STATE OF SOUTH CAROLINA COUNTY OF COLLETON	IN THE COURT OF GENERAL SESSIONS FOURTEENTH JUDICIAL CIRCUIT
The State of South Carolina, vs. Richard Alexander "Alex" Murdaugh, Defendant.	Indictment Nos. 2022-GS-15-00592 2022-GS-15-00593 2022-GS-15-00594 2022-GS-15-00595 **MOTION IN LIMINE TO PRECLUDE OR LIMIT FIREARM BALLISTIC OPINION TESTIMONY, OR ALTERNATIVELY, FOR A *COUNCIL* HEARING**

Richard Alexander Murdaugh ("Murdaugh"), by and through undersigned counsel, moves the Court to preclude, or limit, the introduction of firearms identification evidence and the purported expert opinion testimony of Paul S. Greer ("Greer"), or, alternatively, for a *Council* hearing pursuant to South Carolina Rule Evidence 702. *See State v. Council*, 335 S.C. 1, 19, 515 S.E.2d 508, 517 (1999). The Court should preclude such evidence because neither Greer's methodology in reaching his conclusions, nor the substance of those conclusions is reliable. Accordingly, his opinion testimony does not aid the trier of fact to understand the evidence or to determine a fact in issue and is properly excluded. Furthermore, any probative value such evidence or testimony may have – which Murdaugh denies – is substantially outweighed by the danger of unfair prejudice, confusion of the issues and misleading the jury and must be excluded under South Carolina Rule of Evidence 403.

FACTS

Maggie and Paul Murdaugh were found murdered on June 7, 2021, on their family property located at 4147 Moselle Road, Islandton, S.C. At the crime scene, the ballistic evidence around Paul's body included one shot cup and one shot wad (collectively Item 1), two 12 gauge shotshells

(Items 9-10), as well as bullet jacket fragments (collectively Item 11), a fired bullet (Item 12), a buckshot pellet (Item 13) and birdshot pellets (collectively Item 14). The Colleton County Sherriff's Office identified six .300 Blackout caliber cartridges around Maggie's body (Items 2-7) and one bullet (Item 8).

Law enforcement also confiscated fired .300 Blackout caliber cartridge cases (Items 35-39) from the ground at the side entrance of the house on the Moselle property—approximately 300 yards from the crime scene. Additional .300 cartridge cases (Items 108-124, 126-128), as well as 12 gauge shotshells (Items 125, 129-135) were found in an area by a pond near Moselle Road in a field which was frequented by the Murdaugh family and guests for target practice.

All of the above evidence, as well as four 12 gauge shotguns (Items 22, 30, 31, and 32) and one 300 Blackout caliber rifle (Item 33) collected from the Moselle property were submitted to the Firearms Department at SLED for forensic examination. The laboratory then fired laboratory-supplied ammunition through each shotgun and rifle to create test specimens. Greer then examined and compared the various items of firearms ballistic evidence submitted from the crime scene with the test specimens created by the lab using the naked eye and a microscope. Based on the observable, physical characteristics of the items submitted to the lab, he concluded that some of the .300 cartridges retrieved from the firing range and near the residence were fired and/or loaded into, extracted, and ejected by the .300 Blackout rifle taken from the property. *See SLED Firearms Report*, CA No. 31210061 (July 23, 2021), at 7, attached hereto as **Exhibit A**. While he was unable to conclude the .300 Blackout cartridges found beside Maggie's body (Items 2-7) were fired by the .300 Blackout retrieved from the residence (Item 33), he reported that "[m]atching individual identifying characteristics were found in the mechanism marks of Items 2-7, [spent shell cartridges found at the crime scene], and Items 35-37, 39, 108, 113, 116-117, and 122, [cartridges found at

the shooting range and near the residence], to conclude that these Items were loaded into, extracted, and ejected from the same firearm at some previous time." Id.

ARGUMENT

The Court should preclude the State's ballistic expert from testifying that the .300 Blackout cartridges found at the crime scene were fired from the same weapon that fired .300 Blackout cartridges at the shooting range and near the residence because there are not any reliable studies or any scientific proof that every .300 black-out rifle makes tool marks on fired cartridges that are unique from every other .300 black-out rifle manufactured in the world. Moreover, the field of tool mark analysis is inherently subjective and not scientifically valid. Alternatively, the Court should conduct a *Council* hearing to ensure the proffered evidence is scientifically and substantively reliable and will assist the trier of fact. Whereas here, the conclusions drawn by Mr. Greer are not based on methods that are scientifically valid or reliable, such evidence is properly excluded under Rule 702. Additionally, given the unreliable nature of such evidence and the import a jury attributes to expert testimony, such evidence should also be excluded because any probative value it might offer is substantially outweighed by the danger of unfair prejudice, confusion of the issues and misleading the jury. *See* Rule 403, SCRE.

