STATE OF NEW YORK
ADIRONDACK PARK AGENCY

In the Matter of the Application of

UNCONVENTIONAL CONCEPTS, INC.
and MICHAEL HOPMEIER

For a Permit Pursuant to Section 809 of the
Adirondack Park Agency Act and
9 NYCRR Parts 573 and 574

RESPONSES OF INTERVENOR PROTECT THE ADIRONDACKS TO APPLICANTS' DEMAND FOR PRODUCTION

Project No. 2021-0276

Intervenor Protect the Adirondacks! Inc. ("PROTECT") hereby responds to the Applicants' Demand for Production of Documents and Things dated April 8, 2026 ("Demand") by stating as follows:

GENERAL OBJECTIONS

PROTECT objects to the section of the Demand entitled "Definitions" to the extent that the definitions impose or seek to impose obligations beyond those imposed by Article 31 of the Civil Practice Law and Rules ("CPLR"), the Adirondack Park Agency ("APA") regulations, the APA Final Project Order dated November 14, 2025, and rulings and orders of the Hearing Officer in this proceeding.

PROTECT objects to each and every definition in the section of the Demand entitled "Definitions" as being overbroad, vague, ambiguous, unduly burdensome and not calculated to lead to the discovery of admissible evidence.

PROTECT objects to use of the terms "all" and "any" throughout the Demand as being overbroad, ambiguous, vague, unduly burdensome, beyond the scope of permissible discovery and not calculated to lead to the discovery of admissible evidence.

PROTECT objects to each and every Demand insofar as they seek production of documents protected from disclosure by attorney-client privilege or constitute attorney work product or material prepared in anticipation of litigation.

SPECIFIC OBJECTIONS

PROTECT objects to the Demand's definition "A" of "document" insofar as it seeks production of drafts and non-identical copies as being overbroad, unduly burdensome and not calculated to lead to the discovery of admissible evidence.

PROTECT objects to the Demand's definition "B" of "communication" insofar as it seeks "text messages, telephone calls, voicemail, [and] in-person conversations" as being either impossible to produce, overbroad, unduly burdensome and not calculated to lead to the discovery of admissible evidence, or both.

PROTECT objects to the Demand's definition "H" of "identify" insofar as it seeks the telephone number of individuals as being a violation of privacy, overbroad, beyond the scope of permissible discovery and not calculated to lead to the discovery of admissible evidence.

PROTECT objects to the Demand's definition "I" of "parties" insofar as it seeks to include individuals and/or entities that have not been granted party status in this proceeding.

PROTECT objects to the Demand's definition "M" of "state the basis," "detail all facts," "state all facts," "explain in detail," "state in detail," and "or words of like meaning" as being overbroad, vague, ambiguous, unduly burdensome, beyond the scope of permissible discovery and not calculated to lead to the discovery of admissible evidence.

PROTECT objects to the Demand's definition "O" insofar as it seeks production of original documents instead of copies and seeks production of non-identical copies and drafts as being

overbroad, unduly burdensome, beyond the scope of permissible discovery and not calculated to lead to the discovery of admissible evidence.

PROTECT objects to the Demand's definition "P" insofar as it seeks production of non-identical copies and drafts as being overbroad, unduly burdensome, beyond the scope of permissible discovery and not calculated to lead to the discovery of admissible evidence.

PROTECT objects to the Demand's definition "Q" insofar as it seeks to impose an obligation to provide a list of withheld documents, a complete description of each such document, as well as the date; author(s); signer(s); recipient(s) of copies; the name and title of every person known to have seen, or been told of the contents of said document; and the ground or grounds upon which it is being withheld as imposing or seeking to impose obligations beyond those imposed by CPLR Article 31, the APA, the APA Final Project Order dated November 14, 2025, and rulings and orders of the Hearing Officer in this proceeding. PROTECT further objects to this definition as being overbroad, unduly burdensome, beyond the scope of permissible discovery and not calculated to lead to the discovery of admissible evidence.

PROTECT objects to the Demand's definition "S" insofar as it seeks to impose obligations to produce documents in a manner and form beyond what is required by CPLR Article 31 and the APA regulations.

PROTECT objects to the Demand's definition "T" insofar as it seeks information concerning documents no longer in PROTECT's possession, custody or control as being overbroad, unduly burdensome, beyond the scope of permissible discovery and not calculated to lead to the discovery of admissible evidence.

PROTECT objects to the Demand's definition "U" insofar as it seeks information concerning documents that were "destroyed" as being overbroad, unduly burdensome, beyond the scope of permissible discovery and not calculated to lead to the discovery of admissible evidence.

PROTECT objects to the Demand's definition "V" insofar as it seeks documents not in PROTECT's "immediate control" as being overbroad, vague, unduly burdensome, beyond the scope of permissible discovery and not calculated to lead to the discovery of admissible evidence.

RESPONSES TO DEMANDS

1. All Documents supporting any contention that the Project will result in adverse environmental impacts.

Response: In addition to the foregoing objections, PROTECT objects to this demand insofar as it seeks to impose obligations different from or in addition to those set forth in the Second Revised Scheduling Order. PROTECT further objects to this demand as being overbroad, vague, ambiguous, unduly burdensome, beyond the scope of permissible discovery and not calculated to lead to the discovery of admissible evidence. PROTECT further objects to this demand insofar as it seeks documents not in the possession, custody or control of PROTECT.

Without waiver of the foregoing objections, PROTECT refers the Applicants to the following:

(i) The Application, the Notices of Incomplete Application and the Applicants' responses thereto, and all other application documents available at https://acrobat.adobe.com/id/urn:aaid:sc:US:158fcf1c-d55f-470b-8e64-378f74256656;

(ii) PROTECT's comment letters dated May 13, 2024, October 30, 2025, and November 7, 2025, annexed to and made part of this response;

(iii) PROTECT's Petition to Intervene in this proceeding dated December 17, 2025, annexed to and made part of this response;

(iv) An article on PROTECT's website entitled, "Adirondack Park Agency releases draft order to send controversial weapons firing range to adjudicatory hearing," available at https://www.protectadks.org/adirondack-park-agency-releases-draft-order-to-send-controversial-weapons-firing-range-to-an-adjudicatory-hearing/;

(v) The affidavit of Colonel Paul Vincent Ciminelli, USA (Ret.), submitted as a public comment concerning the Project, a copy of which is annexed to and made part of this response;

(vi) The December 2013 Department of Defense Noise Working Group Technical Bulletin entitled, An Overview of Blast Noise: Characteristics, Assessment and Mitigation, submitted as part of the public comments concerning the Project, a copy of which is annexed to and made part of this response; and

(vii) All other public comments submitted to APA in opposition to the Project, available at: https://apa.ny.gov/meeting/2025/11/files/reg-pro/P2021-0276/2-P2021-0276-PublicComment.pdf; https://apa.ny.gov/files/permits/permit-hearing/PublicComments11.1_11.14.pdf; and https://apa.ny.gov/files/permits/permit-hearing/PublicComments11.1_11.14.pdf.

PROTECT further states that additional documents responsive to this demand, if any, will be provided as part of the pre-filed testimony of its witnesses in this proceeding and/or the pre-filed testimony of witnesses for the other Intervenors.

2. All expert reports, opinions, or analyses prepared or relied upon regarding the Project and for presentation of evidence in the Hearing.

Response: In addition to the foregoing objections, PROTECT objects to this demand insofar as it seeks to impose obligations different from or in addition to those set forth in the Second Revised Scheduling Order. PROTECT further objects to this demand insofar as it seeks expert reports, opinions, or analyses not in the possession, custody or control of PROTECT.

Without waiver of the foregoing objections, PROTECT refers the Applicants to expert reports, opinions or analyses included in the Application, available at https://acrobat.adobe.com/id/urn:aaid:sc:US:158fcf1c-d55f-470b-8e64-378f74256656.

PROTECT further states that additional documents responsive to this demand, if any, will be provided as part of the pre-filed testimony of its witnesses in this proceeding and/or the pre-filed testimony of witnesses for the other Intervenors.

3. All Communications (including but not limited emails) between You and any third party relating to the Project or this Hearing.

Response: In addition to the foregoing objections, PROTECT objects to this demand insofar as it seeks to impose obligations beyond those imposed by CPLR Article 31, the APA regulations, the APA Final Project Order dated November 14, 2025, and rulings and orders of the Hearing Officer in this proceeding. PROTECT further objects to this demand as being overbroad, vague, ambiguous, unduly burdensome, irrelevant, beyond the scope of permissible discovery and not calculated to lead to the discovery of admissible evidence.

4. All Documents relating to any studies, modeling, or data used to evaluate environmental impacts of the Project.

Response: In addition to the foregoing objections, PROTECT objects to this demand insofar as it seeks to impose obligations different from or in addition to those set forth in the Second Revised Scheduling Order. PROTECT further objects to this demand insofar as it seeks expert reports, opinions, or analyses not in the possession, custody or control of PROTECT.

Without waiver of the foregoing objections, PROTECT refers the Applicants to the Application, the Notices of Incomplete Application and the Applicants' responses thereto, and to all other application documents available at https://acrobat.adobe.com/id/urn:aaid:sc:US:158fcf1c-d55f-470b-8e64-378f74256656. PROTECT further states that additional documents responsive to this demand, if any, will be provided as part of the pre-filed testimony of its witnesses in this proceeding and/or the pre-filed testimony of witnesses for the other Intervenors.

5. All Documents supporting any claim that the Project fails to comply with applicable statutes, regulations, or permit criteria.

Response: In addition to the foregoing objections, PROTECT objects to this demand insofar as it seeks to impose obligations different from or in addition to those set forth in the Second Revised Scheduling Order. PROTECT further objects to this demand as being overbroad, vague, ambiguous, unduly burdensome, beyond the scope of permissible discovery and not calculated to lead to the discovery of admissible evidence. PROTECT further objects to this demand insofar as it seeks documents not in the possession, custody or control of PROTECT.

Without waiver of the foregoing objections, PROTECT refers the Applicants to the following:

(i) The Application, the Notices of Incomplete Application and the Applicants' responses thereto, and all other application documents available at https://acrobat.adobe.com/id/urn:aaid:sc:US:158fcf1c-d55f-470b-8e64-378f74256656;

(ii) PROTECT's comment letters dated May 13, 2024, October 30, 2025, and November 7, 2025, annexed to and made part of this response;

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(iv) An article on PROTECT's website entitled, "Adirondack Park Agency releases draft order to send controversial weapons firing range to adjudicatory hearing," available at https://www.protectadks.org/adirondack-park-agency-releases-draft-order-to-send-controversial-weapons-firing-range-to-an-adjudicatory-hearing/;

(v) The affidavit of Colonel Paul Vincent Ciminelli, USA (Ret.), submitted as a public comment concerning the Project, annexed to and made part of this response;

(vi) The December 2013 Department of Defense Noise Working Group Technical Bulletin entitled, An Overview of Blast Noise: Characteristics, Assessment and Mitigation, submitted as part of the public comments concerning the Project, annexed to and made part of this response; and

(vii) The Department of Environmental Conservation Program Policy DEP-00-1, Assessing and Mitigating Noise Impacts, dated October 6, 2000, revised February 2, 2001, available at: https://extapps.dec.ny.gov/docs/permits_ej_operations_pdf/noise2000.pdf; and

(viii) All other public comments submitted in opposition to the Project, available at: https://apa.ny.gov/meeting/2025/11/files/reg-pro/P2021-0276/2-P2021-0276-PublicComment.pdf; https://apa.ny.gov/files/permits/permit-hearing/PublicComments11.1_11.14.pdf; and https://apa.ny.gov/files/permits/permit-hearing/PublicComments11.1_11.14.pdf.

PROTECT further states that additional documents responsive to this demand, if any, will be provided as part of the pre-filed testimony of its witnesses in this proceeding and/or the pre-filed testimony of witnesses for the other Intervenors.

6. All Documents relating to alternative projects or mitigation measures You contend are preferable.

Response: In addition to the foregoing objections, PROTECT objects to this demand insofar as it seeks to impose obligations different from or in addition to those set forth in the Second Revised Scheduling Order. PROTECT further objects to this demand as being overbroad, vague, ambiguous, unduly burdensome, beyond the scope of permissible discovery and not calculated to lead to the discovery of admissible evidence. PROTECT further objects to this demand insofar as it seeks documents not in the possession, custody or control of PROTECT.

Without waiver of the foregoing objections, PROTECT states that it has no documents in its possession, custody or control responsive to this demand.

7. All Documents You intend to rely upon at the Hearing.

Response: In addition to the foregoing objections, PROTECT objects to this demand insofar as it seeks to impose obligations different from or in addition to those set forth in the Second Revised Scheduling Order. PROTECT further objects to this demand as being overbroad, vague,

ambiguous, unduly burdensome, beyond the scope of permissible discovery and not calculated to lead to the discovery of admissible evidence. PROTECT further objects to this demand insofar as it seeks documents not in the possession, custody or control of PROTECT.

Without waiver of the foregoing objections, PROTECT refers the Applicants to the Application, the Notices of Incomplete Application and the Applicants' responses thereto, and to all other application documents available at https://acrobat.adobe.com/id/urn:aaid:sc:US:158fcf1c-d55f-470b-8e64-378f74256656. PROTECT further states that additional documents responsive to this demand, if any, will be provided as part of the pre-filed testimony of its witnesses in this proceeding and/or the pre-filed testimony of witnesses for the other Intervenors.

8. All Documents reflecting funding sources, sponsorship, or financial support related to Your participation in this proceeding.

Response: In addition to the foregoing objections, PROTECT objects to this demand as seeking to impose obligations beyond those imposed by CPLR Article 31, the APA regulations, the APA Final Project Order dated November 14, 2025, and rulings and orders of the Hearing Officer in this proceeding. PROTECT further objects to this demand as being overbroad, vague, ambiguous, irrelevant, beyond the scope of permissible discovery, and not calculated to lead to the discovery of admissible evidence.

9. All Documents reflecting current and past membership in Your organization, including lists of names of current and past members from 1990 to present.

Response: In addition to the foregoing objections, PROTECT objects to this demand as seeking to impose obligations beyond those imposed by CPLR Article 31, the APA regulations, the APA Final Project Order dated November 14, 2025, and rulings and orders of the Hearing

Officer in this proceeding. PROTECT further objects to this demand as being unduly burdensome, overbroad, vague, ambiguous, irrelevant, beyond the scope of permissible discovery, and not calculated to lead to the discovery of admissible evidence.

Dated: April 29, 2026
Albany, New York

Christopher A. Amato, Esq.
Claudia K. Braymer, Esq.
Attorneys for Intervenor
Protect the Adirondacks! Inc.
105 Oven Mountain Road
Johnsburg, New York 12843
Telephone: (518) 860-3696
conservationdirector@protectadks.org
executivedirector@protectadks.org

PROTECT THE ADIRONDACKS!

May 13, 2024

John Ernst, Chair
Board Members
Adirondack Park Agency
PO Box 99
1133 NYS Route 86
Ray Brook NY 12977

Re: Appeal of Fifth Notice of Incomplete Application by Ballistics Testing Facility; Michael Hopmeier of Unconventional Concepts, Inc.

Dear Chairman Ernst and APA Board Members:

We submit these comments to urge you to uphold the Fifth Notice of Incomplete Permit Application (NIPA) issued by the Adirondack Park Agency (APA) to Project Sponsor Michael Hopmeier of Unconventional Concepts, Inc. regarding the proposed ballistics testing range located at 195 Hale Hill Lane in the Town of Lewis, Essex County. The proposed ballistics testing range involves firing test shots from "a M109A3GN 155mm field howitzer up to 2 times per day up to 3 days in a row, for an average of 30 times per year for 5 years". Letter from Fritz Aldinger to Matthew Norfolk, Esq. dated August 16, 2023, page 2.

The project is proposed to take place in land classified as "Rural Use" "where natural recourse limitations and public considerations necessitate fairly stringent development considerations" and where only "a low level of development" may be permissible so long as it is "compatible with the protection of the relatively intolerant natural resources and the preservation of open space". APA Act § 805(3)(f). The site of the proposed project is adjacent to the Taylor Pond Wild Forest, and not far from the Jay Mountain Wilderness.

The 5th NIPA dated January 2, 2024 outlines important "questions [that] must be addressed in order to review" the application, and "some of the information requested" previously still needs to be submitted. NIPA page 1. The 5th NIPA requires basic, critical information about the howitzer that will be on the

site, its precise location, associated source of noise information, proposed noise mitigation (including a proposed berm), an evaluation of other noise mitigation measures (including enclosures and silencers), and noise modeling and analysis information. The 5th NIPA also requires information depicting "all state land boundaries, the southwest corner of the nearest state land parcel located approximately 300 feet from the northeast corner of the firing pad, the nearest dwellings . . . receptor locations M1-M4, and the closest point of the proposed gravel pad or the noise source, whichever is closer, to each receptor". NIPA page 3.

