representing the logical evolution of suppressor design principles.

4. GROUND 4: Proposed Amended Claims 25 and 31 are rendered obvious by Thurler in view of Kenney, WerBell, Barlowatz and Eichenseher.

147. As I have noted above with respect to Ground 1, it is my opinion that Thurler in view of Kenney and WerBell renders all elements of Proposed Amended Claim 23 obvious. As I have also noted above, Dr. Netizel has taken the position that Barlowatz discloses a "radially serpentine" fluid pathway. *Supra*, Grounds 2-3.

a) Proposed Amended Claim 25: "The device of claim 23, wherein the central chamber further comprises a locking block oriented at the inlet, said locking block having an engagement surface configured to attach to the high energy outlet and a hollow interior along the central axis, said hollow interior having a reducing throat portion and a flared outlet."

148. Proposed Amended Claim 25 is identical to Claim 3 of the '750 Patent other than its dependence from Proposed Amended Claims 23. As such, I incorporate

my opinions and analysis with respect to Claim 3 from my Original Declaration as if set forth herein in full. *See* Petition at 76-7; EX1013 at Ground 8, Claim 3; *supra* at Proposed Amended Claim 23. As such, it is my opinion that Proposed Amended Claim 25 is rendered obvious by this combination.

149. Additionally, Eichenseher's ESD further discloses an ESD where "double-walled hollow body 1 and 2 is screwed onto rifle barrel 6 by means of a mouthpiece 5". *See* EX1021 at 1 & FIG. 1; EX1013 at Ground 8, Claim 3.

150. In my opinion, a person of ordinary skill in the art would be motivated to modify Thurler's modified ESD to include Eichenseher's locking block oriented at the inlet for several reasons. First, Eichenseher's threaded mouthpiece design provides a secure, repeatable attachment method that ensures proper alignment between the suppressor and rifle barrel—a critical factor for maintaining accuracy in precision shooting applications. This threaded connection mechanism offers significant advantages over less secure attachment methods by preventing loosening under the repeated shock and vibration of gunfire, which could affect both suppressor performance and shooting accuracy. Second, the locking block configuration at the inlet provides additional structural support at the point of highest stress, where the suppressor experiences the initial blast of high-pressure gases from the firearm. This reinforcement would improve the durability and service life of the modified Thurler design. Third, the inlet-mounted locking

mechanism allows for easy installation and removal by the user, facilitating maintenance and cleaning procedures while ensuring consistent repositioning. Fourth, Eichenseher's design demonstrates that such attachment mechanisms are fully compatible with multi-chamber suppressor designs, as evidenced by its successful integration with the double-walled hollow body configuration. A POSITA would recognize that combining Thurler's proven internal suppression technology with Eichenseher's robust attachment system would create a superior suppressor that addresses both acoustic performance and practical usability concerns, making this modification an obvious improvement that enhances the overall effectiveness of the combined system.

151. In addition, a POSITA would be motivated to make this modification in order to achieve "an instantaneous accumulation and subsequent rapid discharge of the powder gases and thus effective silencing ... without the accumulation of detrimental gas or similar residues." EX1021, 1.

b) Proposed Amended Claim 31: The device of claim 23, wherein the multiple internal walls are formed to produce a radially serpentine fluid pathway."

152. Proposed Amended Claim 31 is identical to Claim 9 of the '750 Patent other than its dependence from Proposed Amended Claims 23. As such, I incorporate my opinions and analysis with respect to Claim 9 from my Original Declaration as if set forth herein in full. See EX1013 at Grounds 4, 5, 6, 8, Claim 9; *supra* at

Proposed Amended Claim 23, Ground 1-2. As such, it is my opinion that Proposed Amended Claim 31 is rendered obvious by this combination.

153. Specifically, in its MTA, PO attempts to argue that Fig. 14 of the '750 Patent discloses a radially serpentine pathway, despite the Board previously defining such pathway as "circumferential." MTA at 12–13; ID at 12–14. Dr. Neitzel does the same with respect to Barlowatz's disclosures. 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."). As such, under PO's interpretation, Barlowatz discloses a "radially serpentine" fluid pathway. *Id.*

154. As I note above, it is my understanding that Petitioner agrees with the Board that Fig. 14 of the '750 Patent and the related disclosures teach a circumferential flow, not a radially serpentine fluid flow, as Fig. 14 does not direct the fluid to flow around a radius. If however, it is found that "radially serpentine" fluid flow encompasses this "circumferential" fluid flow, as PO and Dr. Netizel attempt to suggest, it is my understanding that Petitioner will rely on its Petition, and arguments and exhibits supporting the same with respect to this Claim 9, which is identical to Claim 31 other than its dependence from Claim 23.

XIII. CONCLUSION

155. I submit this Declaration in support of Petitioner's Reply to Patent Owner's Response and Petitioner's Opposition to Patent Owner's Motion to Amend.

156. This Declaration is based on the information presently available to me as of the date of this Declaration. To the extent any additional information is provided at a later time that could further support or modify the conclusions and opinions I have reached to date, I reserve the right to amend or supplement this Declaration, and/or provide an updated Declaration based upon that information. I further reserve the right to consider and comment/opine on any additional positions taken by patent owner or patent owner's experts and testimony of such provided in this proceeding. In summary, I reserve the right to correct, expand, or otherwise edit this Declaration should new information be made available, or errors or omissions be discovered.

157. In signing this declaration, I recognize that this declaration will be filed as evidence in this IPR proceeding before the Patent Trial and Appeal Board of the United States Patent and Trademark Office. I also recognize that I may be subject to cross-examination in this IPR proceeding and that cross-examination will take place within the United States. If cross-examination is required, I will appear for cross-examination within the United States during the time allotted.

158. I hereby declare that all statements made herein are made of my own knowledge and are, to the best of my knowledge, true, and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willfully made false statements are punishable

by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

159. I reserve the right to correct, amend, expand or otherwise modify this Declaration should errors or omissions be discovered or additional information or documents become available.

Second Expert Declaration of Mr. Nixon:
U.S. Patent No. 8,286,750

Executed on this 22nd day of July 2025.



John Nixon.