"When admitting scientific evidence under Rule 702, SCRE, the trial judge must find the evidence will assist the trier of fact, the expert witness is qualified, and the underlying science is reliable." *Council*, 335 S.C. at 20, 515 S.E.2d at 518. In determining whether evidence is admissible pursuant to Rule 702, SCRE, the Court "must assess not only (1) whether the expert's *method* is reliable (i.e., valid), but also (2) whether the *substance* of the expert's testimony is reliable." *State v. Warner*, 430 S.C. 76, 86, 842 S.E.2d 361, 265 (Ct. App. 2020) (internal citations omitted). The Court's determination of reliability requires consideration of "(1) the publications

and peer review of the technique; (2) prior application of the method to the type of evidence involved in the case; (3) the quality control procedures used to ensure reliability; and (4) the consistency of the method with recognized scientific laws and procedures." *Council*, 335 S.C. at 1, 515 S.E.2d at 517 (citing *State v. Ford*, 301 S.C. 485, 392 S.E.2d 781 (1990)). The proponent of scientific evidence has the burden of providing the Court with the factual and scientific information needed for the Court to carry out its gatekeeping function. *See State v. Phillips*, 430 S.C. 319, 334, 844 S.E.2d 651, 659 (2020). If the Rule 702 evidence is deemed relevant and reliable, the Court must then consider whether the probative value of the evidence is substantially outweighed by its potential for unfair prejudice, confusion of the issues, or misleading the jury. *Council*, 335 S.C. at 1, 515 S.E.2d at 517 (citing *Ford*, 301 S.C. 485, 392 S.E.2d 78).

1. **Firearms analysis is neither scientifically valid nor reliable; thus, the ballistics evidence should be excluded.**

Firearms analysis is a "feature-comparison" method that attempts to determine whether a questioned sample is likely to have come from a known source based on shared features." *See* Addendum to the PCAST Report on Forensic Science in Criminal Courts, available at: https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/PCAST/pcast_forensics_addendum_finalv2.pdf (last visited January 15, 2023). It is an inherently subjective forensic field given the methodology depends largely, if not exclusively, on examiner judgment. *Id.* For this reason, authoritative scientific bodies conducting objective reviews of firearms analysis have concluded it is neither scientifically valid nor reliable.

In 2009, the National Research Council of the National Academy of Sciences[1], issued a report (the "NAS Report"), identifying the following issues which plague the reliability of firearms analysis:

- "[E]ven with more training and experience using newer techniques, the decision of the toolmark examiner remains a subjective decision based on unarticulated standards and no statistical foundation for estimation of error rates." *Id.* at 153-154.
- "Sufficient studies have not been done to understand the reliability and repeatability of the methods." *Id.* at 154.
- The Association of Firearm and Tool Mark Examiners' (AFTE) theory of identification does not address "questions regarding variability, reliability, repeatability, or the number of correlations needed to achieve a given degree of confidence." *Id.* at 155.

See Nat'l Res. Council, Nat'l Academies, *Strengthening Forensic Science in the United States: A Path Forward* (2009), available at https://www.ojp.gov/pdffiles1/nij/grants/228091.pdf (last visited January 15, 2023).

A second objective critique of this discipline was presented in a report issued by the President's Council of Advisors on Science and Technology in 2016 ("PCAST Report").[2] Like the

[1] The National Academy of Science is the premier scientific organization in the United States. Its current membership totals approximately 2,400 members and 500 international members, of which approximately 190 are Nobel prize-winners. The NRC committee of the NAS that studied firearm examination was composed of scientists and scholars selected for their ability to evaluate forensic science. These experts included forensic practitioners, crime laboratory directors, statisticians, engineers, and materials scientists. *See* https://www.nasonline.org/ (last visited January 15, 2023). The conclusions set forth in the NAS Report represent a consensus opinion of the top scientific minds in this country.

[2] The President's Council of Advisors on Science and Technology (PCAST) is an advisory group of the Nation's leading scientists and engineers, appointed by the President to augment the science and technology advice available to him from inside the White House and from cabinet departments and other Federal agencies. PCAST is consulted about, and often makes policy recommendations concerning, the full range of issues where understandings from the domains of science, technology, and innovation bear potentially on the policy choices before the President. *See* https://obamawhitehouse.archives.gov/administration/eop/ostp/pcast/about (last visited January 15, 2023); https://www.whitehouse.gov/pcast/ (last visited January 15, 2023).

NAS Report, it concluded that firearms analysis as a field "still falls short of the scientific criteria for foundational validity." Specifically, the PCAST Report raised the following concerns:

- The AFTE's "theory of identification" that "two toolmarks have a 'common origin' when their features are in 'sufficient agreement'" is circular. *Id.* at 60 ("[AFTE] declares that an examiner may state that two toolmarks have a "common origin" when their features are in "sufficient *agreement*." It then defines "sufficient agreement" as occurring when the examiner considers it a "practical impossibility" that the toolmarks have different origins.")

- Relying on "training and experience" and "uniqueness" in lieu of empirical demonstration of accuracy. *Id.* at 60-61. (Practitioners' "honest belief that they are able to make accurate judgments about identification based on their training and experience" is a "fallacy"; " '[e]experience is an inadequate foundation for drawing judgments about whether two sets of features could have been produced by (or found on) different sources" and "'training' is an even weaker foundation."

- Firearms analysis has never been satisfactorily validated. *Id.* at 64 ("There is no known study assessing "the overall firearm and toolmark discipline's ability to correctly/consistently categorize evidence by class characteristics, identify subclass marks, and eliminate items using individual characteristics.")