The 5th NIPA (page 4) states that the "approximate noise level of 127 dB does not appear to be in character with the recorded ambient noise level of approximately 37.2 dBA, which per NYSDEC's noise policy, is most similar to wilderness noise levels at approximately 35 dBA". Notably, the Department of Environmental Conservation (DEC) Policy: Assessing and Mitigating Noise Impacts dated February 2, 2001 (Noise Policy) (pages 13-14) states that increases of 3-6 dB have the "potential for adverse noise impacts" when sensitive receptors are present, "increases of more than 6 dB" require closer analysis of potential adverse impacts, and an "increase of 10 dB(A) deserves consideration of avoidance and mitigation measures in most cases". Additionally, the DEC Noise Policy (page 20) states that a decisionmaker "[in] determining the potential for an adverse noise impact, [must] consider not only ambient noise levels, but also the existing land use, and whether or not an increased noise level or the introduction of a discernable sound, that is out of character with existing sounds, will be considered annoying or obtrusive".

Here, the potential for adverse impacts, from noise levels that far exceed a 10 dB increase and from other impacts to sensitive natural resources, must be closely scrutinized by APA. Contrary to the Project Sponsor's objections, the information requested in the 5th NIPA is necessary for APA to review the adverse impacts of the proposed project on the "the natural, scenic, aesthetic, ecological, wildlife, historic, recreational or open space resources of the park". APA Act § 809(10)(e). The 5th NIPA should be upheld, and the Project Sponsor should be required to provide the information requested therein.

Thank you for your consideration of these comments.

Sincerely,

Claudia K. Braymer

Claudia Braymer
Deputy Director

Via Email

October 30, 2025

Frederick Aldinger
Adirondack Park Agency
P.O. Box 99
Ray Brook, NY 12977

Re: Michael Hopmeier
Unconventional Concepts, Inc.
Proposed Military Ballistic Testing Range
Hale Hill Lane, Town of Lewis, Essex County
APA Project 2021-0276

Dear Mr. Aldinger:

Protect the Adirondacks (PROTECT) appreciates the opportunity to submit comments on the above-referenced application by Unconventional Concepts, Inc. ("UCI"), which seeks approval to construct and operate an artillery firing range on a 197-acre parcel of land classified as Rural Use on the Adirondack Park Land Use and Development Plan Map.

A military-grade artillery firing range that produces excessively loud noise has no place in the Adirondack Park. The proposed project involves the firing of a 155mm howitzer cannon—characterized by the Norwegian defense agency as "one of the noisiest weapons" in the Norwegian arsenal—up to 30 times per year over a five-year period. UCI proposes to fire this acoustically intrusive artillery in close proximity to scores of private residences, within 350 feet of the Taylor Pond Wild Forest, and in close proximity to the Jay Mountain Wilderness, and the Hurricane Mountain Wilderness. Incredibly, UCI proposes that Big Church Mountain be used as a "backstop" to capture artillery shells fired by the howitzer.

The application must be denied. As discussed below, the proposed project is directly at odds with the purpose of the Adirondack Park and is also inconsistent with the statutory purposes and policies applicable to Rural Use areas.

Moreover, the application is significantly deficient in several respects: it fails to provide baseline ecological information about the project site necessary for a complete review of the project's environmental impacts; it mischaracterizes the natural resources present on the project site; its analysis of noise impacts from the firing of major artillery is incomplete and deeply flawed; and its claims of the project's economic benefits are unfounded and exaggerated.

Consequently, the Adirondack Park Agency (APA) should deny the application. At the very least, APA should hold an adjudicatory hearing on the significant and substantive issues raised regarding the numerous deficiencies in the application and the incompatibility of the project with the purposes and goals of the Adirondack Park.

The Proposed Project

As proposed, a portable 155mm howitzer will be fired from a 100-foot by 100-foot crushed gravel pad, sending steel projectiles into a target area. The firing range will be longer than three football fields (330 yards). The howitzer will be fired up to 30 times per year on weekdays between the hours of 10 a.m. and 4 p.m. There may be as many as 10 hours of firings in a single week, and the testing is anticipated to continue for five years.

The project site is forested, includes streams and wetlands, and includes Little Church and Big Church mountains. The application states that the site has been chosen "because it provides easy access to mountains, *which will act as a projectile backstop*," and that "[t]he current intent is that *test shots will impact the mountain at the end of the [firing] range."* Application ("Applic.") at 24; (emphasis added).

There are 42 residences located within two miles of the project site. The site is also located in close proximity to sensitive Forest Preserve lands, including the Jay Mountain Wilderness Area (approximately 2.5 miles away), and the Hurricane Mountain Wilderness Area (approximately 4 miles away). The project site is also within two miles of four parcels of the Taylor Pond Wild Forest, with the closest parcel adjoining the project site and located approximately 350 feet from the proposed artillery firing pad.

The Project is Inappropriate for the Adirondack Park

The siting of a military-grade artillery firing range is, on its face, inconsistent with the character of the Adirondack Park, which "is abundant in natural resources and open space unique to New York and the eastern United States." Executive Law § 801. The proposed project is utterly out of character with "[t]he wild forest, water, wildlife and aesthetic resources of the park and its open space character." *Id*. Furthermore, an artillery firing range does not "complement[] the forest preserve holdings" or provide "supporting facilities necessary to the proper use and enjoyment of the unique wild forest atmosphere of the park." *Id*. Indeed, it is difficult to imagine a use more directly at odds with the Adirondack Park's wild forest atmosphere.

The inappropriateness of locating the proposed project within Park boundaries is underscored by the fact that a military-grade artillery firing range is not listed as either a primary or secondary compatible use for Rural Use (or for any land classification). *See* Executive Law § 805(3)(f)(4).

The proposed project is therefore a presumptively incompatible use for Rural Use areas. *Id*. § 805(3)(a).

Although the proposed project is styled as a "commercial use," which is listed as a secondary compatible use in Rural Use areas, it is not a commercial use contemplated by the APA Act because it does not involve the sale or rental of goods, services or commodities and will not provide recreation facilities or activities. *See* Executive Law § 802(17) (defining "commercial use" as "any use involving the sale or rental or distribution of goods, services or commodities, either retail or wholesale, or the provision of recreation facilities or activities for a fee other than any such uses specifically listed on any of the classification of compatible uses lists."). The proposed project should therefore not be considered compatible with a Rural Use area.

In any event, the incompatibility of the proposed project with the Rural Use classification is made clear by the APA Act. A Rural Use area is one "where natural resource limitations and public considerations necessitate fairly stringent development constraints . . . [and is] characterize[d] by substantial acreages of one or more of the following: fairly shallow soils, relatively severe slopes, significant ecotones, critical wildlife habitats, proximity to scenic vistas or key public lands." Executive Law § 805(3)(f)(1). In addition, Rural Use areas "are characterized by a low level of development and variety of rural uses that are generally compatible with the protection of the relatively intolerant natural resources and the preservation of open space . . [and] provide the essential open space atmosphere that characterizes the park." *Id*. A weapon firing range involving the booming discharge of artillery shells into the side of a mountain will not protect natural resources and will destroy the open space atmosphere that is "essential and basic to the unique character of" the Adirondack Park. *Id*. § 805(3)(f)(2).

The Application is Deficient and Inaccurate

The application is seriously deficient because it lacks essential information regarding the site's natural resources and project impacts. Specifically:

- No vernal pool survey: There is no evidence that a survey was conducted to identify vernal pools, which are critical seasonal habitats for amphibians and other sensitive species.
- No comprehensive natural resource inventory: The application does not include a thorough, on-site inventory to assess habitat quality, species presence, or other key ecological characteristics of the site. This is a particularly significant omission given that there are rare plant and animal species in proximity to the project site. *See* Applic. Attachment D at 10.
- No assessment of impacts on Wilderness areas: The application fails to acknowledge the proximity of the project site to the Jay Mountain Wilderness Area and Hurricane Mountain Wilderness Area, and does not address the project's potential impacts to these sensitive protected areas.
- Inadequate forest cover data: While the application states that the site is forested, it fails to acknowledge that the area has experienced substantial timber harvesting, other than a passing reference to the property being enrolled in the Real Property Tax Law § 480-a

program. There is no information on the current extent of forest cover or how many trees are expected to be removed during development.

Without these baseline data, APA cannot fully, accurately, or lawfully assess the environmental impacts of the proposed project, as required by the Adirondack Park Agency Act and its implementing regulations.

In addition, the application contains internally inconsistent, inaccurate and misleading claims. For example, UCI repeatedly claims that there are no ponds, permanent or intermittent streams or wetlands on the project site. *See* Applic. at 6, 17, 24. However, its own Environmental Resource Map shows ponds, wetlands and streams on the project site. Applic. Attachment D at 3 and 4. UCI also claims that clearing will consist only of brushing and removal of a "limited" (unspecified) number of trees. However, the application's aerial photograph shows the firing range to be completely forested. Applic. Attachment L. This underscores the unreliability of the natural resource information provided by the applicant.

UCI also claims in one part of the application that it has no plans to expand its operations over the next five years. Applic. at 4. Yet elsewhere UCI states that the proposed project "is part of an ongoing strategic plan at UCI's ADK facility to build and expand . . . a wide array of research and development programs including environmental research, telecommunications, and national security." Applic. at 27-28. UCI's future plans for the site must be included as part of this application to avoid impermissible segmentation of APA's environmental review.

Finally, UCI misrepresents the economic benefits of the project, claiming that it will result in "hiring of personnel with advanced technical and research backgrounds" who will "contribute to the local and regional economy." Applic. at 27. But this claim is at odds with UCI's statement that operations at the site will be limited to 30 hours per year, and that the project will create no construction jobs and no full-time or part-time seasonal or year-round employment. Applic. at 5. Thus, there appear to be no economic benefits to the community from this project.

The Applicant Has Failed to Provide Requested Information

UCI has failed to provide information requested by APA staff, including:

- A revised noise source level at or in proximity to the howitzer muzzle noise source (not 820 feet away);
- Empirical sound pressure level calculations for each of the receptor locations and an impact assessment utilizing those calculations;
- A revised noise impact analysis that includes varying wind direction and speed and atmospheric inversions; and
- The maximum charge for the artillery that will be fired.

Without this information, APA cannot conduct the comprehensive review mandated by law.

The Noise Analysis is Flawed and Demonstrates Unacceptable Impacts

UCI has submitted a study that purports to characterize the noise impacts from the proposed artillery firing range. Bowman Consulting, Sound Study (Nov. 2024) ("Sound Study"). The Sound Study is deeply flawed because it is based on inadequate ambient noise monitoring and—as UCI itself concedes—the study's assumptions and results have changed multiple times during the application process. But even the flawed study shows that the noise impacts from the project will be significant and severe enough to require denial of the application.

A. The Sound Study is Flawed

The Sound Study's evaluation of noise impacts is based on comparing anticipated noise levels from the firing of a 150mm howitzer with existing ambient noise levels measured at five locations. However, ambient noise monitoring was conducted for only two days under atypical conditions and at locations influenced by nearby industrial, highway and snowmobile noise—thereby severely understating the true impacts.

Ambient noise monitoring was conducted on two consecutive days in December (December 20 and 21, 2022). Five monitoring locations were utilized: M1 (a residential receptor more than a mile from the firing site); M2 (a residential receptor approximately two miles from the firing site); M3 (a location next to NYS Route 9); M4 (a location in the Taylor Pond Wild Forest approximately one mile from the firing site); and M5 (a location in the Taylor Pond Wild Forest 510 feet from the firing site). Sound Study at 2-6; Figure 3.

However, the monitoring locations chosen and the limited duration of the monitoring cause the project's noise impacts to be underestimated. The M1 residential receptor is located close to the Pulsifer Mill; the M2 residential receptor is close to the NYCO mine; and M3 is located along NYS Route 9. Sound Study, Figure 3. Thus, the ambient noise levels at these three receptors are elevated by existing industrial activity and truck traffic and are not representative of the quieter ambient noise levels that prevail in this rural and largely undeveloped region.

The M4 and M5 Wild Forest receptors are similarly unrepresentative because the monitoring occurred on two days in December immediately following a large snowfall and, as the Sound Study acknowledges, were affected by noise from snowmobiles. Sound Study at 5-6. This is confirmed by the fact that the ambient noise levels monitored at the M4 and M5 receptors were, with one exception, several decibels above the 35 dB level that the Department of Environmental Conservation ("DEC") reports for wilderness areas. *See* Sound Study, Tables 4b, 4c at 13; DEC Program Policy DEP-00-1, Assessing and Mitigating Noise Impacts (2001) ("DEC Noise Policy") at 20.

Because the ambient sound levels were gathered from locations with uncharacteristically higher noise levels, the assessment of noise impacts from the firing range is skewed downward. Collecting ambient noise data from areas more representative of the relatively quiet environment in that area would demonstrate that the noise from a howitzer firing will be highly intrusive. Thus, the Sound Study underestimates the project's noise impacts and its conclusion that those impacts will not be significant is based on cherry-picked, unrepresentative ambient conditions.

The unreliability of the Sound Study is further underscored by the constantly shifting information submitted about the project's noise impacts. For example, UCI has variously identified the noise level from the firing of the howitzer as 166.1 dB, 176 dB, 180 dB, 180.8 dB, 183 dB and 185 dB—discrepancies which UCI concedes. *See* UCI's Response to 5th NIPA, dated June 9, 2025, at 2. UCI has also repeatedly changed the distance from the firing source to the modeled receptors, with the changes ranging from 1,815 feet to 5,955 feet for M1; from 3,025 feet to 9,925 feet for M2; from 2,355 feet to 7,726 feet for M3; from 1,496 feet to 5,200 feet for M4; and from 169 feet to 554 for M5. *Id*. at 3. The calculated sound pressure levels have also altered significantly, from 67 dB(A) to 90 dB(A) for M1; from 71 dB(A) to 85.6 dB(A) for M2; from 73 dB(A) to 87.8 dB(A) for M3; from 79 dB(A) to 91.7 dB(A) for M4; and from 100 dB(A) to 110.7 dB(A) for M5. *See* UCI's Response to 5th NIPA, dated June 9, 2025, at 6. In sum, UCI's noise impact analysis is a moving target, and the constantly changing information submitted provides APA with no rational basis for evaluating the project's noise impacts.

In addition, UCI's attempt to claim reductions in noise impacts from the purported construction of a "sound mitigation berm" is unsupported. UCI initially stated that "[t]he location of the Firing Pad is [the sole] mitigation measure" because "[t]here are no other practicable means to mitigate noise from a noise source such as the one being tested." UCI's First Response to 4th NIPA, dated July 31, 2023, at 5. UCI subsequently changed course, claiming that a sound mitigation berm would be constructed, but no plans or specifications for such a berm have been submitted. UCI's Second Response to 4th NIPA, dated December 14, 2023, at 1. Moreover, given the applicant's initial admission, plus basic common sense that a 13-foot high dirt berm on one side of the firing range and at a lower elevation than the firing pad cannot fully muffle the noise from firing a 155mm howitzer cannon, the sound mitigation berm is not realistic mitigation. Consequently, the lower noise impact values in the Sound Study that assume the presence of a sound mitigation berm are unsupported and should be disregarded.

Finally, the Sound Study is fatally flawed because it fails to assess the noise impacts to either the Jay Mountain Wilderness Area, which is approximately 2.5 miles from the firing range, or the Hurricane Mountain Wilderness Area, which is approximately 4 miles away. UCI offers no explanation or justification for ignoring noise impacts to these highly sensitive areas.

B. <u>The Sound Study Shows Unacceptable Noise Impacts</u>

Putting aside the Sound Study's significant errors and omissions, even that flawed analysis shows that the project's noise impacts are significant and unacceptable. The Sound Study characterizes the blast from firing the howitzer as an "impulse" sound, a noise source that DEC characterizes as "very annoying." Sound Study at 12; DEC Noise Policy at 11. Furthermore, the Sound Study assumes that the noise from firing the 150mm howitzer will be 180.8 decibels (dB) at the source. Applic. at 28; Sound Study at 6. This is well above the 130 dB level that DEC characterizes as "painfully loud." DEC Noise Policy at 19.

Moreover, the increase in noise levels from firing the howitzer—even based on UCI's skewed ambient monitoring data—are well outside levels deemed acceptable by the DEC Noise Policy. For example, the Sound Study shows the increase in noise levels at the M5 Wild Forest receptor

will range from 22.5 to 25 dB, an increase that DEC characterizes as "very objectionable to intolerable." Sound Study Tables 4b and 4c at 10; DEC Noise Policy at 15.

In addition, the noise level at both the M5 receptor and the closest portion of the Taylor Pond Wild Forest is modeled to range from 124 dB to127 dB (even with the phantom sound mitigation berm)—slightly below the 130 dB level deemed by DEC to be "painfully loud." Without the berm, the noise levels range from 130 dB to 132 dB, both above DEC's "painfully loud" threshold *See* UCI's Response to 5th NIPA, dated June 9, 2025, at 14; DEC Noise Policy at 19. Thus, the project's noise impacts to Forest Preserve lands are significant and unacceptable.

