

ULTRA.



NIBIN Toolkit for Prosecutors

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Robert C. Troyer, Esq.

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1. INTRODUCTION

Purpose of this Toolkit

The National Integrated Ballistic Information Network (NIBIN) is an automated forensic technology network used by over 5,000 law enforcement agencies in the United States to link multiple events involving the same firearm. NIBIN's core ballistic system is also used by INTERPOL and over 80 countries worldwide. By linking multiple firearm-related events, NIBIN provides timely intelligence and investigative leads to police. NIBIN is also critical to prosecutors in their work to disrupt "serial shooters" and their shooting cycles. In addition, NIBIN can be integral to prosecuting murder and many other cases by tying a defendant to multiple shooting scenes. Because NIBIN often leads to forensic evidence that is independent but supportive of fearful or compromised witnesses, it can be an essential foundation of successful prosecution.

NIBIN is a particularly important tool right now because it helps lead law enforcement to offenders based on firearm forensics, thereby shielding law enforcement from accusations of discriminatory policing and prosecution.

The purpose of this toolkit is to help prosecutors understand what NIBIN is and what it isn't. Improving this understanding will make it easier for prosecutors to take advantage of NIBIN's benefits and weave NIBIN deeper into the fabric of criminal prosecution to maximize its public-safety impact. More importantly, a solid understanding of NIBIN enables prosecutors to correctly position this essential, firearm-crime reduction technology to help convict dangerous criminals and to protect those convictions on appeal. A court decision that excludes, devalues, or undermines NIBIN would be a serious setback to the use of forensic technology to obtain and uphold convictions that improve public safety. This toolkit is designed to help prosecutors tackle cases involving NIBIN.

To meet this goal, the toolkit covers the following topics:

- What NIBIN is and isn't.
- How the NIBIN process works.
- How a prosecutor can benefit from NIBIN.
- Answers to frequently asked questions.
- Links to reference materials.
- Common terms and definitions.
- Models, including witness outlines, warrant/complaint affidavit language, demonstrative images and diagrams, and language for common courtroom presentations and pleadings.

Toolkit Updates

This toolkit will be updated as necessary to provide the latest and most helpful resources available. To this end, if you have feedback, reference materials, or models that you have found effective, please share them via this email link: marketingdirector@ultra-ft.com. Your feedback, lessons learned in the field, and models will be essential contributions to law enforcement's continued efforts to improve public safety through the evolving use of forensic technology.

About the Author

Robert C. Troyer, Esq.

Robert Troyer was the United States Attorney in Colorado from 2016 to 2018. He was the First Assistant U.S. Attorney for six years before that, and in the early 2000s he was a line criminal prosecutor in that office's drug and violent-crime units. Bob spent the other 15 years of his legal career in private practice conducting internal investigations and litigating civil cases. While U.S. Attorney Bob received the PSN Outstanding Contribution Award from the U.S. Attorney General for helping develop and deploy an innovative, forensic-intelligence violent crime prevention strategy in Colorado. Bob also served from 2016 to 2018 as a member of the National Crime Gun Intelligence Governing Board. He has conducted countless trainings for law enforcement, prosecutors, community leaders, and public officials on the use of forensic intelligence to prevent gun violence. Over the last two years, Bob has worked with numerous policing agencies in Colorado on policy issues, and he conducted two investigations into the history of Catholic clergy child sex abuse in Colorado.



Bob was born in Colorado and grew up in Washington DC. He graduated from Pomona College in 1984 with a BA in English. For several years after college, Bob taught high school English in Washington DC and worked during the summers as a commercial fisherman in Alaska. He then attended Boston College Law School, where he served as the Solicitations Editor for the Boston College Law Review, graduating in 1990. After law school Bob practiced civil litigation at Ropes & Gray in Boston for three years and then moved to Denver to practice at Brownstein Hyatt Farber & Strickland, making partner there in 1997. In 1999 he left to join the criminal division of the Colorado U.S. Attorney's Office.

About Ultra Forensic Technology

Ultra Forensic Technology (www.ultra-forensictechnology.com) is a recognized leader in providing innovative technology and sustainable solutions that help Law Enforcement & Border Security agencies around the world prevent and solve crime. Ultra Forensic Technology pioneered automated ballistic identification and analysis over 30 years ago and continues to be a leader in forensic ballistics and firearm identification technologies that promote a safer society. Ultra Forensic Technology created the Integrated Ballistic Identification System (IBIS®) in 1991. IBIS technology can find the “needle in the haystack”, suggesting possible matches between pairs of spent bullets and cartridge cases, at speeds well beyond human capacity, in order to help forensic experts give detectives more timely information about crimes, guns, and suspects.