See The White House, President Barack Obama, Office of Science and Technology, Report to the President, *Forensic Science in Criminal Courts: Ensuring Scientific Validity of Feature-Comparison Methods* (Sept. 2016) ("PCAST Report"), available at https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/PCAST/pcast_forensic_science_report_final.pdf (last visited January 15, 2023).

In short, two independent, non-partisan groups comprised of accomplished experts have each issued reports – which rely on countless other scientific reports – reflecting a consensus in the scientific community that the evidence the State intends to introduce has not been validated and is unreliable. Thus, the firearms report and testimony of Mr. Greer should be excluded.

2. Alternatively, the Court should conduct a *Council* hearing to determine whether to suppress all such evidence or impose limitations on Greer's testimony.

To the extent the Court is not persuaded to preclude such evidence based solely on the extensive reporting presented by the scientific community, it should hold a *Council* hearing and only admit that evidence which is relevant, comports with Rule 702, and passes muster under Rule 403. It is imperative that in fulfilling its gate-keeping function the Court determine the reliability of the expert testimony being presented. *Council,* 335 S.C. at 20, 515 S.E.2d at 518. Whereas here, the State intends to introduce testimony that individual characteristics of certain groups of cartridge cases found at or near Moselle can be attributed to a specific gun, the Court should preclude or at the very least limit such testimony because of the confusion firearms examiners have not arrived at either strict rules for determining whether a microscopic pattern on a toolmark is an individual or a subclass characteristic or strict rules as to which tools or manufacturing processes do or do not produce toolmarks with subclass characteristics. Accordingly, the State should not be permitted to present evidence that the cartridges in issue came from a certain gun to the exclusion of all others.

When examining samples, firearms analysts compare the markings that are created on the samples when the internal parts of a firearm make contact with the brass and lead that comprise ammunition. Examiners classify these marking into three categories. "Class characteristics" are features that can be associated with a certain group (i.e., markings that appear on all cartridge cases fired from the same make and model of gun). "Subclass characteristics" are markings that can be attributed to a small group of firearms from a specific production lot (i.e., markings left on cartridge cases fired from one of a group of guns mass-produced at the same time). These markings are produced by the manufacturing process, such as when a worn or dull tool is used to cut barrel rifling (i.e., markings left on all cartridge cases fired from guns in that specific production lot).

"Individual characteristics" are the microscopic markings and textures examiners claim are unique to a single firearm. The task of the firearms examiner is to identify the individual characteristics of microscopic toolmarks apart from class and sub-class characteristics and then to assess the extent of agreement in individual characteristics in the sets of toolmarks to permit the identification of an individual firearm. *See NAS* Report at 153.

It is apparent, and the AFTE concedes, that such an exercise involves subjective qualitative judgments by examiners and the accuracy of the assessments is highly dependent on their skill and training. In the present case, the State has not offered any information on the qualifications of Mr. Greer, let alone the methodology used to arrive at his conclusions. Nor, has the State—because it cannot—provided any studies supporting its conclusion – that certain cartridge casings came from specific firearms to the exclusion of all others.

Following the release of the NAS Reports and PCAST reports, Courts have begun to limit the testimony of firearms evidence to the extent it is presented to state opinions that an expert is 100% certain a cartridge came from a specific gun or that a cartridge is a "match' to a specific gun to the exclusion of all others. *See, e.g., United States v. Davis,* No. 4:18-cr-00011, 2019 WL 4306971, at *8 (W.D. Va. Sept. 11, 2019) (permitting FTM expert to testify as to similarities/consistencies in recovered cartridge cases, but precluding testimony that markings indicate a "match" or that cartridges were fired from same firearm); *United States v. Medley*, No. 17 Cr. 242, ECF No. 85 at 54 (S.D. Md. Apr. 24, 2018) (transcript of oral ruling) (holding the court will not allow expert to express opinion that cartridges found at crime scene were fired from the same gun as that associated with the defendant or to express confidence level as to his opinion); *United States v. Adams*, 444 F.Supp.3d 1248, 1266–1267 (D. Or. 2020) (holding expert cannot say "match" or that cartridges were fired from same firearm; expert permitted to testify regarding only

class characteristics); *People v. Ross*, 68 Misc. 3d 899, 918 (N.Y. Sup. Ct. June 30, 2020) (limiting testimony to class characteristics only); *United States v. Tibbs*, No. 2016-CF1-19431, 2019 WL 4359486, at *24 (D.C. Super. Ct. Sept. 5, 2019) (recognizing the weakness in AFTE Journal's peer reviewed articles and holding expert may only testify that bullet fragment and shell casing are "consistent with" being fired from recovered firearm; that recovered firearm "cannot be excluded" as source of bullet and bullet fragment, but cannot testify that bullet and fragment were definitively fired from recovered firearm); *United States. v. Shipp*, 422 F. Supp. 3d 762, 783 (E.D.N.Y. 2019) (expert cannot say "match" or that cartridges were fired from same firearm); *State v. Gibbs*, No. 1819003017, 2019 WL 6709058, at *5 (Del. Super. Ct. Dec. 9, 2019) ("The expert is precluded from testifying to being 100% certain as to his findings [and] if he testifies to a 'match,' the expert may not testify to conclusions that suggest there is a match to 'the exclusion of all other firearms in the world' or that it is a 'practical impossibility' that any other gun could have fired the recovered material. He may not testify within a reasonable degree of 'scientific' certainty and may not state his conclusions regarding a 'match' with any degree of certainty.").[3] This trending limitation in federal and state courts is arising because of the growing recognition in the judiciary of the critique amongst the scientific community when examiners express opinions based on perceived individual characteristics. As recently explained in *People v. Ross*, 68 Misc. 3d 899, 129 N.Y.S.3d 629 (N.Y. Sup. Ct. 2020),