Conclusion

For the reasons set forth above, PROTECT respectfully urges APA to deny UCI's application. In the alternative, APA should hold an adjudicatory hearing to address the numerous deficiencies in the application and the incompatibility of the project with the purposes and goals of the Adirondack Park. These steps are essential to ensuring that APA fulfills its statutory mandate to protect the natural resources of the Adirondack Park.

On behalf of the Board of Directors of PROTECT, please accept our gratitude for the opportunity to share our comments on this conceptual design.

Sincerely,

Christopher Amato
Conservation Director and Counsel

PROTECT THE ADIRONDACKS!

Via Email

November 7, 2025

Chairman Mark Hall and Members
Adirondack Park Agency
P.O. Box 99
1133 NYS Route 86
Ray Brook, NY 12977

Re: Michael Hopmeier
Unconventional Concepts, Inc.
Proposed Military Ballistic Testing Range
Hale Hill Lane, Town of Lewis, Essex County
APA Project 2021-0276

Dear Chair Hall and Adirondack Park Agency Members:

Protect the Adirondacks (PROTECT) has reviewed the proposed Order presented by staff to the Board regarding the above-referenced application by Unconventional Concepts, Inc. ("UCI"), which seeks approval to construct and operate a howitzer firing range on a 197-acre parcel of land classified as Rural Use on the Adirondack Park Land Use and Development Plan Map. While the applicant has claimed that this proposed project will support military preparedness, there is no evidence to support such a claim, and the applicant has stated in a letter dated November 6, 2025 that this should be reviewed as "a request to use firearms in the park".

In addition to our public comment letter regarding the application, we would like to take this opportunity prior to the Adirondack Park Agency ("APA") Board meeting on November 13-14, 2025 to urge the Board to adopt the staff's recommendation to order this proposed project to undergo an adjudicatory hearing, with the addition of one issue. We suggest that the Board add as one of the issues for adjudication the applicant's claim that this project is critical for the national security of the United States.

As we commented in our October 30, 2025 letter to staff, a "military weapons testing range has no place in the Adirondack Park". Firing an excessively loud 155mm howitzer cannon in close proximity to residences, within 350 feet of the Taylor Pond Wild Forest, and in close proximity to

the Jay Mountain Wilderness, and the Hurricane Mountain Wilderness is incompatible with the statutory goals for the Adirondack Park and is also inconsistent with the purposes and policies applicable to Rural Use areas.

We agree with the proposed Order's Findings stating that the criteria for holding an adjudicatory hearing have been met. We also support the proposed Order stating that three issues need to be considered at the hearing, summarized as follows:

1. Whether the proposed howitzer firing range is compatible with the Adirondack Park;
2. Whether the proposed howitzer firing range is a compatible use within the Rural Use land area classification; and
3. Whether the proposed howitzer firing range would have an undue adverse impact upon the natural, scenic, ecological, wildlife, recreational or open space resources of the Adirondack Park.

As noted above, we suggest that the Board identify as an issue for adjudication the applicant's claim that this project is essential for the national security of the United States.

We note that without an adjudicatory hearing, this Board cannot make the findings required by the Adirondack Park Agency Act. The application contains inaccurate and misleading information, fails to include comprehensive natural resources information, and fails to provide complete information as requested by APA staff. Without all of this information, APA cannot fully, accurately, or lawfully assess the environmental impacts of the proposed project, as required by the Adirondack Park Agency Act and its implementing regulations.

Conclusion

PROTECT respectfully requests that APA deny UCI's application to site a weapons firing range in the Adirondack Park. To do so, APA must hold an adjudicatory hearing to comply with the APA Act's procedural requirements.

Respectfully submitted,

Claudia K. Braymer

Claudia Braymer
Executive Director

PROTECT THE ADIRONDACKS!

Via Email

December 17, 2025

Hon. David N. Greenwood
Administrative Law Judge
New York State Department of Environmental Conservation
Office of Hearings and Mediation Services
625 Broadway, First Floor,
Albany, NY 12233-1550

Re: In the Matter of the Application of Unconventional Concepts, Inc. and Michael Hopmeier
APA Project No. 2021-0276

Dear Judge Greenwood:

Attached please find the Petition to Intervene by Protect the Adirondacks! Inc. in the above-referenced proceeding.

Respectfully submitted,

Christopher A. Amato, Esq.
Conservation Director and Counsel

Cc: Grace Sullivan, Esq.
Matthew Norfolk, Esq.

Protect the Adirondacks
PO Box 48, North Creek, NY 12853 518.251.2700
www.protectadks.org info@protectadks.org
Like Us on Facebook and on Instagram/Threads @ProtectAdkPark

STATE OF NEW YORK
ADIRONDACK PARK AGENCY

In the Matter of the Application of

UNCONVENTIONAL CONCEPTS, INC. and MICHAEL HOPMEIER

PETITION TO INTERVENE

For a Permit Pursuant to Section 809 of the Adirondack Park Agency Act and 9 NYCRR Parts 573 and 574

Project No. 2021-0276

Protect the Adirondacks! Inc. ("PROTECT") respectfully submits this Petition pursuant to Executive Law § 812 and 9 NYCRR § 580.7 for permission to intervene as a full party in the above-referenced proceeding.

I. Introduction

This proceeding involves the application by Unconventional Concepts, Inc. and Michael Hopmeier to establish an artillery testing range on two parcels of land classified Rural Use by the Adirondack Park Land Use and Development Plan Map: an approximately 8-acre parcel located at 87 Hale Hill Lane, and an approximately 197-acre parcel located at 195 Hale Hill Lane. Both parcels are in the Town of Lewis, Essex County ("the Application").

As proposed in the Application, a portable 155mm howitzer will be fired from a 100-foot by 100-foot crushed gravel pad, sending steel projectiles into a target area ("Project"). The firing range will be longer than three football fields (330 yards). The howitzer will be fired up to 30 times per year on weekdays between the hours of 10 a.m. and 4 p.m. There may be as many as 10 hours of firings in a single week, and the testing is anticipated to continue for five years.

The Project site is forested, includes streams and wetlands, and includes Little Church and Big Church mountains. There are 44 residences located within two miles of the Project site. The site is also located in close proximity to sensitive Forest Preserve lands, including the Jay Mountain Wilderness Area (approximately two miles away), and the Hurricane Mountain Wilderness Area (approximately four miles away). The Project site is also within two miles of four parcels of the Taylor Pond Wild Forest, with the closest parcel located approximately 300 feet from the proposed artillery firing pad.

PROTECT is a non-profit organization dedicated to the protection and preservation of the natural resources and communities in the Adirondack Park and has a long history of advocacy before the Adirondack Park Agency ("APA"). PROTECT submitted detailed comments to APA concerning the Application, pointing out significant flaws and deficiencies in the analysis of the Project's potential impacts and identifying reasons why the Application fails to meet the statutory and regulatory criteria for approval. As set forth in detail below, PROTECT meets the regulatory criteria for intervention and should therefore be granted full party status.

II. Nature and Purpose of the Organization (9 NYCRR § 580.7(a)(1))

PROTECT is a New York not-for-profit corporation managed by a Board of Directors. It is a grassroots membership organization dedicated to the protection, stewardship, and sustainability of the natural environment and human communities of the Adirondack Park and the Forest Preserve for current and future generations.[1] PROTECT uses advocacy, independent public oversight, grassroots organizing, education, scientific research, and legal action to advance its mission. Its offices are located in the Adirondack Park at 105 Oven Mountain Road, Johnsburg, New York. A copy of PROTECT's by-laws is annexed to this Petition as **Exhibit A**.

[1] PROTECT's mission statement is available here.

PROTECT has approximately 2,000 members and supporters who share a common desire to protect the environmental health and legacy of the Adirondack Park. Many of PROTECT's members reside or own property within the Park, and 70 of PROTECT's members live in Essex County. PROTECT's members are also regular users of and visitors to the Forest Preserve who recreate in and enjoy the natural resources and scenic treasures of the Adirondack Park, including the Jay Mountain Wilderness Area, the Hurricane Mountain Wilderness Area and the Taylor Pond Wild Forest. PROTECT and its members are committed to ensuring that public and private lands in the Adirondack Park are managed in a coordinated and complementary manner as envisioned and required by the New York State Constitution, the Adirondack Park State Land Master Plan, applicable Unit Management Plans and the Adirondack Park Agency Act ("APA Act").

PROTECT was formed in 2009 by consolidating two predecessor organizations: the Association for the Protection of the Adirondacks, founded in 1902, the oldest non-profit Adirondack Park advocacy group; and Residents' Committee to Protect the Adirondacks, Inc., an environmental advocacy organization founded in 1990. PROTECT's staff includes an Executive Director, a Conservation Director and Counsel, and a Fundraising Coordinator.

A high proportion of PROTECT's membership dues directly support projects that help protect the Adirondack Park's six million acres. Through independent public oversight, advocacy, education, grassroots organizing, water quality monitoring, research, and legal action, PROTECT and its members work to protect, preserve, and enhance the wilderness character, ecological integrity, and scenic resources of the Adirondack Park, and to promote appropriate recreational uses in the Forest Preserve.

One of PROTECT's priorities is to ensure that APA's regulation of private lands in the Adirondack Park complies with all applicable statutory and regulatory requirements. To that end,

PROTECT routinely monitors APA's review of permit and variance applications; submits Freedom of Information Law requests for records pertaining to private land projects under review by APA; submits comment letters on proposed projects; and attends the monthly meetings of the APA Board.

In addition to advocacy on key issues related to the management of private and public lands in the Adirondack Park, PROTECT is a member of DEC's Forest Preserve Advisory Committee, the Forest Preserve Trails Stewardship Working Group, and the DEC Visitor Use Management Plan Stakeholders Group.

PROTECT's website is also actively maintained as a repository of public information about major issues facing the Adirondack Park; the history and protection of the Forest Preserve; key legislation affecting the Park; major private lands development projects and PROTECT's comments to APA on those projects; and trail guides to 100 hikes in the Park.

PROTECT's members and volunteers are also engaged in projects to educate the public and State agencies about environmental conditions and trends in the Adirondack Park. For example, PROTECT has published reports: (i) identifying opportunities for motor-less recreation on 200 of the largest lakes and ponds in the Adirondack Park; (ii) documenting impacts to natural resources in the Forest Preserve from the use of all-terrain vehicles; (iii) assessing private land development trends in the Adirondack Park; (iv) documenting economic and population trends in the Park; (v) reviewing protected lands in New York State to establish the additional acreage of lands needing protection in order to meet the State's goal of protecting 30 percent of lands and inland waters by 2030; and identifying locations for accessible paddling opportunities in the Adirondack Park.

Although PROTECT relies in most cases on direct advocacy before APA and DEC staff and leadership to achieve its goals, it does on occasion resort to court action when appropriate and necessary to ensure that the agencies comply with the APA Act, the Forever Wild clause of the New York State Constitution, the Adirondack Park State Land Master Plan, and applicable Unit Management Plans. Most recently, PROTECT was successful before the New York Court of Appeals in its suit challenging DEC's unlawful construction on Forest Preserve lands of miles of extra-wide snowmobile trails requiring the cutting of thousands of trees in violation of the Forever Wild clause of the New York State Constitution. *Protect the Adirondacks! Inc. v. N.Y.S. Dep't of Envtl. Conservation*., 37 NY3d 73 (2021).

III. Capacity to Participate (9 NYCRR § 580.7(a)(2))

As noted above, PROTECT has a long history of advocacy before APA concerning both private land and Forest Preserve issues. PROTECT has also on occasion filed legal challenges to APA's approval of private land projects, as well as APA's approval of Forest Preserve management actions by the Department of Environmental Conservation ("DEC").

PROTECT has submitted detailed comments on the following recent private land development applications: proposed subdivisions in the Town of Chester, Warren County (APA Project No. 2025-0129) and the Town of Bolton, Warren County (APA Project No. 2025-0195); a proposed amendment to the Adirondack Park Land Use and Development Plan Map in the Town of Lake Luzerne, Warren County (MA 2025-01); the proposed expansion of an RV park in the Town of Mayfield, Fulton County (APA Project No. 2024-0270); a proposed forest clearcut in the Town of Indian Lake, Hamilton County (APA Project No. 2025-0104); and a proposed solar energy facility in the Town of Ausable, Clinton County (APA Project No. 2025-0015). PROTECT also submitted comments and expert reports addressing visual impacts and engineering of a

remedial waste pile in connection with the application by Barton Mines Corporation, LLC to expand its mining operation in the Town of Johnsburg, Warren County (APA Project No. 2021-0245). In addition, PROTECT participated as a full party in the last adjudicatory hearing held by APA involving the proposed Adirondack Club and Resort in the Town of Tupper Lake, Franklin County.

PROTECT has also filed the following recent legal challenges to actions undertaken or approved by APA: *Adirondack White Lake Assn. et al. v. Adirondack Park Agency* (Sup. Ct. Oneida Co. Index No. EFCA2022-000556); *Protect the Adirondacks! Inc. v. N.Y. Dept. of Envtl. Conservation et al.* (Sup. Ct. Albany Co. Index No. 900663-23); *Protect the Adirondacks! Inc. v. Adirondack Park Agency* (Sup. Ct. Warren Co. Index No. EF2023-71671); *Protect the Adirondacks! Inc. v. N.Y. Dept. of Envtl. Conservation et al.* (Sup. Ct. Albany Co. Index No. 902978-24).

Thus, PROTECT has the capacity to fully participate in this adjudicatory proceeding and to provide information or expertise on matters likely to be considered at the hearing.

IV. Prior Legal or Administrative Proceedings (9 NYCRR § 580.7(a)(3))

Please see Petitioner's response in Point III, *supra*. Further, as noted above, PROTECT participated as a party in the most recent adjudicatory hearing held by APA, and filed a legal challenge to APA's approval of the project following the hearing. *Protect the Adirondacks! Inc. v. Adirondack Park Agency* 38 Misc 3d 1235(A) (Sup. Ct. Albany Co. 2013, *aff'd in part, petition dismissed by* 121 AD3d 63 (3d Dept 2014), *leave to appeal dismissed, leave to appeal denied*, 24 NY3d 1065.

V. Evidence to be Presented (9 NYCRR § 580.7(a)(4))

The APA Order directing that the Application be sent to an adjudicatory hearing identified three issues for adjudication. PROTECT intends to submit testimony on all three issues, each of which–compatibility with the Adirondack Park, compatibility with Rural Use areas, and undue adverse impacts on the resources of the Adirondack Park – is each directly related to PROTECT's mission to ensure that development of private lands complies with the APA Act and protects the Park's human communities, wildlands, wildlife and scenic character.

PROTECT has made every effort to expeditiously identify and retain witnesses to testify on the issues to be adjudicated. To the extent possible at this early juncture, PROTECT is including the names of witnesses who are likely to provide testimony and the subject matter of their testimony. However, discussions with prospective fact and expert witnesses are ongoing, and PROTECT wishes to reserve the ability to supplement or modify its witness list to the extent permitted by any scheduling order.

Issue #1: Whether the proposed howitzer testing range is compatible with the Adirondack Park land use and development plan, including, but not limited to, whether the howitzer testing range is compatible with the purpose of insuring overall conservation, protection, preservation, development and use of the unique scenic, wildlife, recreational, open space, ecological, and natural resources of the Adirondack Park. [APA Act § 809(10)(a)].

The incompatibility of the proposed Project with the Rural Use classification is made clear by the APA Act. A Rural Use area is one "where natural resource limitations and public considerations necessitate fairly stringent development constraints . . . [and is] characterize[d] by substantial acreages of one or more of the following: fairly shallow soils, relatively severe slopes, significant ecotones, critical wildlife habitats, proximity to scenic vistas or key public lands."

Executive Law § 805(3)(f)(1). In addition, Rural Use areas "are characterized by a low level of development and variety of rural uses that are generally compatible with the protection of the relatively intolerant natural resources and the preservation of open space . . [and] provide the essential open space atmosphere that characterizes the park." *Id*. A military testing range involving the intrusively loud discharge of artillery shells into the side of a mountain will not protect natural resources and will seriously compromise the open space atmosphere that is "essential and basic to the unique character of" the Adirondack Park. *Id*. § 805(3)(f)(2).

PROTECT intends to provide expert testimony regarding the history and characteristics of the Adirondack Park generally, why the proposed Project conflicts with the purposes and policies of the APA Act, and whether the howitzer firing range is compatible with the purpose of insuring overall conservation, protection, preservation, development and use of the unique scenic, wildlife, recreational, open space, ecological, and natural resources of the Adirondack Park. We anticipate that Philip Terrie, Ph.D., will provide testimony on this issue, and that one or more retired United State military personnel may provide testimony on alternatives to the proposed Project. PROTECT also intends to provide testimony from Barbara Rottier, Esq., former APA Associate Counsel, regarding the characteristics of Rural Use areas and why the proposed project is inconsistent with that classification. PROTECT also intends to provide testimony from Kurt Fristrup, Ph.D., on the Project's potential adverse noise impacts on neighboring Forest Preserve units. PROTECT further intends to provide testimony from witnesses residing in the Town of Lewis concerning the characteristics and community character of the area.