Our ballistic identification solutions help law enforcement and security agencies in more than 130 countries solve firearm crime, authenticate questioned documents, and investigate crime scenes. ATF’s NIBIN program is powered by our IBIS technology. Ultra Forensic Technology has been expanding and servicing the IBIS equipment deployed by ATF since 1994. Ultra Forensic Technology has a long partnership with ATF and together they have built, supported, and nurtured NIBIN with the goal of reducing firearm-related crime in the United States.

Headquartered in Montreal (Canada), and with offices in the USA, Ireland, and Switzerland, Thailand, South Africa and Mexico, Ultra Forensic Technology employs over 300 professionals worldwide. In 2014, we joined the Ultra (www.ultra.group), a successful publicly-traded international company headquartered in London (United Kingdom). Ultra has a long and consistent record of innovating and engineering solutions that satisfy customer requirements. Ultra provides application-engineered solutions in the key elements of mission critical and intelligent systems. Through innovative problem solving, using sustainable capabilities, and evolving technologies, we deliver outstanding solutions to our customers’ most complex problems in defense, security, critical detection, and control environments.

2. WHAT NIBIN IS AND ISN'T

NIBIN is the U.S. national automated network that searches for previously unknown links between events involving the same firearm. NIBIN relies on advanced technology called **IBIS®** (*Integrated Ballistic Identification System*). IBIS uses specialized 3D microscopy to capture the marks left by firearms on fired bullets and cartridge cases, and then uses algorithms to find similarly marked bullets or cartridge cases within the NIBIN database of captured images. IBIS technology is based on the principles of firearm identification.

Firearm identification is a sub-category of toolmark identification. Toolmark identification is a discipline of forensic science that determines whether a mark on an object was made by a particular tool. The purpose of firearm identification is to determine if a bullet, cartridge case, or other ammunition component was fired by a particular firearm. This determination is possible because the surfaces of each fabricated item of the firearm (*such as the firing pin, barrel, ejector, and breech block*) have random tool marks from the manufacturing process that leave marks (*such as peaks, ridges, and furrows*) on components of the fired ammunition. Thus, these components bear the firearm's "mechanical fingerprint" once fired. The firearm examiner analyzes the cartridge case or bullet under a comparison microscope, examining the relative height, depth, width, curvature, and spatial relationship of the peaks, ridges, and furrows of the "mechanical fingerprint." From this examination, the firearm examiner reaches his or her opinion as to whether the cartridge case or bullet was fired by a particular firearm, or in the absence of a firearm, whether the bullets or cartridge cases were fired by the same firearm.

Law enforcement uses NIBIN as a search tool to find multiple cartridge cases or bullets that were likely fired by the same firearm. NIBIN itself does not reach the conclusion that a firearm and specific bullets or cartridge cases actually match. It is not a computer system that spits out an expert report. Rather, it employs a technology that finds likely matches. Without NIBIN, a firearm examiner would have to manually compare thousands of cartridge cases (*or bullets*) under a microscope to look for matches. Thus, using NIBIN is like doing a Google search. In essence, a technician asks NIBIN if anything in its database of bullet and cartridge case images resembles the bullet or cartridge case in question, and NIBIN answers with a narrowed list of likely matches—much like Google provides a list of the likely most relevant sources for the user to check to see which best matches his or her query.

Finally, NIBIN alone does not establish that your defendant was the shooter at a prior crime scene. Instead, it tells investigators that the gun involved in your case is likely the same gun used at a prior crime scene. Firearm examination can then confirm this. Once law enforcement suspects a connection between your case and a prior crime scene, further investigation frequently uncovers additional evidence (*such as video, GPS, witnesses, etc.*) putting the firearm in your defendant's hand at that prior crime scene. Proof that your defendant shot this firearm at a prior scene can help you establish that

he possessed the firearm in your case. It also can give you new charges, enhance his sentence, and bolster your proof of facts and elements beyond just possession (*e.g., use, conspiracy acts, intent, and motive*). Finally, it can help you prove his dangerousness at the detention hearing—or establish that he has violated pre-trial release or supervised-release conditions.