> Even if an expert is using reliable principles to examine for class characteristics, there is little reliable basis for extrapolating further from other marks seen under a microscope. The expert's opinions must be limited if there is simply too great an analytical gap between the data and the opinion proffered. *At a foundational level,*

[3] Although South Carolina has not adopted the *Daubert* approach, South Carolina's *Council* test has been held to be "extraordinarily similar" to the federal test. *See Warner*, 430 S.C. at 86, 842 S.E.2d at 366 (citing Young, *How Do You Know What You Know?*, 15 S.C. Law. Rev. 28, 31 (2003)). Accordingly, opinions utilizing this framework are instructive.

> *beyond comparing class characteristics forensic toolmark practice lacks adequate scientific underpinning and the confidence of the scientific community as a whole.*
>
> A significant flaw in the forensic method is the potential for subclass characteristics to mimic individual characteristics and obscure the true reason for what may appear to the examiner to be a unique match: "[b]ullets fired from different guns may have significantly similar markings, reflecting class or subclass, rather than individual characteristics." Both the literature and the forensic science expert confirmed that subclass characteristics remain an unknown for the examiner under ordinary circumstances. Such a void can lead to an erroneous conclusion that there is "agreement" or "consistency" if the examiner mistakes a subclass characteristic for an individual one on discharged shell casings or bullets.

Id. at 916–917 (internal citations omitted) (emphasis added); *see also United States v. Taylor*, 663 F. Supp. 2d 1170, 1177 (D.N.M. 2009).

Such limitation is appropriate when characteristics on a cartridge case claimed by the examiner to be "individual" can derive from any of several sources, including the manufacturing processes, subsequent materials handling and processing, and use or servicing of the firearm. Without personal knowledge of the "individual" and subclass characteristics produced by a particular manufacturing run, or even a known sample for comparison, an examiner does not have sufficient information to differentiate between the two phenomena for most forming processes. Thus, Courts have appropriately limited the testimony of a firearms expert seeking to testify to a conclusion "matching" (to the exclusion of all others) a certain firearm to cartridge casings based on the examiner's findings concerning individual characteristics of the firearm.

In the present matter, the examiner did not present any findings based on "class characteristics." Rather, Mr. Greer offers testimony that the "matching individual identifying characteristics" found on certain cartridge cases submitted for his review can be definitely tied to specific firearms. *See* Ex. A at 7. As set forth above in scientific reports and case law from across the country, such testimony should not be allowed because Mr. Greer's conclusion remains inherently subjective and is derived from a method with unarticulated standards and no statistical

foundation for estimation of error rates. Such evidence cannot be deemed to satisfy the reliability requirements of *Council* and Rule 702; therefore it is properly excluded, or alternatively, limited.

Moreover, even if the State's ballistic evidence provided from Mr. Greer was admissible under Rule 702 – which it is not – the minimal probative value (if any) that a jury could gleam from Mr. Greer's testimony is substantially outweighed by the potential for unfair prejudice, confusion of the issues, and misleading the jury.

CONCLUSION

Based on the foregoing, the Court should grant Defendant's motion in limine to preclude, or limit the ballistics evidence and testimony of Mr. Greer. Alternatively, the Court should hold a *Council* hearing and only admit that evidence which is relevant, comports with Rule 702, and passes muster under Rule 403.

Respectfully submitted,

Richard A. Harpootlian, SC Bar No. 2725
Phillip D. Barber, SC Bar No. 103421
RICHARD A. HARPOOTLIAN, P.A.
1410 Laurel Street (29201)
Post Office Box 1090
Columbia, South Carolina 29202
(803) 252-4848
Facsimile (803) 252-4810
rah@harpootlianlaw.com
pdb@harpootlianlaw.com

James M. Griffin, SC Bar No. 9995
Margaret N. Fox, SC Bar No. 76228
GRIFFIN DAVIS LLC
4408 Forest Drive (29206)
Post Office Box 999
Columbia, South Carolina 29202
(803) 744-0800
jgriffin@griffindavislaw.com
mfox@griffindavislaw.com

Attorneys for Richard Alexander Murdaugh

January 23, 2023
Columbia, South Carolina

State of South Carolina v. Richard Alexander Murdaugh
Indictment Nos. 2022-GS-15-00592, -593, -594, and -595
Motion in Limine to Preclude or Limit Firearm Ballistic Opinion Testimony, or Alternatively, for a *Council* Hearing