Issue #2: Whether the proposed howitzer testing range is a compatible use within the Rural Use land area classification, and whether it is compatible with the character description and purposes, policies and objectives of the Rural Use land area classification, including but not limited

to whether the proposed use should be considered a "commercial use;" and if not, whether the proposed howitzer testing range is a compatible use. [APA Act § 809(10)(b)].

The inappropriateness of locating the proposed Project within Park boundaries is underscored by the fact that a military artillery firing range is not listed as either a primary or secondary compatible use for Rural Use (or for any land classification). *See* Executive Law § 805(3)(f)(4). The proposed Project is therefore a presumptively incompatible use for Rural Use areas. *Id*. § 805(3)(a).

Furthermore, the proposed Project does not meet the APA Act's definition of "commercial use," because it does not involve the sale or rental of goods, services or commodities and does not provide recreation facilities or activities. *See* Executive Law § 802(17) (defining "commercial use" as "any use involving the sale or rental or distribution of goods, services or commodities, either retail or wholesale, or the provision of recreation facilities or activities for a fee other than any such uses specifically listed on any of the classification of compatible uses lists."). The proposed project is therefore not compatible with a Rural Use area.

PROTECT intends to provide expert testimony from Barbara Rottier, Esq., former APA Associate Counsel, on the compatible use and commercial use issues.

Issue #3: Whether the proposed howitzer testing range would have an undue adverse impact upon the natural, scenic, ecological, wildlife, recreational or open space resources of the park [APA Act § 809(10)(e)], considering the development considerations contained in APA Act § 805(4) and 9 NYCRR 574.5, including, but not limited to the following:

i. Whether the howitzer testing range involves any potential discharges, residues, or other pollutants that may affect water resources, land resources, or air resources. [APA Act § 805(4)(a)(1) – (3)]

ii. Whether the howitzer testing range would have an undue adverse impact to land resources within the park, such as soils, forest and open space resources, including the quality and availability of nearby lands for outdoor recreational purposes. [APA Act § 805(4)(a)(1) and (2)]

iii. Whether there is a reliable, comprehensive and accurate projection of the noise that will be produced by the howitzer testing range and whether such noise will have an undue adverse impact upon the Park's resources. [APA Act § 805(4)(a)(1)]

iv. Whether noise mitigation exists or whether they are practical to implement that would avoid undue impact to the Park's resources. [APA Act § 805(4)(a)(1)]

v. Whether the howitzer testing range will create undue ecological impacts or disruption to native or migrating wildlife and their habitats at or near the howitzer testing range, considering species' sensitivities. [APA Act § 805(4)(a)(5) and (6)]

vi. Whether the howitzer testing range could have health and safety impacts relating to the operation, storage, and transport of military equipment. [APA Act § 805(4)(c)(2)(a)]

vii. Whether the howitzer testing range could impact nearby Wilderness and Wild Forest areas. [APA Act § 805(4)(c)(2)(a)]

viii. Whether the howitzer testing range would have economic impact on adjoining and nearby land uses, such as property values. [APA Act § 805(4)(c)(2)(a)].

PROTECT intends to provide expert testimony on several of the sub-issues identified above, including: whether the howitzer firing range involves any potential discharges, residues, or other pollutants that may affect water resources, land resources, or air resources; whether there is a reliable, comprehensive and accurate projection of the noise that will be produced by the howitzer

firing range and whether such noise will have an undue adverse impact upon the Park's resources; whether the howitzer firing range will create undue ecological impacts or disruption to native or migrating wildlife and their habitats at or near the howitzer firing range, considering species' sensitivities; whether the howitzer firing range could have public health and safety impacts relating to the operation, storage, and transport of military equipment; and to what extent the howitzer firing range will adversely impact nearby Wilderness and Wild Forest areas.

PROTECT anticipates providing testimony from RSG, Inc., an environmental consulting firm, on issues #3(ii) and (iii); testimony from Maria Sagot, Ph.D., on issue #3(v); testimony from Kurt Fristrup, Ph.D., on issues #3(ii) and (vii); and testimony from Aaron Forum and/or Alan Rizzo, experts in field artillery, on issues #3(i) and (vi). PROTECT is engaged in the process of identifying and securing other potential witnesses to testify on the other sub-issues identified for issue #3.

PROTECT also intends to make an offer of proof on one additional issue to be adjudicated:

Compliance Issues: PROTECT intends to make an offer of proof showing that the applicant has conducted activities at and surrounding the Project site that are not authorized by and violate the APA Act and the applicant's existing APA permit, APA Permit 2023-0111. The offer of proof will show that the Applicant's compliance history is relevant to whether the Applicant can reasonably be expected to comply with permit conditions in the event the Project is approved by APA.

VI. Interest of PROTECT in This Proceeding (9 NYCRR § 580.7(a)(5))

As demonstrated above in Petitioner's responses in Points II and III, *supra*, PROTECT has an interest that will be affected by APA's decision concerning the proposed Project. As a grassroots membership organization dedicated to the protection, stewardship, and sustainability of the natural

environment and human communities of the Adirondack Park and the Forest Preserve for current and future generations, PROTECT and its members (including 70 members from Essex County) work to ensure that the public and private lands in the Adirondack Park are managed in accordance with the New York State Constitution, the Adirondack Park State Land Master Plan, applicable Unit Management Plans and the APA Act.

This is the first adjudicatory hearing held by APA in over 14 years. PROTECT has an interest in participating in this historic event by providing testimony and evidence to support and enhance the APA Board's review of and decision-making on the Project.

WHEREFORE, Petitioner Protect the Adirondacks requests permission to participate as a full party in this proceeding.

Respectfully submitted,

Christopher A. Amato, Esq.
Claudia K. Braymer, Esq.
Attorneys for Petitioner
Protect the Adirondacks! Inc.
105 Oven Mountain Road
Johnsburg, New York 12843
Telephone: (518) 860-3696
conservationdirector@protectadks.org
executivedirector@protectadks.org

EXHIBIT A

BY-LAWS
Protect the Adirondacks! Inc.

Index

ARTICLE I
Name and Seal

Section 1 Name
The Corporate name is: **Protect the Adirondacks! Inc.** It shall herein be referred to as the "Corporation".

Section 2 Seal
The seal of the Corporation shall be the White Pine Seal of the former Association for the Protection of the Adirondacks with the name updated.

ARTICLE II
Office and Corporate Books

Section 1 Office
The principal office of the Corporation shall be located at 105 Oven Mountain Road, Johnsburg, NY (mailing address PO Box 48, North Creek, NY 12853). The Corporation may also have offices at such other places within or without this state as the Board of Directors may from time to time determine and the business of the Corporation may require.

Section 2 Corporate Books and Records
There shall be maintained and kept current at an office of the Corporation correct books of account setting forth the assets and liabilities of the Corporation and containing statements describing the activities and transactions of the Corporation including a minute book, which shall contain a copy of the Certificate of Consolidation, a copy of these By-Laws, a copy of the letter from the Internal Revenue Service declaring the Corporation to be a tax-exempt organization and the minutes of all meetings of the members of the Corporation and its Board of Directors.

ARTICLE III
Mission and Vision Statements

Section 1 Mission Statement
Protect the Adirondacks! Inc. is a non-profit, grassroots membership organization dedicated to the protection and stewardship of the public and private lands of the Adirondack Park, and to building the health and diversity of its natural and human communities for the benefit of current and future generations.

Section 2 Vision Statement
We look to a future in which the wild character, ecological integrity, and mutual well-being of the natural and human communities of the Adirondack Park are sustained by an underpinning of laws, policies, and programs that:

- Permanently protect the Park's wildlands, native flora and fauna, waters, soils and air, and the open space and scenic character of the Park;
- Defend the "Forever Wild" clause, Article XIV of the New York Constitution, and ensure that the Forest Preserve is managed accordingly.
- Defend and expand the network of classified Wilderness lands of the Park.
- Ensure that the Park's private lands are sustainably managed to conserve their productivity, economic viability, and open-space character.
- Promote the development of local communities that are strong, diverse, and vital.

- Promote the Adirondack Park as a global model of landscape-scale conservation in which strong protection of large, interconnected public wildlands are integrated with sustainably managed, economically viable, private farms and forests that are linked to healthy, diverse rural communities.
- Protect, preserve, and enhance the wilderness character, ecological integrity, scenic resources, and appropriate recreational uses of the New York State Forest Preserve.
- Conserve the wild, natural, open-space character and the viability of the private farms and forests of the Adirondack Park.
- Undertake educational, research, scientific, investigative, philanthropic and charitable activities, grassroots organization, legal action, public advocacy, and work with the public and other organizations to achieve its mission.

ARTICLE IV
Membership

Section 1 Qualification of Members
The membership shall consist of persons who are interested in and who support the objectives of this Corporation.

Section 2 Membership Classes
There shall be one class of members except that pre-existing life memberships shall be honored.

Section 3 Admission of Members
Upon payment of annual dues, members shall have the right to vote at all meetings of members, and to participate in the benefits of the Corporation.

Section 4 Dues
The Board of Directors shall from time to time establish a schedule of annual membership dues.

ARTICLE V
Board of Directors

Section 1 Board of Directors
The business and affairs of the Corporation shall be managed and conducted by a Board of Directors consisting of not fewer than twelve (12) nor more than thirty (30) Directors, all of whom shall be members of the Corporation. Not fewer than one-third of the Directors shall be domiciled within the Adirondack Park. The Directors may appoint Honorary Directors who shall not have a vote.

Section 2 Nominations and Vacancies
The Board Governance Committee shall annually recommend to the Corporation a slate of candidates to serve as Directors in place of those whose terms are expiring and to fill such vacancies as may exist. The person so elected shall serve the remainder of the appointed term, until elected by the members at the next annual meeting. The recommendations of the Committee shall be reported to the Chair not less than thirty (30) days prior to the Annual Meeting and shall be sent to all Members of the Corporation with the Notice of the Annual Meeting.

Section 3 Election
3.1 One-third of the number of Directors shall be elected each year for a term of three years by the members of the Corporation at its Annual Meeting.

3.2 Directors must be members of the Corporation who are not in the employ, full or part-time, of the Corporation.

Section 4 Powers and Duties of the Board of Directors
The Board of Directors shall have power and the duty to:

- Determine the direction, policies and activities of the Corporation;
- Adopt an annual budget, authorize capital expenditures, approve banking relationships, make provision for bonding of the Treasurer and provide for an independent annual audit;
- Elect new Directors to the Board, and elect its Chair from its own;
- Appoint the Executive Director and all ~~other~~ necessary committees, and authorize additional staff positions;
- Appoint legal counsel, and employ such other assistants, including accounting and investment counsel as it may deem useful, and to regulate their compensation;
- As appropriate, authorize committees or individuals to represent the Corporation before any legislative body, or other organization, public or private, respecting any matter in which the Corporation shall be interested;
- Authorize litigation that will further the mission of the Corporation;
- Maintain and manage the real property owned by the Corporation;
- Confer with Union College on the development and maintenance of the Protect the Adirondacks! historic Adirondack collection presently on permanent loan to the Kelly Adirondack Research Center of Union College;
- Report to the Annual Meeting of the Corporation of its activities and proceedings during the preceding year;
- Convene in Executive Session with the vote of the majority of Directors present.

Section 5 Policy
Only the Board of Directors at regular or special meetings shall determine Corporation policies, unless otherwise specified in these By-laws. Committees and individuals representing the Corporation shall present positions consistent with the broad policy of the Corporation as declared by specific action taken by the Board.

Section 6 Duties of the Members of the Board of Directors
Members of the Board of Directors shall:

- Regularly attend Director Meetings;
- Support the officers and the Executive Director in pursuing the Corporation's Mission and programs;
- Help develop the Corporation's capacities, including personal financial support commensurate with individual resources;
- Actively seek new members for the Corporation;
- Adhere to the Corporation's Conflict of Interest Policy in accord with applicable law;
- Voluntarily serve on committees to assist in the work and management of the Corporation.

Section 7 Removal
The Board of Directors may act, in its discretion, and by a vote of not less than two-thirds of the Directors present at a duly constituted meeting of the Board of Directors, to remove from office any elected Director for cause.

ARTICLE VI
Officers

Section 1 Elected Officers
1.1 The elected Officers of the Corporation shall be a Chair, two Vice Chairs, a Secretary, a Treasurer, plus one "at large" Officer member to serve on the Executive Committee, and such other officers as the Board shall appoint. No fewer than one-third (1/3) of the Officers must be domiciled within the Adirondack Park.

1.2 Election
The Chair shall be nominated by the Board from their own with the advice of the Board Governance Committee and elected by the Board of Directors and serve a two year term. Other Officers shall be nominated by the Chair with the advice of the Board Governance Committee, and elected by the Directors from their own number for a term of two years, also to serve until their successors are elected. The Board has the authority to nominate Board Members to Officer positions that were not nominated by the Board Governance Committee.

Section 2 Executive Director
2.1 The Executive Director shall be an officer of the Corporation and an ex officio member of all Board committees except the Board Governance Committee without vote.

2.2 The Executive Director shall be an employee-at-will of the Corporation and shall serve at the pleasure of the Board of Directors.

Section 3 Officer Responsibilities
3.1 Chair
- The Chair is directly accountable to the Corporation's membership and Board of Directors for implementing the programs and policies of the Corporation and together with the Secretary, or other duly elected officer, shall sign all contracts and obligations of the Corporation;
- The Chair shall preside at all meetings of the Corporation and its Board of Directors, and serve as Chair of the Executive Committee;
- The Chair shall be an ex officio member with vote of all Board committees except the Board Governance Committee;
- The Chair shall be the chief executive officer of the Corporation.
- The Chair shall designate which Vice-Chair shall be "Primary" and which "Secondary."

3.2 Vice Chairs
- The Vice Chairs shall perform such duties as may be assigned by the Chair;
- The Primary Vice Chair shall, in the absence or inability of the Chair, perform the duties of the Chair, and when so acting shall have all the powers and perform the duties of the Chair.
- The Secondary Vice-Chair shall have the same powers should the Primary Vice-Chair be unable to perform.

3.3 Secretary

- The Secretary shall keep the minutes of all meetings of the members, Board and Executive Committee. Minutes shall provide a full description of issues discussed and decisions reached, including any actions required.
- The Secretary shall have custody of the seal of the Corporation, and affix and attest the same to documents when duly authorized by the Board;
- The Secretary shall ensure that notice is duly given of all meetings of the Membership and the Board of Directors;
- The Secretary shall perform such other duties as may be assigned by the Chair.

3.4 Treasurer

- The Treasurer shall have oversight of the financial affairs of the Corporation, and shall provide periodic reports to the Executive Committee and Board of Directors;
- The Treasurer shall ensure an independent audit of the Corporation's records is commissioned and presented on an annual basis to the Board;
- The Treasurer shall perform such other duties as may be assigned by the Chair.

Section 4 Executive Director

The Executive Director shall be the principal operating officer of the Corporation, charged with the duty of carrying out the purposes and objectives of the Corporation and other directives under the supervision of the Chair and shall serve at the pleasure of the Board. The Executive Director has the authority to recruit and hire staff authorized through the budget process by the Board. The Chair, with the advice and consent of the Officers and/or Board, shall establish annual performance goals and objectives with the Executive Director, which shall be in writing and presented to the Board of Directors and Executive Director. The Chair and the Officers shall establish an evaluation form, based on the performance goals and objectives, to be completed annually by each member of the Executive Committee. The Chair and Primary Vice-Chair shall conduct an annual review of such completed evaluations, discuss performance based on the evaluations with the Executive Director and report the results to the Board of Directors.

Section 5 Election of Officers

Election of Officers shall be by majority of the Board at a meeting of the Board of Directors.

Section 6 Removal or Resignation, Filling of Vacancies

6.1 Removal

An elected Officer may be removed from office by the Board for cause, by a vote of two-thirds of the total number of Directors on the Board.

6.2 Resignation

Any Officer or Director may resign at any time by giving written notice to the Board, the Chair or the Secretary of the Corporation. Unless otherwise specified in the notice, the resignation shall take effect upon receipt thereof by the Board, the Chair or the Secretary. Acceptance of the resignation shall not be necessary to make it effective.

6.3 Vacancies

Any vacancy among the Officers or Directors may be filled by election or appointment at any meeting of the Board for the balance of the term of the office falling vacant. The Board shall seek the advice of the Board Governance Committee in seeking nominees to fill the vacancy.

ARTICLE VII
Committees

Section 1 Standing Committees
The Executive Committee shall be the sole standing committee of the Board of Directors.