3. THE NIBIN PROCESS

Here is how the NIBIN process typically works. For simplicity's sake, the description below discusses a test-fired cartridge case from a firearm recovered by law enforcement, but the process applies equally to test-fired bullets, and to bullets and cartridge cases recovered by law enforcement. Also, be aware that the process may vary slightly depending upon where it is conducted, and the agencies involved in the various steps. Where there is variation, it is noted below. The variation usually is because there are two different approaches that may be used to process a cartridge case or bullet through NIBIN: some jurisdictions do all the processing at a local NIBIN site, and some acquire images of their bullets and cartridge cases locally but the correlation reviews are done at the NIBIN National Correlation and Training Center (NNCTC) in Alabama. The NNCTC also provides acquisition services for some jurisdictions, but primarily it conducts correlation reviews for law enforcement agencies around the country.

Note that the NIBIN process is endorsed by the International Association of Chiefs of Police (see *IACP Resolution referenced in Section 6*).

Figure 1 shows the main workflow that applies to both approaches. This diagram is also included in Appendix section A6-1, for use as a demonstrative. In both approaches, the fundamental steps of the NIBIN process are the same.

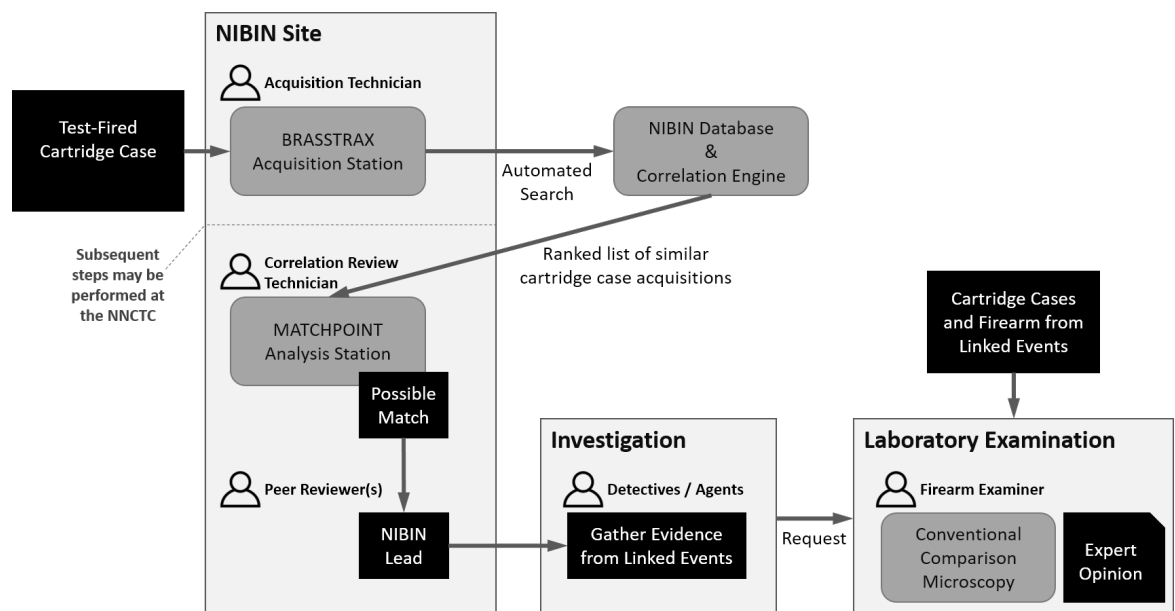


FIGURE 1 – THE NIBIN PROCESS (EXAMPLE FOR CARTRIDGE CASE FROM RECOVERED FIREARM)