EXHIBIT A

(SLED Firearms Report, July 23, 2021)

SOUTH CAROLINA LAW ENFORCEMENT DIVISION

FORENSIC SERVICES LABORATORY REPORT

HENRY D. MCMASTER
Governor

MARK A. KEEL
Chief

July 23, 2021

David Owen, III
South Carolina Law Enforcement Division
4400 Broad River Road
Columbia, SC 29210

FIREARMS DEPARTMENT
SLED LAB: L21-09074
Your Case No: 31210061
Incident Date: 6/7/2021
[V-Deceased] Paul Murdaugh
[V-Deceased] Margaret Murdaugh
[W] Richard Murdaugh

This is an official report of the South Carolina Law Enforcement Division Forensic Services Laboratory and is to be used in connection with an official criminal investigation. These examinations were conducted under your assurance that no previous examinations of person(s) or evidence submitted in this case have been or will be conducted by any other laboratory or agency.

Mark A. Keel, Chief
South Carolina Law Enforcement Division

ITEMS OF EVIDENCE:

Item: 1 One shot cup and one wad component, listed as "...from Marker 1".
RESULTS:
See Item 69 results.

Item: 1.1 Reddish-brown debris swabbed from Item 1.
RESULTS:
Item 1.1 was returned without further analysis.

Item: 1.2 Fibrous material removed from Item 1.
RESULTS:
Item 1.2 was returned without further analysis.

Item: 2 One fired 300 Blackout caliber cartridge case, listed as "...from Marker 2".
Item: 3 One fired 300 Blackout caliber cartridge case, listed as "...from Marker 3".
Item: 4 One fired 300 Blackout caliber cartridge case, listed as "...from Marker 4".
Item: 5 One fired 300 Blackout caliber cartridge case, listed as "...from Marker 5".
RESULTS:
See Item 128 results.

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P.O. Box 21398, Columbia, South Carolina 29221-1398 Phone (803) 896-7300 Fax (803) 896-7351

Item: 6 One fired 300 Blackout caliber cartridge case, listed as "...from Marker 6".
Item: 7 One fired 300 Blackout caliber cartridge case, listed as "...from Marker 7".
RESULTS:
See Item 128 results.

Item: 8 One fired bullet, listed as "...near tire tire impression at Marker 8".
RESULTS:
See Item 137 results.

Item: 9 One fired 12 gauge shotshell, listed as "...from Marker 9".
Item: 10 One fired 12 gauge shotshell, listed as "...from Marker 10".
RESULTS:
See Item 135 results.

Item: 11 One fired bullet jacket fragment, three bullet jacket fragments, and one piece of lead, listed as "...from defect in ground (gravel) (Marker 13)".
Item: 12 One fired bullet, listed as "...from bedding inside doghouse".
RESULTS:
See Item 137 results.

Item: 13 One buckshot pellet, listed as "...from table below storage room window".
Item: 14 Twenty-four birdshot pellets listed as "...from dog food storage room".
RESULTS:
See Item 104 results.

Item: 14.1 Reddish-brown debris swabbed from Item 14.
RESULTS:
Item 14.1 was returned without further analysis.

Item: 22 One Benelli Model Super Black Eagle 3 semiautomatic shotgun, 12 gauge, serial number U573210E17, with one unfired 12 gauge shotshell, one unfired 16 gauge shotshell, and accessory. *Please note that the accessory was not listed on the submission documents.*
RESULTS:
Item 22 was physically examined. The shotgun was test fired and found to be in working order. The 12 gauge shotshell was the correct gauge for use in the shotgun. The 16 gauge shotshell was not correct for use in the shotgun.

No analysis was performed on the accessory.

Item: 22.4 Reddish-brown debris swabbed from the right side of the Item 22 receiver.
RESULTS:
Item 22.4 was forwarded to the DNA Department.

Item: 22.5 Reddish-brown debris swabbed from the left side of the Item 22 receiver, above manufacturer information.
RESULTS:
Item 22.5 was forwarded to the DNA Department.

Item: 22.6 Test specimens fired by Item 22 using Laboratory supplied ammunition.
RESULTS:
The test specimens were packaged for return to your Agency for long term storage as evidence.

Item: 22.7 The unfired 12 gauge shotshell submitted as Item 22 test fired in the Item 22 shotgun.
RESULTS:
This test specimen was used for comparisons purposes and was packaged for return with the other evidence.

Item: 22.8 Reddish-brown debris swabbed from under the forearm on the magazine tube and receiver area.
RESULTS:
Item 22.8 was returned without further analysis.

Item: 30 One Mossberg Model 835 "ULTI-MAG" pump-action shotgun, 12 gauge, serial number UM613411, with one unfired 12 gauge shotshell, listed as "...(previously on pool table)..."
RESULTS:
Item 30 was physically examined. During test firing, the first shotshell was loaded from the magazine tube and successfully test fired. After firing, the next available shotshell in the magazine tube had to be manually removed. The shotshell was then fed into the chamber with the lifter and fired. This issue did not prevent test firing and no further analysis was performed.

Item: 30.2 Test specimens fired by Item 30 using Laboratory supplied ammunition.
RESULTS:
The test specimens were packaged for return to your Agency for long term storage as evidence.