Section 2 Permanent, Program and Special Committees

2.1 Permanent Committees
The permanent committees shall consist of the following:

- **2.1.1** Board Governance
- **2.1.2** Conservation Advocacy (CAC)
- **2.1.3** Development & Membership
- **2.1.4** Audit Committee

2.2 Committees Chairs
The Chair shall appoint the Chairs of the Committees, except the Board Governance Committee, subject to the approval of the Board. Each Permanent Committee in consultation with the Board Chair shall develop a charter defining its purpose and function and determine the number of its members.

2.3 Special Committees
The Chair may establish and determine the charter of and provide for the appointment of members of such additional committees for specific purposes, projects and programs as may be deemed advisable subject to approval by the Board of Directors.

Section 3 Committee Membership Qualifications
Persons serving on Committees must be members of the Corporation.

Section 4 Executive Committee

4.1 Membership
Membership of the Executive Committee shall consist of the six elected officers of the Corporation (the Chair, two Vice-Chairs, Secretary, and Treasurer) and one at-large Director/Officer elected from the Board of Directors, all to serve two-year terms. Not fewer than one-third (1/3) of the members of the Executive Committee must be domiciled within the Adirondack Park. The Chair shall be the Chairperson of the Executive Committee.

4.2 Responsibilities
The Executive Committee shall act for the Board when necessary between meetings of the Board of Directors and in the best interests of the Corporation in accordance with the Certificate of Consolidation, and By-Laws of the Corporation. The Committee shall promptly report its actions to the Board.

Section 5 Board Governance Committee

5.1 Membership
The Chair, with the approval of the Board of Directors, shall appoint a Board Governance Committee, which shall elect its own Chair.

5.2 Responsibilities
The duties of the committee shall be to address the following activities and report and make recommendations to the Board:

- Review governance documents and procedures to ensure they are lawful, purposeful, and adhered to;
- Review all offices and advise on nomination of officers;
- Search for needed talents for the Board of Directors; nominate candidates for election or reelection to be voted upon at the ensuing annual meeting; and nominate candidates to serve as Honorary Directors.
- Facilitate a periodic evaluation of Board Directors.

Section 6 Conservation Advocacy Committee (CAC)

6.1 Membership
Any Board Director may serve on this Committee. With approval of the Committee chair(s), members of the Corporation may serve with voting rights.

6.2 Responsibilities
The CAC, guided by the Executive Director, follows the progress of current public policy and conservation initiatives and any issues regarding the Adirondack Park and Forest Preserve. The CAC is authorized to develop recommended actions to the Board of Directors in furtherance of the Corporation's Mission and Vision. The Board may authorize the CAC to act on its behalf on any issue it so chooses. Delegation of issues shall be identified in a separate document approved by the Board. The CAC Chair or the designated Secretary shall prepare minutes in advance of the next Board meeting. Minutes shall provide a full description of issues discussed and the results of any decisions, along with any initiatives that require Board action.

Section 7 Development and Membership Committee

7.1 Membership
The Chair, with the approval of the Board of Directors, shall appoint a Development and Membership Committee. With approval of the Committee Chair(s), members of the Corporation may serve with voting rights

7.2 Responsibilities
To devise strategies and enlist the Board of Directors in pursuing initiatives to:
- Fundraise and otherwise enhance the Corporation's fiscal capacities;
- Enlarge and retain an engaged Corporate membership.

ARTICLE VIII
Finances

Section 1 Fiscal Year
The fiscal year of the Corporation shall commence on July 1 of each year and end on June 30 of the succeeding year.

Section 2 Depositories
Funds of the Corporation, including securities, may be deposited from time to time to the credit of the Corporation with depositories approved by the Board of Directors.

Section 3 Signatories
All checks, drafts or other orders for the payment of money, notes, acceptances or other evidence of indebtedness issued in the name of the Corporation, shall be signed by the

designated individual or individuals, actual or facsimile, in the manner which shall be determined by the Board of Directors.

Section 4 Audit
The financial statements and records of the Corporation shall be audited each year by an independent certified public accountant.

Section 5 Compensation
Directors and Officers other than the Executive Director shall serve without compensation but reasonable expenses may be paid. No employee of the Corporation shall receive any funds from the Corporation or any pecuniary profit from the operations thereof, except reasonable compensation for services actually rendered to the Corporation and reimbursement for expenses incurred in the performance of such services.

Section 6 Investments
The funds of the Corporation may be retained in whole or in part in cash or be invested and reinvested from time to time in such property, real, personal or otherwise, including stocks, bonds or other securities, as the Board of Directors may deem desirable.

ARTICLE IX
Indemnification

The Corporation shall, to the fullest extent now or hereafter permitted by and in accordance with the standards and procedures provided for by the Not-for-Profit Corporation Law of New York and any amendments thereto, indemnify any person made, or threatened to be made, a party to any criminal or civil action or proceeding arising from the performance of his or her duties as a Director, Officer, employee of the Corporation, against judgments, fines, amounts paid in settlement and reasonable expenses, including attorneys' fees. The Board shall purchase insurance for such purpose.

ARTICLE X
Corporate Status

The Corporation is a non-stock, non-profit corporation, organized and operated exclusively for charitable, conservation, and education purposes. Specific restrictions apply to the distribution and use of Corporation funds as defined in the Certificate of Consolidation.

ARTICLE XI
Meetings

Section 1 Meetings of the Membership

1.1 Annual Meetings
The Annual Meeting of the Corporation shall be held during the months of June, July, August or September on such date and at such time and place as the Board of Directors may designate.

1.2 Notice
Notice of meetings of the membership shall be given to members by first class mail, or electronic mail not fewer than thirty (30) days prior to such meeting.

1.3 Special Meetings

- May be called by the Chair;
- Must be called upon request of majority of the members of the Board of Directors;
- Must be called if a petition so requesting is signed by at least ten percent of the members of the Corporation;
- Notice of a special meeting shall be given in the time and manner provided in subsection 1.2 above;
- Notice of a special meeting shall also state the purpose or purposes for which the meeting is called. No other business but that specified in the notice may be transacted at a special meeting without the unanimous consent of those present.

1.4 Voting Rights and Proxies

At all meetings of the membership, each member shall be entitled to cast his or her vote in person. The Board may in its discretion allow a vote by official written proxy ballot which must bear the member's signature.

1.5 Quorum

A quorum for the transaction of business at any meeting of the membership shall be constituted by the presence of thirty (30) members, or one-tenth of the total membership, whichever is lesser, in person or by proxy. However, a lesser number may adjourn the meeting for a period of not more than ten weeks from the date originally scheduled. The secretary shall cause a notice of the rescheduled date of the meeting to be sent to those members who were not present at the meeting originally called.

1.6 Majority

All matters brought to vote shall be decided by a simple majority vote of the members present in person or by proxy except for such matters for which a greater vote is required by the laws of the State of New York, the Corporation's By-Laws or Certificate of Consolidation.

Section 2 Meetings of the Board of Directors

2.1 Regular Meetings

Meetings may be held at any place within or without the State of New York and at such times as the board may from time to time fix, but normally every third month or four (4) times per annum and a fifth such meeting shall be held during each Annual Meeting of the Members for the purpose of electing officers.

2.2 Notice of Meetings

Not less than seven (7) prior written notice, which may be by electronic mail, shall be given to all members of the Board of Directors of the time and place of meetings. Notice shall include an agenda and relevant informational materials.

2.3 Special Meetings

Special meetings of the Board of Directors may be called at any time by the Chair or, in case of the Chair's absence or inability to act, by a vice Chair, or by signed statement of two-thirds of the Board, upon at least five (5) days' prior written notice to each member of the board, at such time and place as it may determine. Notice of a special meeting shall state the purpose or purposes for which the meeting is called. No other business but that specified in the notice may be transacted at a special meeting without the unanimous consent of those present.

2.4 Quorum

A quorum for the transaction of business at any meeting of the Board of Directors shall be constituted by the presence, in person, of one half of the Directors. In the absence of a quorum, the Directors present may reschedule the meeting.

2.5 Majority
Unless otherwise provided herein, all matters brought to vote shall be decided by majority vote of the Directors present.

Section 3 Meetings of the Executive Committee.

- The Chair may convene the Executive Committee as necessary at times between regular meetings of the Board, upon notice to all members of the Committee.
- All actions of the Executive Committee shall be by majority vote of the entire Committee.
- All actions of the Executive Committee shall be reported at the next meeting of the Board of Directors and entered into the minutes thereof.

Section 4 Rules of Order
The rules contained in Roberts Rules of Order, revised, shall govern the Corporation in all cases to which they are applicable, and in which they are not inconsistent with the By-Laws or special rules of order of this Corporation.

Section 5 Action by Consent
Any action required or permitted to be taken by the Board of Directors or Executive Committee may be taken without a meeting if all members of the Board of Directors or Executive Committee consent in writing to the resolution authorizing the action.

Section 6 Action by Conference Call
Board of Directors or Executive Committee meetings may be held with one or more members participating by means of a conference telephone or similar communications equipment allowing persons participating in the meeting to hear each other at the same time.

Section 7 Limit on Action in Absence of a Quorum
At any duly called meeting of either the Board of Directors or the Executive Committee at which a quorum shall not be present, no action shall be taken except upon the signed, written unanimous consent of by every member of the Board of Directors or the Executive Committee as the case applies, after each of them shall have subscribed his or her name signifying his or her approval and consent to a statement setting forth the specific action to be taken.

ARTICLE XII
Construction

If there be any conflict between the provisions of the Certificate of Consolidation, and these By-Laws of the Corporation, the provisions of the Certificate of Consolidation shall govern.

ARTICLE XIII
Amendments

The Certificate of Consolidation and By-Laws may be amended in the following manner:

- Any proposed amendment must be approved at a regular or special meeting of the Board of Directors, at which a quorum is present, by a two-thirds vote of the Board members present and voting at such meeting.
- Any amendment so approved shall be submitted to the membership for a vote following procedures established by the Board of Directors.
- A majority of the membership voting in person or by proxy is required to approve the amendment.
- In the event that the Board of Directors shall fail to approve any proposed amendment to the Certificate of Consolidation or By-Laws submitted to it, the proposed amendment must be submitted to the membership for vote if a petition is filed in support of said amendment carrying the signatures of not less than ten percent of the membership of the Corporation. The same procedure must be followed as if such amendment had been approved by the Board of Directors.

Adopted by Board of Directors on May 4, 2024
Approved by the membership on July 20, 2024

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DNWG

DEPARTMENT OF DEFENSE
NOISE WORKING GROUP

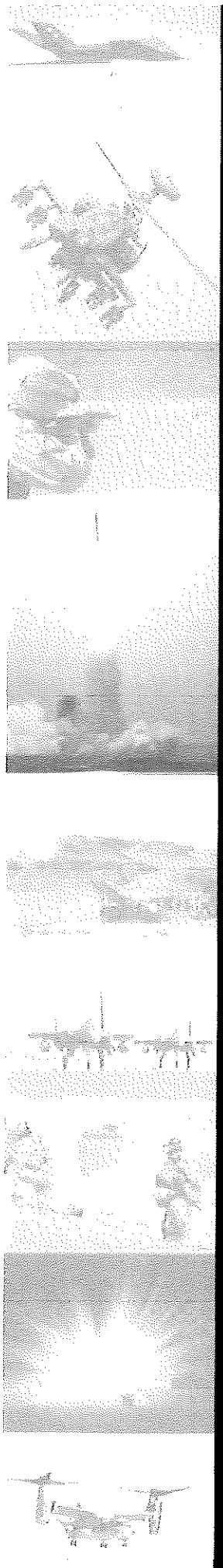
TECHNICAL BULLETIN

An Overview of Blast Noise: Characteristics, Assessment and Mitigation

December 2013

Noise from large weapons (artillery, tank) and explosives can travel long distances and still be loud enough to cause negative community reactions. A broad understanding of the characteristics, assessment methods, and noise management and mitigation strategies for blast noise will enable better planning and community communication/outreach to minimize training restrictions due to noise issues.

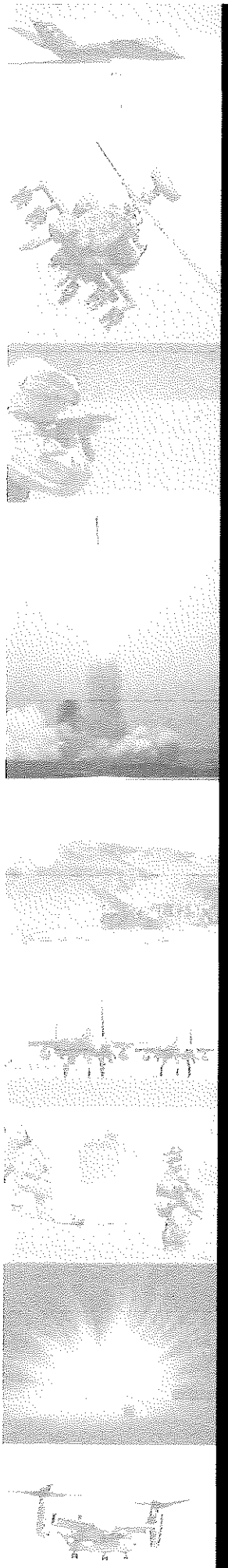
DEPARTMENT OF DEFENSE
UNITED STATES OF AMERICA



This bulletin, "An overview of blast noise: characteristics, assessment, and mitigation," is one of a series of technical bulletins issued by the Department of Defense (DoD) Noise Working Group (DNWG) under the initiative to educate and train DoD military, civilian, and contractor personnel, and the public, on noise issues.

For military noise management, blast noise is defined as noise generated by large caliber weapons (20mm and greater) and explosive charges. Blast noise is becoming more prevalent on military installations due to changes in the training doctrine and troops returning from overseas to home bases. In recent years, the number of troops receiving Improvised Explosive Device (IED) training has increased. Often, this training must be conducted at local installations due to time and fiscal constraints. Additionally, over the past few years, most installations have experienced a decline in large caliber weapons firing due to troop deployments. Once troops return, training levels should return to pre-deployment levels.

Noise from large weapons (artillery, tank) and explosives can travel long distances, and still be loud enough to cause negative community reactions. A broad understanding of the characteristics, assessment methods, and noise management and mitigation strategies for blast noise will enable better planning and community communication and outreach to minimize training restrictions due to noise issues.



BACKGROUND

The DoD Noise Working Group (DNWG) recognized that there is a dearth of compiled information regarding the unique characteristics, propagation tendencies, assessment methods, and management and mitigation methods for blast noise. As more military installations produce blast noise as part of their training mission, a succinct compilation of this information, written at a layman level, has become a necessity.

The purpose of this technical bulletin is to provide military installations with a single document that compiles the practical elements of blast noise management. This will be accomplished by providing an overview of the unique characteristics of blast noise, describing the methods used for assessing blast noise, and providing descriptions of known noise mitigation techniques and noise management strategies.

DISCUSSION

This section will cover three main topics:

1) The unique characteristics of blast noise and their implications for propagation.
2) Noise assessment methods for blast noise, including threshold criteria and prediction tools.
3) Mitigation, management, and control of blast noise.

Blast Noise Characteristics:

Noise from live-fire training with ground-based systems (such as artillery or tank) is loud, intermittent, short in duration, and rich in low frequency energy. These sounds can travel long distances, often ten miles or more, and remain loud enough to be disturbing. The spectral (i.e. frequency content or "pitch") and temporal characteristics change over distance due to interactions with the surrounding environment, including the atmosphere, ground, and vegetation. In fact, noise from artillery can be likened to thunder: when lightning is near, one hears a sharp crack; when it is a moderate distance away, the thunder booms; and when distant, it has a rumbling, rolling quality. This section describes these effects in more detail.

Blast noise from military training operations is fundamentally different from more common noise sources, such as industrial or transportation noise. There are six major differences between these sounds, as shown in **Table 1.**

Characteristic	Blast Noise	Transportation Noise
Duration	Very short	Continuous or greater than 1 second duration
Frequency Content	Broadband, may contain significant low frequency content	Broadband, higher frequencies. May have tonal content
Loudness	Very loud	Moderately loud
Frequency of occurrence	Intermittent	Continuous or frequent
Visibility of noise source	Often far away, hard to determine direction, and unseen	Often visible, direction of source can often be determined
Directivity of source	Typically stationary. Source directivity can be significant	Typically moving. Source directivity is less profound over the duration of the signal

Table 1. Comparison of characteristics of blast noise and transportation noise.

These differences influence how far the sounds can propagate and how they are perceived by individuals and communities. In this section, each of these unique characteristics and the implications on propagation and perception will be described.

Duration: The duration of a single event blast from military training is typically only a few milliseconds. As it travels farther from the point of origin, the duration increases, much like thunder. Due to the abrupt onset of the signal, it can be quite startling to individuals. Because the signal is so short, it is highly sensitive to the instantaneous atmosphere at each point that it passes

through, causing a large amount of variability even when the weather does not appear to be changing.