Important Steps of the NIBIN Process

- When law enforcement recovers a firearm, they test fire it, and an acquisition technician at a NIBIN site puts the test-fired cartridge case into an imaging machine called “**IBIS® BRASSTRAX**”. BRASSTRAX takes a high-definition, 3D, digital “picture” of the cartridge case. This is known as “the cartridge case acquisition.” *(If the object is a bullet, not a cartridge case, it is entered into a machine called “**IBIS® BULLETRAX**” that performs a similar function.)*
- BRASSTRAX automatically uploads the cartridge case acquisition onto NIBIN, triggering an automatic search on NIBIN’s database of millions of cartridge case acquisitions.
- NIBIN’s infrastructure (*primarily its “Correlation Engine”*) automatically uses algorithms to determine what (*if any*) cartridge case acquisitions already in the database have markings that are similar to those on the newly entered cartridge case. NIBIN generates a ranked list of those similar cartridge case acquisitions.
- Next, a correlation review technician uses a machine called “**IBIS® MATCHPOINT**” to review the results in that ranked list. MATCHPOINT enables the technician to look through the listed comparable acquisitions on-screen, side-by-side with the test-fired cartridge case acquisition. Using MATCHPOINT, the technician visually determines whether the acquisitions have markings that are similar enough to indicate they were fired by the same firearm.
- If the correlation review technician determines that there is a potential match, his or her determination is “peer reviewed” at least once and often twice. Sometimes the second and third reviews are both done by firearm examiners at the NIBIN site or the NNCTC. Sometimes the second review is done by another correlation review technician. If there is a third, visual, side-by-side review of the acquired images on the MATCHPOINT screen, it is conducted by a firearm examiner.
- All of these steps, including at least one peer review, are required by and conducted pursuant to the Minimum Required Operating Standards (MROS) that govern the work of all NIBIN sites and the NNCTC. The MROS are issued by ATF and the National Crime Gun Intelligence Governing Board. Compliance with them is mandated, monitored, and audited by ATF. In addition to secondary peer reviews of potential matches, the MROS require that technicians and firearm examiners at NIBIN sites and the NNCTC be trained. The MROS also establish requirements regarding quality assurance, site organization and personnel, site management, facility security, evidence control, and corrective action at NIBIN sites and the NNCTC. *(The MROS are referenced in Section 6.)*



- If the correlation review technician and all the peer reviewers agree that the cartridge cases likely match, they now have what is called a “NIBIN Lead.” This investigative lead is passed to law enforcement investigators. Law enforcement follows the lead where it takes them (*often to other evidence*) now that they know there is a potential connection between the firearm and certain prior crime scenes.
- If the investigation leads to charges, and sometimes before charging (*depending on the charges and other evidence*), a firearm examiner will collect the actual cartridge cases from the test fire or the crime scenes, and will examine them under a conventional comparison microscope. If the examiner confirms that they match after applying his or her expertise and reliable methods of examination, this is sometimes referred to as a “hit.”
- If requested by the prosecutor, the examiner then will write a formal expert opinion as to whether the cartridge cases at issue were fired by the same firearm. This is the expert opinion that the prosecutor will use in court. It is based on the firearm examiner’s expertise and application of reliable methods; it is not based on anything BRASSTRAX (*or BULLETRAX in the case of bullets*), NIBIN, its Correlation Engine, or MATCHPOINT told the firearm examiner. To continue the Google analogy, Google did not answer the query. It just pointed to possible sources, one of which standing on its own answers the query.

Thus, NIBIN use is a background step in a process that, if likely matches are found, leads to the firearm examiner’s stand-alone opinion reached after microscopic examination of the actual cartridge cases themselves. NIBIN operations are separate from the expert’s opinion; his or her opinion does not rely on NIBIN accuracy. NIBIN is part of the context that explains how the examiner came to be looking at these particular, physical objects to determine if they share a common source. In other words, NIBIN is the “pointer system” or “search tool” used to find the right cartridge cases to examine (*if any*). The admissibility of the examiner’s opinion will depend entirely on whether he or she has sufficient expertise and has reliably applied a recognized method. The BRASSTRAX (*or BULLETRAX in the case of bullets*) acquisition function, NIBIN’s correlation search function, and MATCHPOINT’s correlation review function have nothing to do with the opinion’s reliability. In this regard, NIBIN is analogous to drug field-testing, not to final mass spectrometry drug testing.

The functioning of the NIBIN components can, however, be relevant to any use a prosecutor makes of a technician’s or an examiner’s determinations based on a review of the images on a MATCHPOINT screen. There are accepted uses in the criminal process for these visual-review determinations, specifically in criminal processes to which the rules of evidence do not apply (*like warrant affidavits and detention hearings*). Accordingly, the Appendix section presents the language that prosecutors can use in these various contexts. The suggested language explains the NIBIN process transparently so that a judge can give this “cartridge case similarity” evidence its proper weight alongside other evidence presented in these contexts. To be clear, though, a conclusion set forth in a

warrant affidavit that is based on the visual examination of image acquisitions still does not rely on the NIBIN search algorithms' ability to find the acquisitions that might match. The search results are non-quantified and remain irrelevant to the examiner's or the technician's expertise, methods, and reliability at finding similarities in the images displayed on the MATCHPOINT screen.