Item: 31 One Browning Model Auto-5 Light Twelve semiautomatic shotgun, 12 gauge, serial number 03867NV211.
RESULTS:
Item 31 was physically examined. During test firing, the shotgun did not extract and eject the fired shotshells. The shotshells had to be removed from the chamber by manually cycling the firearm. This issue did not prevent test firing and no further analysis was performed.

Item: 31.2 Test specimens fired by Item 31 using Laboratory supplied ammunition.
RESULTS:
The test specimens were packaged for return to your Agency for long term storage as evidence.

Item: 32 One Benelli Model Super Black Eagle II semiautomatic shotgun, 12 gauge, serial number U391148, with two unfired 12 gauge shotshells and one accessory .
RESULTS:
Item 32 was physically examined. The shotgun was test fired and found to be in working order. The unfired shotshells were the correct gauge for use in the shotgun.

No analysis was performed on the accessory.

Item: 32.2 Test specimens fired by Item 32 using Laboratory supplied ammunition.
RESULTS:
The test specimens were packaged for return to your Agency for long term storage as evidence.

Item: 32.3 Debris swabbed from inside the choke of Item 32.
RESULTS:
Item 32.3 was returned without further analysis.

Item: 33 One Palmetto State Armory Model PA-15 semiautomatic rifle, 300 Blackout caliber, serial number PA068237, with accessory.
RESULTS:
Item 33 was physically examined. The rifle was test fired using the Item 34 magazine. During test firing, the first available cartridge in the magazine was fed and chambered correctly. The cartridge was successfully test fired, and extracted and ejected from the rifle. As the firearm cycled, the next available cartridge from the magazine failed to feed into the chamber. The bolt had to be manually cycled in order to feed the next cartridge. This issue did not prevent test firing and no further analysis was performed.

No analysis was performed on the accessory.

Item: 33.2 Test specimens fired by Item 33 using Laboratory supplied ammunition.
RESULTS:
The test specimens were packaged for return to your Agency for long term storage as evidence.

Item: 33.3 Test specimens cycled through Item 33 using Laboratory supplied ammunition.
RESULTS:
The test specimens were packaged for return to your Agency for long term storage as evidence.

Item: 34 One magazine and twenty-six unfired 300 Blackout caliber cartridges.
RESULTS:
Item 34 was physically examined. The magazine was a correct magazine assembly for use in the Item 33 rifle and in other similar type firearms. The unfired cartridges were the correct caliber for use in the Item 33 rifle and in other firearms chambered for 300 Blackout caliber cartridges.

Item: 35 One fired 300 Blackout caliber cartridge case, listed as "...from ground at side entrance door".
Item: 36 One fired 300 Blackout caliber cartridge case, listed as "...from ground at side entrance door".
Item: 37 One fired 300 Blackout caliber cartridge case, listed as "...from ground at side entrance door".
Item: 38 One fired 300 Blackout caliber cartridge case, listed as "...from ground at side entrance door".
Item: 39 One fired 300 Blackout caliber cartridge case, listed as "...from ground at side entrance door".

RESULTS:
See Item 128 results.

Item: 66 Three fired bullet jacket fragments and seven pieces of lead, listed as "...from Margaret Murdaugh at autopsy".

RESULTS:
See Item 137 results.

Item: 67 Forty-eight birdshot pellets, listed as "...from left shoulder and head of Paul Murdaugh at autopsy".

RESULTS:
See Item 104 results.

Item: 68 One piece of plastic, listed as "...from left shoulder and head of Paul Murdaugh at autopsy".

RESULTS:
Item 68 was physically and microscopically examined. It could not be determined whether Item 68 was part of a wad or wad component at some prior time, or if it originated from another source. No marks of value suitable for identification were found, and it was concluded that Item 68 was unsuitable for identification.

Item: 69 One combination wad, listed as "...from left axilla of Paul Murdaugh at autopsy".

RESULTS:
Items 1 and 69 were physically examined and microscopically compared with each other and test wads fired by the Item 22 and 30 – 32 shotguns. Based on their observable, physical characteristics, Items 1 and 69 were most consistent with wads/wad components loaded into some 12 gauge shotshells. Items 1 and 69 bore some striated markings; however, their origin could not be determined and the results of these comparisons were inconclusive. It could not be determined whether Items 1 and 69 were fired by Items 22, 30, 31, 32, or by another firearm or firearms. Items 1 and 69 may not be suitable for identification with other firearms related evidence.

Sufficient differences in class characteristics were found to conclude that Items 1 and 69 were not fired by the Item 33 rifle.

Item: 104 One birdshot pellet, listed as "...found with Paul Murdaugh's clothing".

RESULTS:
Items 13, 14, 67, and 104 were physically and microscopically examined. From these examinations, the following conclusions were reached:

- Based on its observable, physical characteristics, Item 30 was most consistent with being a Number 0 or larger buckshot pellet. No marks of value suitable for identification were found, and it was concluded that Item 13 was unsuitable for identification with other firearms related evidence.
- Based on their observable, physical characteristics, Items 14, 67, and 104 were most consistent with being Number 2 birdshot pellets. No marks of value suitable for identification were found, and it was concluded that Items 14, 67, and 104 were unsuitable for identification with other firearms related evidence.