Frequency Content: The frequency content of the signals is quite important. Signals from military blast noise are broadband, meaning that they have energy present over a very broad range of frequencies. For large weapons, such as artillery, there is a large amount of energy present at low frequencies, around 30-50 Hertz (Hz), which is near the lower end of the range of human hearing. Lower frequencies correspond to longer wavelengths. At 30 Hz, the wavelength of the sound is approximately 11 meters (m) or 36 feet. Higher frequencies have much shorter wavelengths. For example, speech is centered around 1000 Hz, which has a wavelength of approximately 34 centimeters or 13 inches. These shorter wavelengths are more likely to scatter off of or be absorbed by objects with which they interact, whereas the longer wavelengths tend to diffract (wrap or bend) around smaller objects. The atmosphere also absorbs sound, with the amount of absorption increasing with frequency. For example, at 1 kilometer or 0.6 mile, signals at 30 Hz will have lost approximately (~) 1 decibel (dB) due to atmospheric absorption, signals at 1000 Hz will have lost ~2.5 dB, and signals at 10,000 Hz will have lost ~18 dB. For reference, people typically cannot perceive a change of less than 3 dB, and an increase/decrease of 10 dB is perceived as a doubling/halving of loudness. This, along with the ability to bend around most objects, explains why low frequencies travel much longer distances than higher frequencies.

Related to frequency content is the concept of frequency weighting. Frequency weightings are sound level adjustments applied to the spectral representation of a sound. These weightings are based on the response of human ears to moderate level (A-weighting) or high level (C-weighting) sounds. For most industrial and transportation applications, A-weighting is used. For military blast noise assessments, C-weighting is used. A-weighting applies progressively higher reductions to lower frequencies, mimicking the reduced sensitivity of human ears to low frequency sounds. However, in order to more accurately capture the low frequency energy present in blast noise, and to account for the higher levels present, C-weighting, with its much slower roll-off at lower frequencies, is more appropriated for military blast noise. The standardized weightings as a function of frequency are shown below.

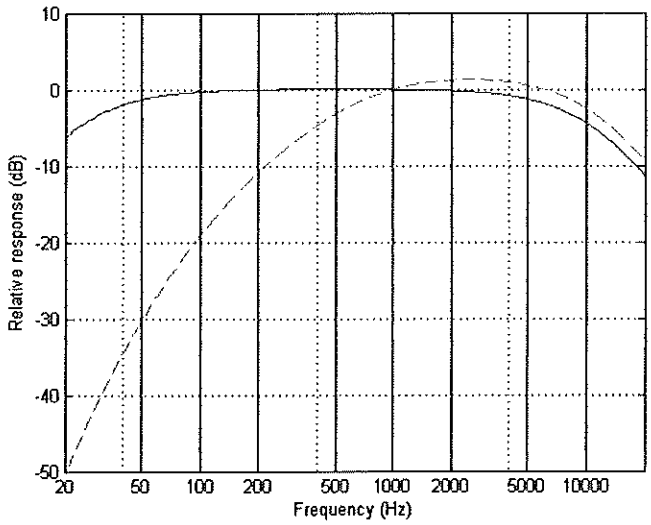
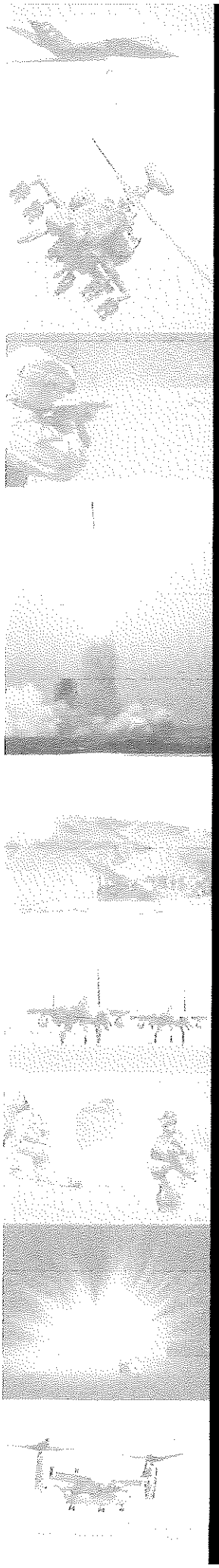


Figure 1: Frequency weightings. The red dashed line is A-weighting, the blue solid line is C-weighting.



Loudness: Blast noise from military training is loud. In the direct vicinity of the source, the levels are high enough that hearing protection is required to prevent hearing loss. Levels 2 km away from the demolition of 5 lbs of Composition C4 (a good surrogate for the largest artillery pieces in terms of loudness and general spectral characteristics) can be as high as 120 dB peak if propagation conditions are favorable. A peak level is defined as the loudest instantaneous sound level received over some time period. In this case, the time period is the duration of the signal. This is loud enough to startle people or animals, and on occasion rattle windows.

Frequency of occurrence: Live-fire training noise is intermittent. It can occur at any time of the day or night, at any time of the year, depending on the training requirement. But the noise is not constant, even on the busiest installations. Because the signals are infrequent, they are perceived differently from other more common noise sources. This influences the use of appropriate assessment metrics.

Directivity: Large weapons (greater size than 50 caliber (cal.)) often exhibit strong directivity in the acoustic signature. It is not uncommon for a weapon to be up to 15 dB louder in front of the muzzle than behind. Most sound sources have some directivity associated with them. For example, a person speaking exhibits strong directivity. A person is much easier to hear (louder) when facing you and speaking than when facing away from you and speaking. That is because the sound is projected outward from the mouth.

Long-range Sound Propagation (in general):
Long-range sound propagation through the atmosphere is most strongly influenced by three main factors: refraction, reflection, and scattering. Refraction is the bending of sound waves due to variations in temperature and wind within the atmosphere. Reflection is typically considered with respect to large surfaces, such as the ground or cliff faces. Scattering due to smaller objects, such as trees and buildings, as well as scattering from atmospheric turbulence are also considered.

Refraction: Refraction of sound waves works on the same principle as light refracting in water. Think of placing a spoon in a clear glass filled with water. Peering through the glass, it appears as though the spoon bends at the surface of the water. In fact, only the light is bending because the refractive properties of water are different than that of air. For acoustic waves, refraction is controlled by the gradient of the vertical sound speed profile. The speed of sound in the atmosphere is dependent upon temperature and wind speed in the direction of propagation. Both temperature and wind vary with height, depending on the time of day and other atmospheric conditions. Sound waves will bend towards the direction of lower sound speeds.

In general, there are three major refraction conditions: upward refracting, downward refracting, and upward, then downward, refracting. In an upward refracting condition, the sound waves tend to bend upwards into the upper atmosphere, creating a shadow zone near the ground where very little sound is heard. In a downward refracting condition, the sound waves tend to bend downwards back towards the ground and sound can travel for long distances near the ground. In an upward, then downward, refracting condition, the sound refracts up, creating a shadow zone, and then back down, sometimes very strongly, creating a situation where listeners closer to the source may not hear the sound but listeners farther away may hear the sound loudly. The following paragraphs describe each of these conditions in more detail.

Upward refraction occurs when the sound speed decreases with height. This can occur in a temperature lapse condition or an upwind propagation condition. In a temperature lapse, the temperature decreases with height. This is a common daytime condition, where the air near the

ground is being warmed by the sun. In an upwind propagation direction, the sound propagation of interest is in the opposite direction than the wind is blowing (upwind). In this case the wind speed, which increases with height, is subtracted from the temperature-dependent sound speed profile. When the sound is predominantly refracted upwards, the sound levels near the ground are very low. This is called a shadow zone. While mixing and randomness in the atmosphere will fill in the shadow zone to some degree, the levels near the ground are much lower than in other conditions. **Figure 2** illustrates an idealized example of upward refraction.

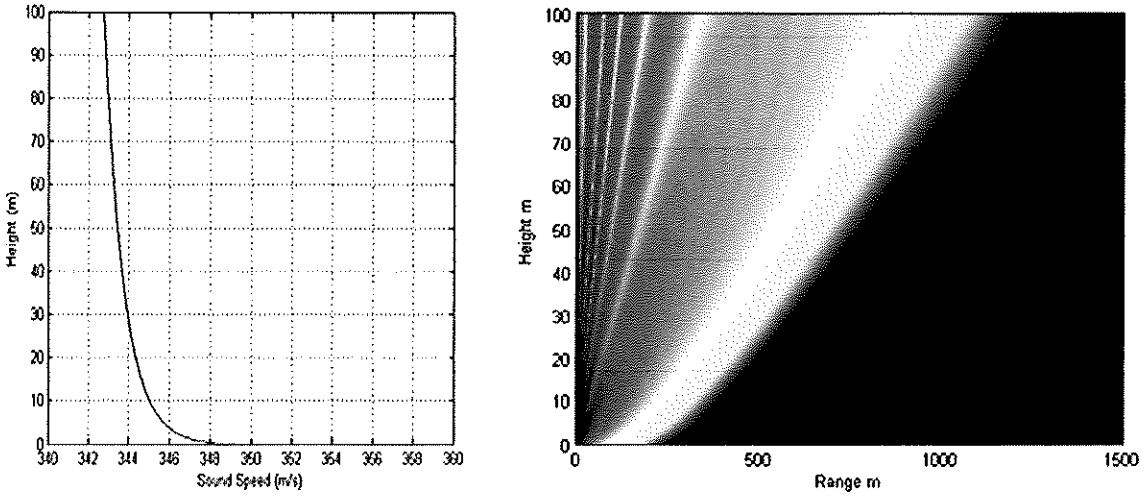


Figure 2. Upward Refraction condition. On the left, the sound speed decreases with height. On the right, red indicates high levels, deep blue indicates low levels.

Downward refraction occurs when the effective sound speed increases with height. This can occur in a temperature inversion condition or a downwind condition. In a temperature inversion situation, the temperature increases with height. This is a common nighttime condition, where the air is cooler near the ground as the ground releases heat stored during the day. This cooling spreads upwards with time. In a downwind propagation direction, the sound propagation of interest is in the same direction that the wind is blowing (downwind). In this case the wind speed, which increases with height, is added to the temperature-dependent sound speed profile. When the sound is predominantly refracted towards the ground, the sound can propagate for long distances along the ground surface. This case can occur at night, during cloudy and foggy days, and low cloud ceilings. **Figure 3** illustrates an idealized example of downward refraction.

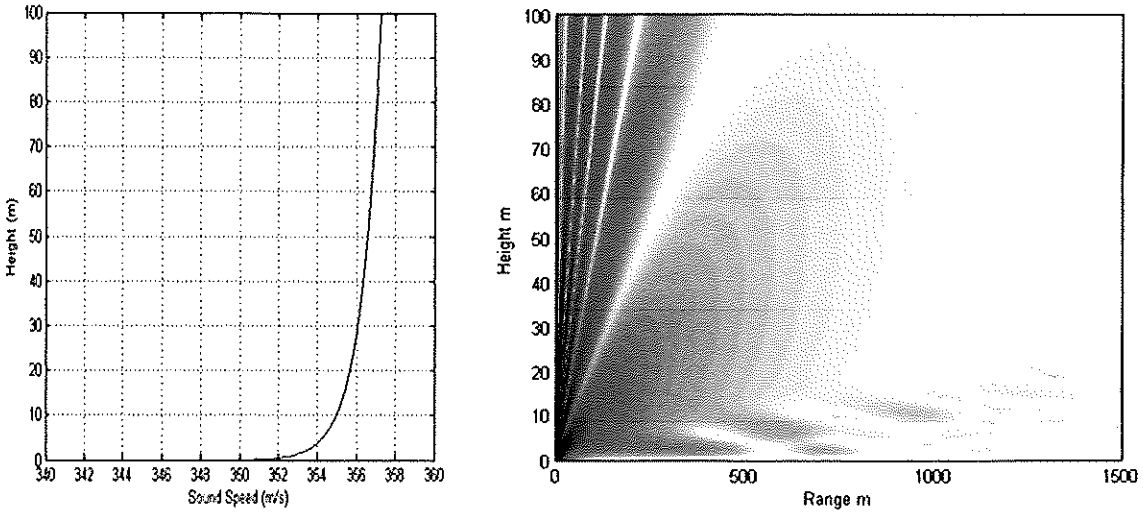


Figure 3. Downward Refraction condition. On the left, the sound speed increases with height. On the right, red indicates high levels, deep blue indicates low levels.

An upward, then downward, refracting case occurs when the sound speed profile first decreases with height and then increases. This is a common occurrence early in the day, and the effect depends strongly upon the height of the inversion layer, defined as the height at which the temperature gradient changes from decreasing with height (lapse) to increasing with height (inversion). In this condition, the sound will first refract upwards. When it reaches the inversion height, it will be refracted downwards. This can lead to cases where there may be little sound (shadow zone) near the source, but strong signal further away. **Figure 4** illustrates an idealized example of an upward, then downward, refracting case.

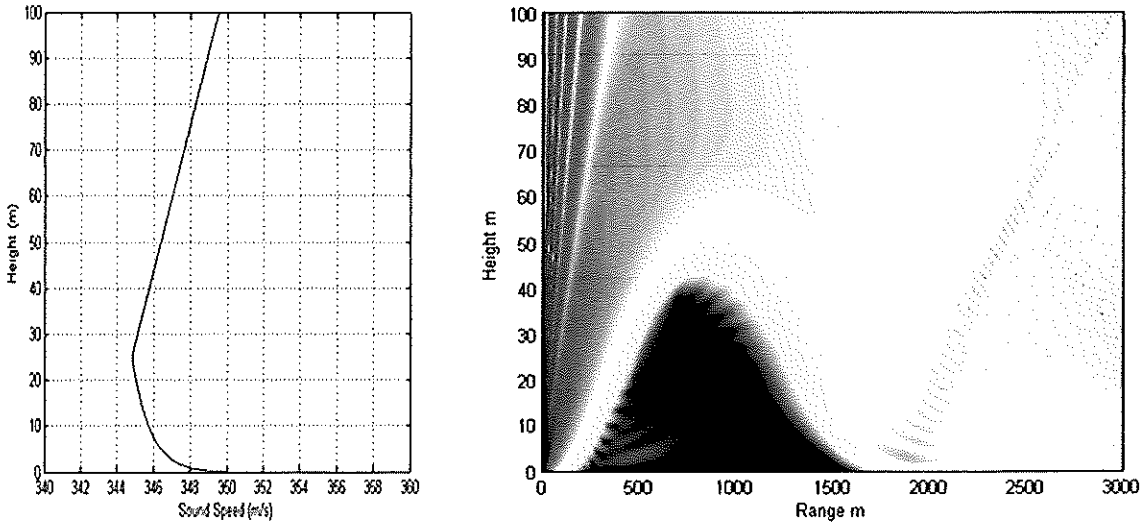


Figure 4. Upward, then downward, Refraction condition. On the left, the sound speed first decreases and then increases with height. On the right, red indicates high levels, deep blue indicates low levels.

Reflection: Acoustic waves will reflect from large surfaces that they come into contact with. Sometimes these reflections are like perfect bounces and sometimes the reflections result in some loss of energy. Think of dribbling a basketball. If you are on a basketball court with a nice smooth,

solid surface, the ball behaves as expected. The ball will bounce back to about the same height it was dropped from. Bounce passes to a friend are predictable, as the ball will bounce up at the same angle to the court as it impacted the surface. Now think of dribbling that same basketball on a grassy field. Instead of bouncing back to the same height, it will only bounce back part of the way. This is because some of the energy in the ball has been absorbed by the ground. If you attempt a bounce pass to your friend, the ball will go in some unpredictable direction, and will lose some energy along the way. Sound waves behave in a very similar way. On acoustically hard surfaces, such as asphalt or still water, the sound will reflect perfectly, much like the basketball on the court, and almost no energy is lost due to the reflection. On acoustically softer surfaces, such as grass, forest floors, or snow, some sound is absorbed at each reflection, causing attenuation along the propagation path. An illustration of sound reflecting off a rigid surface is shown in **Figure 5**.