4. NIBIN'S VALUE TO PROSECUTORS

If a firearm, a cartridge case, a bullet, or a shooting scene is at all involved in one of your cases, NIBIN can help your prosecution on many levels, as follows:

- NIBIN helps you direct your resources toward defendants you know are involved in multiple shootings, the “worst of the worst” offenders, not those who merely possess but never shoot their firearms.
- NIBIN points you and your investigators to other acts and evidence that provide proof of knowledge, intent, possession, and related elements in firearm use or possession cases, drug cases, conspiracy cases, VICAR cases, murder cases, and many others. NIBIN also often points you to additional evidence, offenses, charges, and defendants.
- In a culture where crime shows are extremely popular, juries, judges, and communities expect your proof to include forensic technology whenever possible. The fact that NIBIN's automated network searched the cartridge case acquisitions for your firearm examiner to conduct a separate expert analysis helps satisfy their expectations.
- Adding this NIBIN forensic-technology foundation to your case comforts skeptical juries, judges, and communities exposed to anti-police rhetoric. It helps assure them that your prosecution is not discriminatory, partial, race-based, or politically motivated.
- More broadly, NIBIN is also a substantial asset for measuring, communicating, and otherwise taking advantage of your office's performance on violent-crime reduction. For example, “We prosecuted 12 serial shooters linked to 46 shootings” is a rhetorically effective metric to use with law enforcement partners, media, communities, grant proposals, DOJ, and office initiatives.
- Because NIBIN often leads to forensic evidence independent but supportive of fearful or compromised witnesses, it can be an essential foundation of a successful prosecution.

5. FREQUENTLY ASKED QUESTIONS

Q1. *Does a NIBIN match prove my defendant was the shooter at a prior crime scene?*

ANSWER: Not by itself. The matches just tell you that the same firearm was likely fired at multiple crime scenes. Investigators take that lead and follow it to other evidence that puts the defendant at the different scenes and proves what he did there. Frequently, investigators obtain confessions, cell phone GPS location data, video from the scenes, witness statements, license-plate-reader images, and social media posts that button up the proof that your defendant was present and fired that same firearm at those multiple shooting scenes.

Q2. *Will I admit evidence from the NIBIN process itself at trial?*

ANSWER: No. Your firearm examiner expert, or another witness, will explain the NIBIN process and how that process preceded the firearm expert's examination. Your case agent or another law enforcement witness may do the same when describing how he or she came to do further investigation that led to additional evidence from a prior crime scene. But you will not seek to admit any NIBIN evidence itself. For example, you will not seek to admit the technician's notes or NIBIN-site paperwork that recorded his or her visual review and MATCHPOINT observations.

Q3. *Do I need to call a NIBIN technician as a trial witness?*

ANSWER: No, except in rare cases. Given their roles, there is a remote possibility that either technician (*the "acquisition technician" who places the cartridge case or bullet into BRASSTRAX or BULLETRAX, respectively, for image acquisition, or the "correlation review technician" who visually reviews potentially matching acquisitions, if any, on the MATCHPOINT screen*), will be needed as a chain-of-custody or factual-context witness. But the technician will never be offered as an expert witness or a witness providing information for the foundation for an expert firearm examiner's opinion. This is because the firearm examiner's expert opinion does not rely on the technician's work; the technician's work is merely background leading up to, but not in any way affecting, the reliability or admissibility of the firearm examiner's expert opinion.

Q4. *Can I use evidence from the NIBIN process itself in non-trial courtroom proceedings?*

ANSWER: Yes. Preliminary hearings, detention hearings, Rule 404(b) hearings, supervised-release violation hearings, pre-trial release violation hearings, pre-trial

hearings on various motions, and sentencing hearings are all likely opportunities to use evidence from the NIBIN process itself (*which led to further investigation, which led to additional evidence, which puts your defendant at prior shooting scenes*).

Q5. *Have courts allowed the use of NIBIN-process evidence?*

ANSWER: Yes. Courts commonly accept NIBIN-process evidence in warrant and complaint affidavits, preliminary hearings, detention hearings, supervised-release violation hearings, motions hearings, and sentencing hearings.

Q6. *Where do I get the expert that I need in court to prove the defendant's firearm was fired at multiple crime scenes?*

ANSWER: You get your firearm examiner expert from the crime lab that tested the firearm, cartridge cases, or bullets at issue. Your expert will be the lab's firearm examiner who actually put the cartridge cases under a conventional comparison microscope to reach the opinion that they were fired by the same firearm. Your case agent will know how to submit the lab request required to get a full formal report and testimony from that expert.