Sufficient differences in class characteristics were found to conclude that Items 13, 14, 67, and 104 were not fired by the Item 33 rifle.

Item: 108 One fired 300 Blackout caliber cartridge case, listed as "...from to the left of shooting chair (near field)".

Item: 109 One fired 300 Blackout caliber cartridge case, listed as "...collected from right front corner (near field)".

Item: 110 One fired 300 Blackout caliber cartridge case, listed as "...from in front of shooter's chair under table (near field)".

Item: 111 One fired 300 Blackout caliber cartridge case, listed as "...from in front of chair at table (near field)".

Item: 112 One fired 300 Blackout caliber cartridge case, listed as "...from under shooting table (near field)".

Item: 113 One fired 300 Blackout caliber cartridge case, listed as "...from in front of right shooting table leg (near field)".

Item: 114 One fired 300 Blackout caliber cartridge case, listed as "...from near right leg of shooting table in front of chair (near field)".

Item: 115 One fired 300 Blackout caliber cartridge case, listed as "...from the front of and to the right of shooting table leg (near field)".

Item: 116 One fired 300 Blackout caliber cartridge case, listed as "...from to the right halfway between leg and wall (near field)".

Item: 117 One fired 300 Blackout caliber cartridge case, listed as "...from near right leg of shooting table near chair (near field)".

Item: 118 One fired 300 Blackout caliber cartridge case, listed as "...from by right wall (near field)".

Item: 119 One fired 300 Blackout caliber cartridge case, listed as "...from right front part of front wall (near field)".

Item: 120 One fired 300 Blackout caliber cartridge case, listed as "...from right side of shooting platform (near field)".

Item: 121 One fired 300 Blackout caliber cartridge case, listed as "...from right of shooting chair by platform (near field)".

RESULTS:

See Item 128 results.

Item: 122 One fired 300 Blackout caliber cartridge case, listed as "...from right side near wall (near field)".

Item: 123 One fired 300 Blackout caliber cartridge case, listed as "...from right side chair platform (near field)".

Item: 124 One fired 300 Blackout caliber cartridge case, listed as "...from right wall near sandbags (near field)".

RESULTS:

See Item 128 results.

Item: 125 One fired 12 gauge shotshell, listed as "...collected near field". *Item 125 was originally submitted as "...8..." fired shotshells. This evidence was itemized for identification and reporting purposes. See Items 129 – 135.*

RESULTS:

See Item 135 results.

Item: 126 One fired 300 Blackout caliber cartridge case, listed as "...from right front corner".

Item: 127 One fired 300 Blackout caliber cartridge case, listed as "...from right and to the front of right table leg".

Item: 128 One fired 300 Blackout caliber cartridge case, listed as "...collected from right near front wall".

RESULTS:

Items 2 – 7, 35 – 39, 108 – 124 and 126 – 128 were physically examined and, where appropriate, microscopically compared with each other and test cartridge cases fired by the Item 33 rifle. From these examinations and comparisons, the following conclusions were reached:

- Matching individual identifying characteristics were found on Items 38, 109 – 110, 121, 126, 127 and test cartridge cases fired by the Item 33 rifle. It was concluded that these Items were fired by Item 33.
- Due to insufficient corresponding individual identifying characteristics, the results of comparisons of Items 2 – 7, 35 – 37, 39, 108, 111 – 120, 122 – 124, and 128 with each other and test cartridge cases fired by the Item 33 rifle were inconclusive. It could not be determined whether these Items were fired by Item 33 or by another firearm or firearms with similar rifling characteristics. These Items may or may not be suitable for identification with other firearms related evidence.
- Matching individual identifying characteristics were found in the mechanism marks of Items 111, 114 – 115, 118 – 119, 123, 128 to conclude that these Items were loaded into, extracted, and ejected from the Item 33 rifle at some previous time.
- Matching individual identifying characteristics were found in the mechanism marks of Items 2 – 7, 35 – 37, 39, 108, 113, 116 – 117, and 122 to conclude that these Items were loaded into, extracted, and ejected from the same firearm at some previous time.

Sufficient differences in class characteristics were found to conclude that Items 2 – 7, 35 – 37, 39, 108, 111 – 120, 122 – 124, and 128 were not fired by any of the Item 22, 30, 31, or 32 shotguns.

Item: 129 One fired 12 gauge shotshell, originally submitted as/with Item 125.
Item: 130 One fired 12 gauge shotshell, originally submitted as/with Item 125.
Item: 131 One fired 12 gauge shotshell, originally submitted as/with Item 125.
Item: 132 One fired 12 gauge shotshell, originally submitted as/with Item 125.
Item: 133 One fired 12 gauge shotshell, originally submitted as/with Item 125.
Item: 134 One fired 12 gauge shotshell, originally submitted as/with Item 125.
Item: 135 One fired 12 gauge shotshell, originally submitted as/with Item 125.