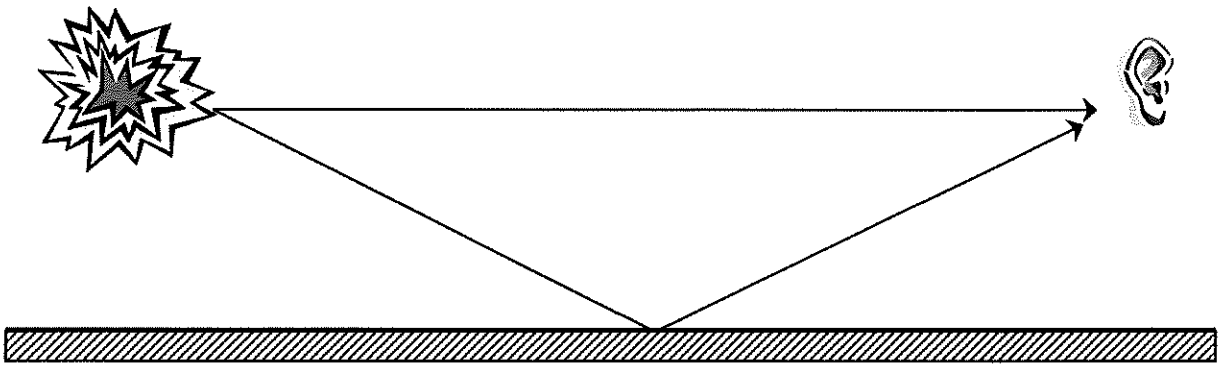


Figure 5. Illustration of sound waves bouncing off of a rigid surface and arriving at a listener.

Scattering and Turbulence: Scattering occurs when sound waves interact with smaller objects, typically a few wavelengths or less in size. Think of a smoothly flowing stream. All of the water is moving steadily in the same direction. Now imagine a rock protruding above the surface. The water now redirects around the rock, and some of the redirected water interferes with the general flow of the stream, causing eddies and ripples. Now think of many objects cluttering the stream. The flow is no longer smooth. Instead, it has places with strong flow, places with almost no flow, and anything in between. This is similar to an acoustic wave scattering off of objects in its path, producing areas of stronger sound and lower sound, and generally muddying up the flow. Some examples of settings with strong scattering are cities (buildings, cars, people), forests (trees and undergrowth), and the turbulent atmosphere. In this section, the focus is on the turbulent atmosphere, as it is the most common occurrence, and it has a strong influence on impulsive blast noise.

Turbulence is present most of the time in the atmosphere. Portions of air, called turbules, move in a semi-random fashion. In the general atmosphere, large masses of air will break down into progressively smaller masses of air, providing a wide size distribution of scattering objects. The turbules scatter sound because they may be a different temperature and may be moving in a different direction. The net effects of turbulence are randomizing the signal to some degree, filling in shadow zones by scattering energy into them, and causing high variability in received levels of impulsive signals. Scattering from turbulence can lead to variability in received peak levels of up to 15 dB peak within a 15 minute time window. This certainly complicates determining the validity of measurements and simulations of noise levels. Turbulence has an effect on more continuous noise sources as well, but the effects tend to be averaged out more over time, unlike impulsive signals that pass quickly through and interact with the instantaneous atmosphere.

Figure 6 contains examples of one realization of turbulence each for an upward refracting case and a downward refracting case. These can be compared to the plots in **Figure 2** and **Figure 3**. Notice how the effect is much more profound in the upward refracting case than in the downward refracting case. However, both cases are influenced by turbulence.

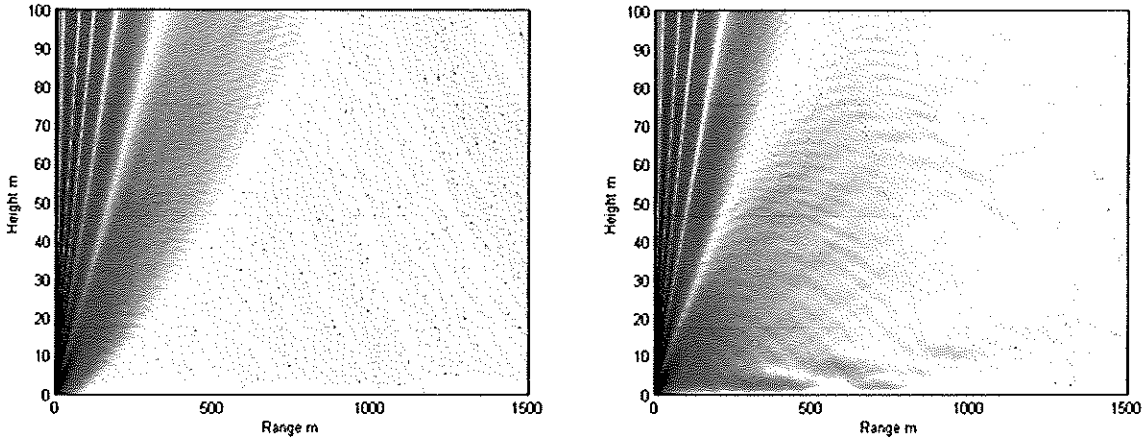
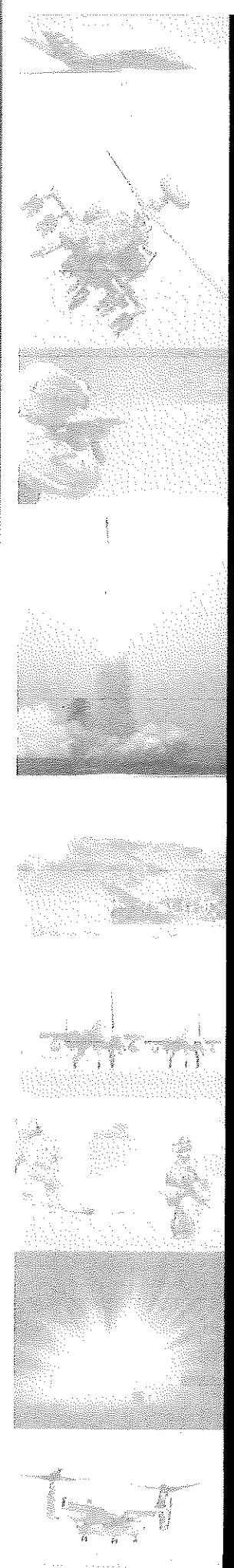


Figure 6. Turbulence examples. The upward refracting case is on the left and the downward refracting case is on the right.



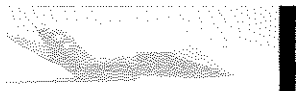
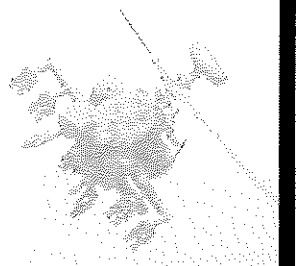
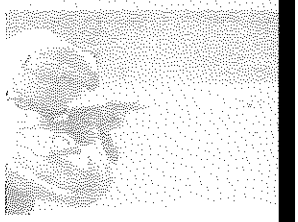
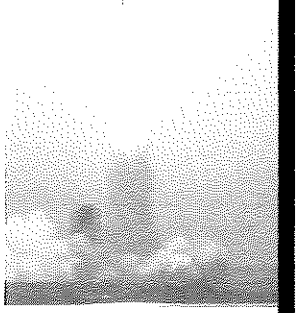
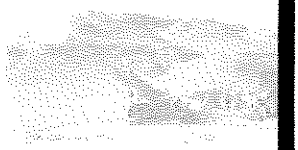
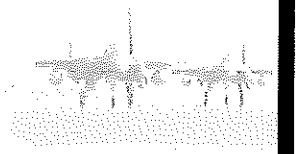
Noise Assessment Methods for Blast Noise:
Noise is the most common environmental impact on communities surrounding military installations. The unique characteristics of blast noise suggest that these noises be assessed using different methods than noise sources such as aircraft and transportation noise. The impulsive and intermittent characteristics of blast elicit community responses at different levels than other sounds. Because of the nature of the sounds produced, blast noise can travel quite far from the installation. People in the community may view noise as a nuisance, a health risk, or a property risk. These concerns generally fall within the categories of building damage, property values, quality of life issues, hearing damage, and sleep disturbance. Army Regulation 200-1 (AR 200-1), Environmental Protection and Enhancement, and US Marine Corps Order 3550.13 (MCO 3550.13), "Marine Corps Installations Range Compatible Use Zones (RCUZ) Program" dictate the metrics and thresholds used for NEPA, and land use planning for the Army and Marine Corps, respectively, Installation Noise Management Plans for the Army, and RCUZ procedures for the USMC. Guidance for the Navy and the Air Force is still emerging.

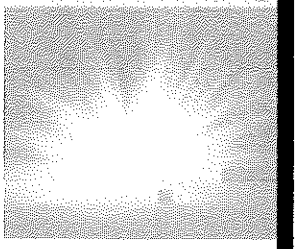
Thresholds designate the edges of Noise Zones. Noise Zone III includes very high sound levels or very frequent occurrences of the noise. Noise sensitive land uses, such as housing, schools, and medical facilities, are not recommended in Noise Zone III. Levels are still high, but considered at least marginally more acceptable in Noise Zone II. However, it is advised that noise sensitive land uses not be located within Noise Zone II. Noise-sensitive land uses are considered acceptable within the Land Use Planning Zone (LUPZ) and Noise Zone I. The LUPZ is a subdivision of Zone I and is delineated at 5 dB lower than the lower bound of Noise Zone II. Communities and individuals often have different views regarding what level of noise is acceptable or desirable. To address this, some local governments have implemented land use planning measures out beyond the Noise Zone II limits. Implementing planning controls within the LUPZ can develop a buffer to avert the possibility of future noise conflicts. In reality, there are often existing noise sensitive land uses that could be defined as non-conforming, such as housing in Noise Zone II. In most cases, this is not a risk to community quality of life or mission sustainment. The thresholds of these Noise Zones are listed in **Table 2.**

	Noise limits (dB)
Noise zone	**Impulsive CDNL**
LUPZ	57 - 62
I	< 62
II	62 - 70
III	>70

Table 2. Noise limits as specified in AR 200-1 and MCO 3550.13 for large arms (Impulsive CDNL).

As illustrated in the previous section, noise levels in communities will vary greatly, based on atmospheric conditions. Because of this fact, AR 200-1 and MCO 3550.13 state that noise modeling shall be used to determine the noise zones. Typical commercial, off-the-shelf noise modeling software does not have the capability needed to predict impulsive noise levels, and does not contain the acoustic source data required for predicting noise levels due to military weapons systems. Government-owned software is available for these applications and will be described briefly in the following sections.




Applicable regulations state that for large weapons (20 millimeter (mm) and greater), noise contours shall be calculated in CDNL (C-weighted Day-Night averaged sound Level) for land use planning purposes. This metric averages all of the sound energy produced during the assessment period, applying a 10 dB penalty for any event occurring between 2200 and 0700 hours, the so-called nighttime penalty. The typical assessment period over which the noise energy is averaged is 250 days for Active Army installations and 104 days for Army Reserve and National Guard installations. The Marine Corps uses an assessment period of 365 days for busy installations, and a variable numbers of days for less active installations.

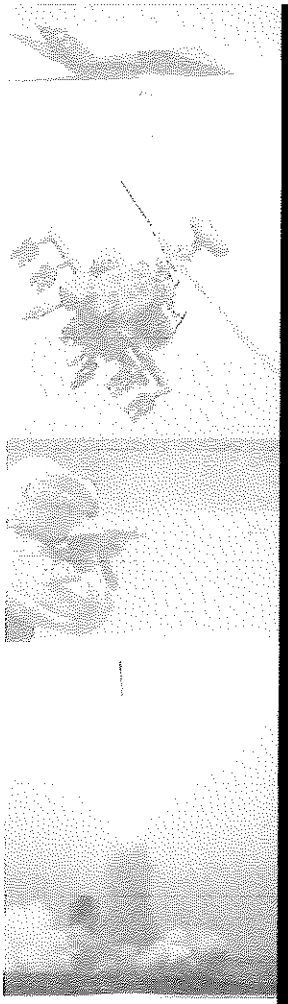
The use of average noise levels over a protracted time period generally does not adequately assess the probability of community noise complaints based on what people actually hear. There are several issues that communities frequently bring up when presented with average noise levels. Contours contained on-post lead people to believe the noise stays on-post. At many installations, Noise Zones are contained within the installation boundary indicating that noise-sensitive development would be compatible up to the fence line. Furthermore, CDNL contours can show areas as "compatible" even though single events may shake some houses.

To give communities and decision-makers a better sense of the actual noise environment when training is occurring, it is recommended that peak level contours also be generated. Thresholds for the peak levels for large arms are based on the Pater criteria, shown in **Table 3.** These criteria provide an indication of the likelihood of receiving a noise complaint, based on the peak level received. Though these areas often encompass land beyond the Noise Zones, individual communities may decide that proactive planning initiatives, such as real estate disclosure or ACUB (Army Compatible Use Buffer) participation, would benefit the community. Some guidance for use of peak levels follows:

1. People located within the 115 and 130 dB Peak area may be exposed to noise levels that are noticeable and distinct. From within this area, the installation has a moderate risk of receiving noise complaints. The magnitude of the complaint risk is dependent upon frequency of occurrence in addition to factors such as time of day activity occurs, propagation conditions under which activity takes place, and noise sensitivity of individuals in these areas.
2. Levels above 130 dB Peak are generally objectionable, and are often described as very loud and startling. These levels are correlated with a high risk of noise complaints.
3. For infrequent operations which may generate high peak levels in the community, land use controls may not be warranted. However, prior public notification should be given.
4. Peak levels are directly correlated with airborne vibration which is the dominant cause of structural response from military training. Peak levels in the low 120's may cause the rattling of windows or loose ornaments (e.g., pictures on walls) which can annoy occupants but are below levels necessary to cause structural damage. It is widely recognized that structural damage is improbable below 140 dB Peak.

Risk of Noise complaints	Large caliber weapons noise limits (dBP)	Perceptibility
Low	< 115	Audible
Medium	115 - 130	Noticeable, distinct, may notice vibration/rattle
High	>130	Very loud, may startle

Table 3. Pater criteria thresholds for determining the likelihood of receiving a noise complaint.



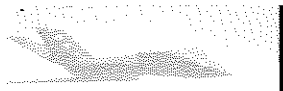
The metric utilized to plot the complaint risk noise contours is PK15(met). PK 15(met) is the calculated peak noise level, without frequency weighting, expected to be exceeded by 15 percent of all events that might occur. PK 15(met) accounts for statistical variation in received single event peak noise level that is due to weather. It was determined that using the average (50%) solution was inadequate for generating a realistic picture of the noise environment, and that using the maximum (100%) solution was too restrictive. Thus the 85% solution (PK15(met)) was chosen as the metric of choice for noise assessments. If there are multiple weapon types fired from one location, or multiple firing locations, the single event level chosen should be the loudest level that occurs at each receiver location.

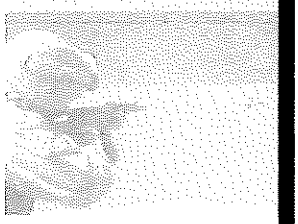
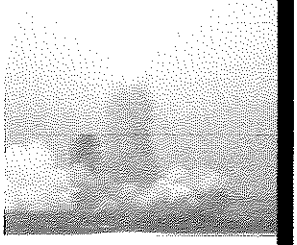
Most tables of equivalent noise levels only consider time-averaged noise levels. For that reason, a table of peak levels of some common noise sources is included here in Table 4.

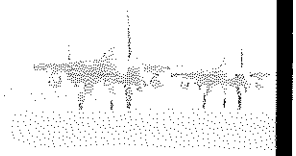
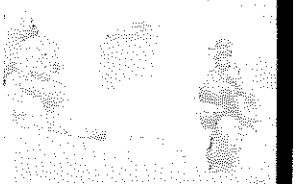
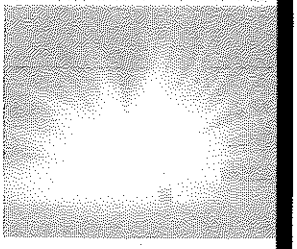
Noise Source	Peak Level (dB)
Safety whistle at 15.2 m	76
Thunderstorm, varying distances	95-112
Restaurant	105-145
Balloon Pop at 1 m	117-137
Movie Theater	<130
Average rock, pop, or rap concert	139
Cap gun at 50 cm	143-152
Pull-apart firecracker at 20 cm	153
Airbags at driver's ear	169

Table 4. Examples of peak levels of several common sources. (source: Noise Navigator Database)

Noise assessment for large weapons (20 mm and greater), and explosives are currently performed using the government-owned software, BNoise2. The software considers type of weapon and ammunition, number and time of rounds fired, range attributes, weather, and assessment procedures and metrics. It accounts for the spectrum and directivity of both muzzle blast and projectile sonic boom, which facilitates accurate calculation of propagation and frequency weighting. Source model parameter values are based on empirical data. The propagation algorithms are based on sophisticated calculations and experimental data. Available metrics include sound exposure level (SEL), peak, and day-night noise level (DNL). C-weighting for SEL and DNL is available.




Mitigation and Management Strategies for Blast Noise:
Blast noise, particularly from large weapons and demolitions, is notoriously difficult to mitigate. Because of the high pressures and low frequencies inherent in the signal, methods used for transportation noise, such as road barriers, are not feasible. Finding novel methods for mitigating blast noise is an active area of research. There are, however, strategies available for minimizing the impacts of blast noise on surrounding communities. These include understanding atmospheric conditions, intelligent range siting, and communicating with the public. In addition, some suggestions regarding noise monitoring are presented.