RESULTS:

Items 9 – 10, 125, and 129 – 135 were physically examined and, where appropriate, microscopically compared with test shotshells fired by the Item 22 and 30 – 32 shotguns. From these examinations and comparisons, the following conclusions were reached:

- Matching individual identifying characteristics were found, and it was concluded that Items 9 – 10 were fired by the same firearm.
- Due to insufficient corresponding individual identifying characteristics, the results of comparisons of Items 9 – 10 with test shotshells fired by the Item 22 shotgun were inconclusive. It could not be determined whether Items 9 – 10 were fired by Item 22 or by another firearm with similar characteristics. Items 9 – 10 may be suitable for identification with other firearms related evidence.
- Sufficient differences in class and/or individual characteristics were found to conclude that Items 9 – 10 were not fired by the Item 30, 31, or 32 shotguns.
- Due to their damaged and weathered condition, the results of comparisons of Items 125 and 129 – 135 with each other, Items 9 – 10, and test shotshells fired by the Item 22 and 30 – 32 shotguns were inconclusive. It could not be determined whether Items 125 and 129 – 135 were fired by the firearm that fired Items 9 – 10, the Item 22, 30, 31, or 32 shotguns, or by another firearm or firearms with similar characteristics. Items 125 and 129 – 135 may not be suitable for identification with other firearms related evidence.

Sufficient differences in class characteristics were found to conclude that Items 9 – 10, 125, and 129 – 135 were not fired by the Item 33 rifle.

Item: 137 One piece of lead, listed as "...from hair on the Item 92 dress".

RESULTS:

Items 8, 11 – 12, 66, and 137 were physically examined and, where appropriate, microscopically compared with each other and test bullets fired by the Item 33 rifle. From these examinations and comparisons, the following conclusions were reached:

- Based on their observable, physical characteristics, Items 8 and 12 were most consistent with bullets loaded into some 300 Blackout caliber cartridges.
- Marks of value were found on Item 8 and it was concluded that it may be suitable for identification with other firearms related evidence.
- Due to damage, Item 12 was unsuitable for identification with other firearms related evidence; however, it may be suitable for elimination purposes based on class characteristics.
- Due to damage and their size, the caliber or calibers of Items 11, 66, and 137 could not be determined.
- Due to damage and limited marks of value found on the Item 11 fired bullet jacket fragment and the Item 66 fired bullet jacket fragments, it was concluded that these Items may or may not be suitable for identification with other firearms related evidence.
- No marks of value were found on the Item 11 bullet jacket fragments, the Item 11 piece of lead, and the Item 66 pieces of lead, and it was concluded that these Items were unsuitable for identification with other firearms related evidence.
- Item 137 bore some striated markings; however, their origin could not be determined and it was concluded that this Item was unsuitable for identification with other firearms related evidence.
- Due to damage and insufficient corresponding individual identifying characteristics, the results of comparisons of Item 8, the Item 11 fired bullet jacket fragment, and the Item 66 fired bullet jacket fragments with each other and test bullets fired by the Item 33 rifle were inconclusive. Although some limited similarities were noted on Item 8 and one of the Item 66 fired bullet jacket fragments, it could not be determined whether Item 8, the Item 11 fired bullet jacket fragment, and the Item 66 fired bullet jacket fragments were fired by Item 33 or by another firearm or firearms with similar rifling characteristics.

Sufficient differences in class characteristics were found to conclude that Item 8, the Item 11 fired bullet jacket fragment, and the Item 66 fired bullet jacket fragments were not fired by the Item 22 and 30 – 32 shotguns.

Items 3, 9, 10, and 33 were entered into the Integrated Ballistics Identification System (IBIS). These exhibits will automatically be correlated with exhibits from SC, GA, NC, and VA. Should any investigative leads be developed, your Agency will be notified. Please retain the evidence for a minimum of two years in order to maintain its availability for future comparisons related to IBIS activity.

This report contains the conclusions, opinions and interpretations of the analyst whose signature appears below.

Technical records supporting the conclusions in this report are available upon request. Afford sufficient time for production.

Paul S. Greer

Paul S. Greer
Forensic Scientist

P.O. Box 21398, Columbia, South Carolina 29221-1398 Phone (803) 896-7300 Fax (803) 896-7351

STATE OF SOUTH CAROLINA	)	IN THE COURT OF GENERAL SESSIONS
	)	FOURTEENTH JUDICIAL CIRCUIT
COUNTY OF COLLETON	)	

The State of South Carolina,

Plaintiffs,

vs.

Richard Alexander Murdaugh,

Defendant.

Indictment Nos. 2022GS1500592 – 00595

CERTIFICATE OF SERVICE

I, Holli Miller, paralegal to the attorney for the Defendant, Richard A. Harpootlian, P.A., with offices located at 1410 Laurel Street, Columbia, South Carolina 29201, hereby certify that on January 23, 2023 did serve by hand delivering the following documents to the below mentioned person:

Document: Motion in Limine to Preclude or Limit Firearm Ballistic Opinion Testimony, or Alternatively, for a *Council* Hearing

Served: Creighton Waters, Esquire
Office of The Attorney General
Rembert C. Dennis Building
Post Office Box 11549
Columbia South Carolina 29211-1549
cwaters@scag.gov

Holli Miller

JAN 23 2023 PM4:01
COLLETON CO GS, REBECCA H.HILL