Understanding atmospheric conditions: When it is possible to do so without compromising the training mission, selecting training times based on atmospheric conditions can minimize the noise levels received in communities around installations. Ideally, training on bright, sunny, cloudless days, from mid-morning until mid-afternoon, is ideal. These are strongly upward refracting conditions, and much of the sound energy will be refracted into the upper atmosphere where it does not impact communities. Nighttime, dawn and dusk should be avoided whenever possible, as propagation conditions are strongly downward refracting. During dawn and dusk upward, then downward, refracting conditions are common, making areas of potentially high noise levels difficult to predict. Overcast skies, fog, and low ceilings also all have strong downward refracting conditions, and should be avoided when possible. If there are noise-sensitive communities in the downwind direction, it is desirable to wait for wind conditions to shift, as propagation will be stronger in the downwind direction. Conversely, if the noise-sensitive community is in the upwind direction, they are less likely to be impacted by the sounds.

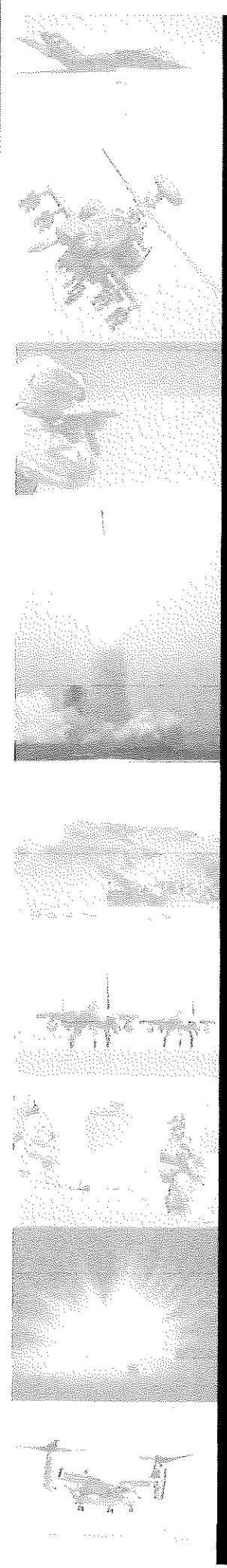
Intelligent range siting: Effective land use planning on and around military installations can greatly reduce the number of noise complaints received by the installation and improve the quality of life of surrounding communities, as well as on-post communities. Discouraging noise-sensitive land uses, such as hospitals, schools, and homes, in areas that are known to have high noise levels is a good start. Ranges should be built as far as possible from noise-sensitive areas. The strong directivity inherent in many weapon systems can be exploited by orienting the firing direction so that the maximum energy is pointing away from noise-sensitive areas.

Communication: Effective communication between the installation and the surrounding community is vital for any noise management plan. Real estate disclosure statements can reduce the likelihood of noise-sensitive people moving into noisy areas with existing housing. Informing the public through radio and television spots, newspaper articles and websites, of significant changes to the noise environment has been shown to help with acceptance. Often noise "complaint" calls are really simply a resident wondering what is going on, why is it happening, and when will it stop.

Short term noise monitoring: In some situations, a short-term noise monitoring study may be performed to get a benchmark on the noise environment. However, the long-term applicability of the data recorded during such a noise monitoring study is limited to similar atmospheric conditions. That said, short-term noise monitoring can be a powerful tool for improving public relations, alleviating concerns, and getting a few data points on the actual noise levels in an area.

Long term noise monitoring: In areas with chronic issues, it can be of great benefit to install permanent noise monitors. This accomplishes two things. First, it improves community relations by demonstrating that their concerns are taken seriously by the installation leadership. Second, it provides the installation with real received levels, which can be extremely valuable when investigating complaints or damage claims. Prior to investing in a long-term noise monitoring

system, the Installation Leadership is cautioned to develop a plan for the long-term storage and planned usage of the data collected, as well as a plan for operation and maintenance of the system. The DNWG does not endorse any one monitoring system at this time, and installations are cautioned to research their choices carefully before investing in such a system.



SUMMARY

This technical bulletin has provided an overview of the unique characteristics, assessment, and mitigation of blast noise. Qualities of blast noise that differ significantly from more common noise sources, such as transportation noise, have been highlighted and each feature described. The influence of environmental parameters, such as meteorology and the ground, on long range sound propagation have been illustrated. Noise assessment methods, metrics, and threshold have been provided in detail. Finally, some mitigation and noise management strategies have been described.

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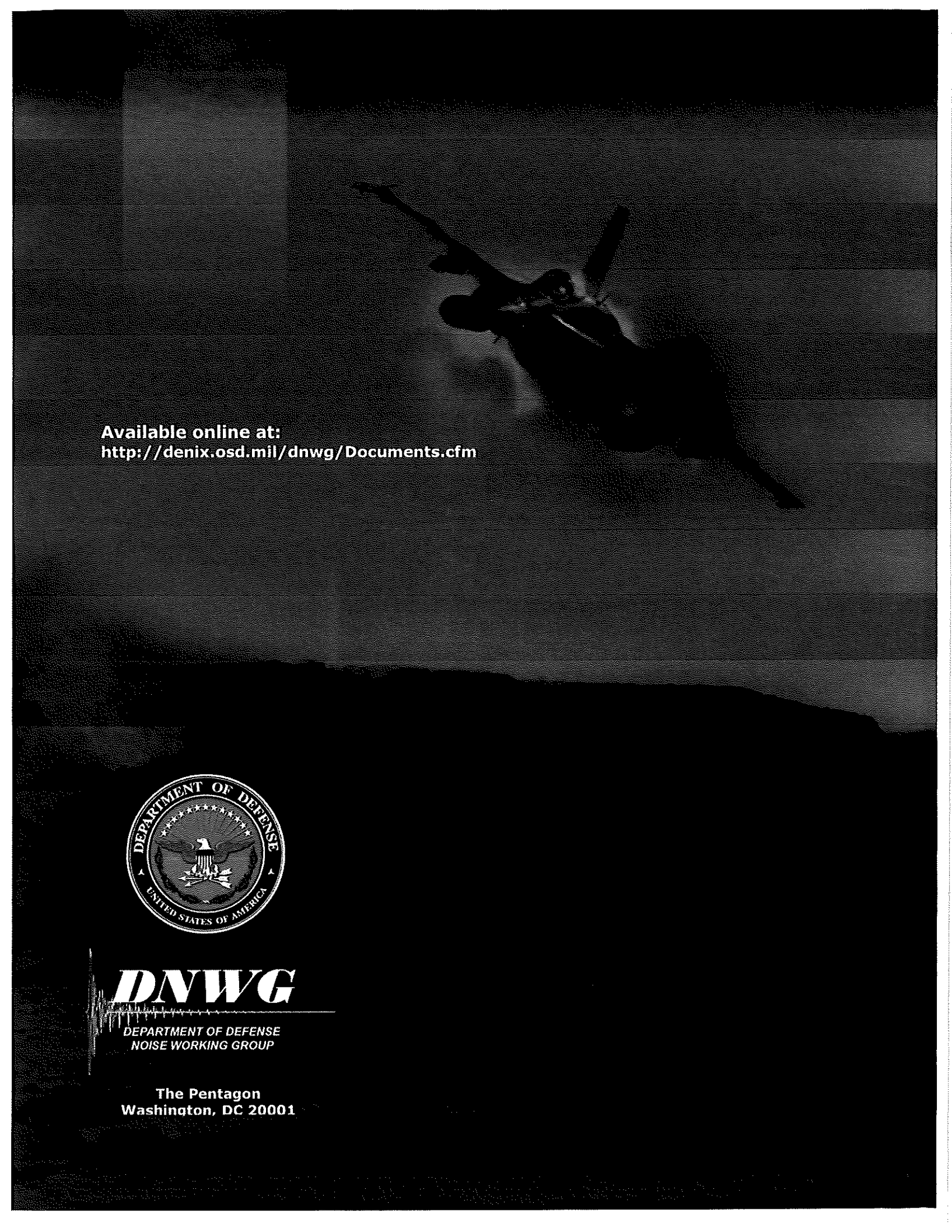
E-A-R Noise Navigator™ Sound Level Database, E-A-R 88-34/HP, ver. 1.5, www.e-a-r.com/pdf/hearingcons/**Noise**_Nav.xls



Available online at:
http://denix.osd.mil/dnwg/Documents.cfm

DNWG

DEPARTMENT OF DEFENSE
NOISE WORKING GROUP

The Pentagon
Washington, DC 20001

AFFIDAVIT OF COLONEL PAUL VINCENT CIMINELLI, USA (Ret)

COLONEL PAUL VINCENT CIMINELLI, USA (Ret) being duly sworn, deposes and says as follows:

1. I am a retired, United States Army Colonel with over thirty years of Active and Reserve commissioned service. My military career includes operational, command, and staff assignments in both active duty and reserve components, culminating in the rank of Colonel serving as the Chief of Civil Military Operations, 8th Army, Republic of Korea. I am a graduate of the United States Army War College, where I earned a Master of Strategic Studies, United States Army Command & General Staff College and have attended numerous military schools including the Cavalry Officer Basic Officer Course, Armor Officer Advanced Course, Civil Affairs Officer Advanced Course, and the NATO Senior Officer Crisis Management Course.
2. My military service includes assignments as Battalion, Company, Detachment and Platoon Commander often in combined arms settings requiring expert knowledge of the integration of direct fire (individual and crew-served systems), indirect fire (howitzer, mortar and missile) as well as close air support; Senior Team Leader for Joint, Interagency, and Multinational Operations Analysis under the auspices of the Office of the Secretary of War at United States Joint Forces Command; and instructor and syndicate leader for NATO and Partner Nation senior staff training programs. I have served in combat operational theaters including Operation Desert Storm, Saudi Arabia, Kuwait and Iraq, Operation Joint Endeavor, Bosnia & Herzegovina, and multiple tours for Operation Enduring Freedom, Afghanistan. I have worked as a range officer in numerous settings involving different weapon systems wherein the Army has labored to mitigate the effects of noise on surrounding

areas and the wildlife on installations and the communities around military bases.

3. I am also an attorney licensed in the States of New York and New Jersey, and the District of Columbia, and a member of the Bars of the United States Supreme Court and several federal courts. In my civilian capacity, I have served as Chief Counsel to the Sheriff of Monroe County, New York; Managing Partner of Ciminelli & Ciminelli, PLLC; Major Felony Assistant District Attorney in Monroe County; adjunct faculty member in Homeland Security Management at Monroe Community College; and an executive advisor in both government and private enterprise. My professional and academic background includes strategic leadership, management, and crisis response.
4. I have served as a member of Board of Directors and Vice President/General Counsel for Genesee Conservation League, a conservation, firearms and archery club of over 2000 members founded in 1925 and since 1946 located in a highly populated suburban setting outside Rochester, NY. In this capacity I have been involved in numerous issues involving noise and noise mitigation.
5. Based on my military training, operational experience, and review of relevant acoustic and blast data, I have prepared the following factual description regarding the physical experience and observable effects of the firing of a 155mm howitzer at varying distances in a combat, training range or urban settings.
6. Standing next to a 155mm howitzer when it fires is an intense, visceral experience. The blast is deafening, even with appropriate ear protection—a deep, earth-shaking boom that you feel in your chest and bones as much as you hear. The ground trembles, and a shockwave hits you like a physical force, pushing air against your body. The muzzle flash is blinding, especially in low light, and the heat from the barrel is palpable if you're close. There's a sharp,

acrid smell of gunpowder and burnt metal lingering after each shot. The sheer power is awe-inspiring but can be disorienting—your heart races, and it's hard to stay steady without bracing yourself. If you're too close without proper protective gear, the overpressure can cause physical discomfort and injury, like ruptured eardrums.

7. The 155mm howitzer produces an intense, short-duration impulse at the moment of firing. At the muzzle, the peak sound pressure level can reach approximately 185 decibels (dB peak). This level of intensity creates an immediate auditory hazard and a palpable concussive wave. Within several meters of the weapon, the blast wave can be physically felt as a force upon the body, displacing loose material and generating a visible muzzle flash and dust plume.
8. At distances between five and twenty-five meters, the peak sound level remains in the range of 165–175 dB. These levels produce significant physical sensations and require the use of double hearing protection under military standards. Personnel experience temporary disorientation and chest or facial pressure consistent with the known effects of near-field blast overpressure.
9. At approximately 100 meters, the estimated peak sound pressure level is near 145 dB (comparable being 10–25 meters of a commercial jet engine during takeoff at full thrust, such as near the runway at an airport) . The firing is perceived as an extremely loud, sharp report with noticeable vibration transmitted through the ground. Although unlikely to cause injury at this range from a single exposure, repeated firings may induce temporary hearing threshold shifts.
10. At one-half mile (approximately 805 meters), the peak level reduces to about 130-140 dB (comparable being 50 meters of a commercial jet engine during takeoff at full thrust, such as near the runway at an airport). Observers perceive

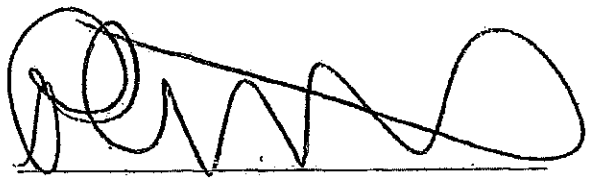
a powerful, instantaneous boom, occasionally strong enough to rattle windows and light structures. The sound may carry a physical sensation akin to a mild pressure wave, particularly under still atmospheric conditions.

11. At one mile (1,609 meters), the estimated level is approximately 121 dB (an example is attending a rock concert or nightclub with amplified music, where sound levels near the speakers). The sound remains clearly audible as a single, thunder-like report but without harmful physiological effects absent prolonged exposure. At this distance, the sound is transient and characterized by a brief low-frequency boom.
12. At three miles (4,828 meters), the estimated peak sound level is near 111 dB (example is a power lawnmower or leaf blower operating at close range of 1–2 meters). The acoustic event is experienced as a low-frequency rumble or deep rolling thunder, often accompanied by a delay between flash and report when visible. The blast remains audible and recognizable as artillery fire under calm atmospheric conditions.
13. At five miles (8,047 meters), the sound attenuates to approximately 107 dB. It is faint but still perceptible, particularly under nighttime or overcast conditions that favor long-distance sound propagation. No hearing risk or physical discomfort occurs at this range.
14. Overpressure sufficient to damage property or cause injury does not occur beyond several tens of meters from the weapon. Pressure levels decrease rapidly with distance, and by 100 meters the effect transitions to an acoustic impulse without destructive force. Vibrations or rattling at greater distances are due to acoustic resonance rather than blast impact.
15. Environmental factors such as humidity, temperature gradients, and wind direction significantly influence sound propagation. Under inversion conditions, artillery fire may be audible at distances exceeding ten miles. Conversely,

upwind and turbulent conditions may sharply limit audibility. These patterns are well documented in Department of Defense acoustic studies.

16. In a pristine Adirondack setting, characterized by dense forests, minimal human activity, and low ambient noise levels (approximately 35-40 dB from natural sounds like wind, leaves, or distant wildlife), the firing of a 155mm howitzer creates a stark contrast that amplifies the perceived intensity of physical sensations compared to urban or noisy environments. The quiet baseline makes the blast subjectively louder and more disruptive, heightening psychological effects such as increased heart rate, startle response, or disorientation, even at distances where decibel levels are consistent with other settings. Sound propagation in forested terrain may attenuate high-frequency components of the blast (up to 10 dB reduction) due to absorption by foliage and ground cover, but low-frequency impulses travel farther with minimal loss, potentially audible over 100 miles under favorable conditions.
17. The howitzer's firing significantly impacts wildlife within 5 miles or closer, particularly in a pristine habitat like the Adirondacks. Animals exhibit immediate startle responses, such as fleeing or scattering, with birds at risk of abandoning nests, reducing reproductive success. High-decibel blasts (130–190 dB near the source) disrupt communication, masking predator warnings or mating calls, increasing predation risk and altering social behaviors. Mammals like deer or bears may avoid the area, leading to habitat fragmentation, while chronic exposure could cause stress hormone spikes, sleep disturbances, or hearing damage in species reliant on acute hearing (e.g., bats or owls).
18. Repeated firings may drive long-term displacement, reduce biodiversity, or alter migration patterns, though some species may habituate over time. Low-frequency sound propagation extends the impact zone, potentially affecting sensitive ecosystems far beyond 5 miles.

19. In my professional opinion and experience, the foregoing statements accurately describe the physical manifestations and sound levels associated with 155mm howitzer firing, based upon my direct experience and the published technical data of the United States Army, United States Department of War and allied defense research agencies.
20. I make this affidavit to provide a factual and technical account based on my education, training, and experience, and I affirm the accuracy of the foregoing to the best of my knowledge and belief.



Paul Vincent Ciminelli
Colonel, USA, (Ret)

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