Q7. *When will the expert complete his or her full opinion – in time to use for search warrants? Grand jury? Detention hearing?*

ANSWER: Whenever you ask. If you feel that you need a full expert opinion based on microscopic comparison, just ask. If a cartridge case or bullet match is the linchpin in your case, get the firearm examiner's opinion early and rely on it in warrant affidavits, grand jury, the detention hearing, etc.

Q8. *If my case is going to trial and the cartridge case match evidence is truly a linchpin, do I need to have an expert testify to the calibration of the NIBIN machines, or to the computer science behind the algorithms and the technology?*

ANSWER: No. The firearm examiner's expert opinion will be based entirely on his or her own microscopic analysis of the actual cartridge cases. That analysis and opinion are separate, apart, and not reliant on anything the NIBIN machines have done. If, in preparing for testimony, the examiner tells you that he or she relied on NIBIN to form his or her expert opinion, you should identify the exact points where such reliance occurred and have the examiner conduct the additional steps required for him or her to eliminate that reliance. You should also consider getting a more-qualified firearm examiner to conduct a new examination and generate a new opinion, because reliance on NIBIN to form an expert opinion should never happen.

Q9. *Are there common missteps with NIBIN evidence I need to avoid when preparing my case?*

ANSWER: Yes. Detectives, officers, case agents, and occasionally even firearm examiners sometimes accidentally blur the distinction between a lead, a hit, and an expert opinion. The distinctions among these are based on the degree of examination. A NIBIN Lead is based on a correlation review technician and at least one peer reviewer visually comparing images on MATCHPOINT's screen. A hit is based on a firearm examiner comparing the actual cartridge cases under a microscope. An expert opinion is the final conclusion the examiner reaches after full and reliable application of his or her expertise using accepted methods. Make sure that you and your witnesses are precise about what degree of examination you are relying on whenever presenting any form of NIBIN evidence in any court context. For example, if your case agent says that he can testify in grand jury that the defendant's firearm fired the cartridge cases found at a prior crime scene, double-check. Make sure that you and the case agent are crystal clear on whether this "determination" comes from a technician or firearm examiner, and whether the determination was a likely match after MATCHPOINT visual comparison, or a conclusive match after microscopic examination.

Q10. *Are there common attacks by the defense on firearm examiners when NIBIN was used in an investigation?*

ANSWER: Yes. In addition to the usual attacks on toolmark examination as a discipline, the defense may assert that the firearm examiner's opinion was biased in favor of finding a match because he knew NIBIN found a potential match and a correlation review technician "confirmed" it on MATCHPOINT. To address this attack, simply prepare the firearm examiner to explain how he or she isolated the examination process from any such influence. The *Direct Examination of Expert Witness* model, provided in the Appendix, lays out how to address this issue.

It is also common for the defense to attack the expert if the expert overstates his or her opinion. Per the Association of Firearm and Tool Mark Examiners, the strongest positive opinion a firearm examiner should give about a cartridge case or bullet matching a particular firearm is this: "The likelihood that the cartridge case or bullet was fired by a different firearm is so remote as to be considered a practical impossibility." It is essential that your expert NOT express any greater certainty than this.

However, AFTE is considering revising their recommend language because of recent court decisions concerned with the certainty of a "practical impossibility". That language has been resisted by the courts in recent years and the courts in the U.S. have started replacing it with their own terminology such as "ballistic certainty" or "scientific certainty", neither of which has a clear meaning to firearm examiners.

The DOJ's Uniform Language for Testimony and Reports (ULTR) provides terminology for the Forensic Firearms/Toolmarks Discipline (*referenced in Section 6*). For example, it states that "a 'source identification' is the statement of an examiner's opinion (an inductive inference) that the probability that the two toolmarks were made by different sources is so small that it is negligible."

Q11. *Do I have to disclose NIBIN-process evidence under the discovery rules?*

ANSWER: No, not under a strict reading of those rules. You are required, of course, to disclose your firearm examiner's expert opinion. But otherwise, for example, Federal Rule of Criminal Procedure 16 only requires disclosure of documents "material to preparing the defense [or that] the government intends to use in its case-in-chief at trial." Documents related to the NIBIN process that preceded the expert's opinion, and on which the expert did not rely to reach his or her opinion, do not fall under this rule. The attached model *NIBIN Language for Discovery Motion Opposition*, in the Appendix, lays out this position. However, if you practice in a jurisdiction that requires broader disclosures, consider obtaining and disclosing the NIBIN site's materials generated from its processing of your cartridge cases or bullets so that you do not have a distracting discovery dispute over this material later in the case.

Q12. *Are there intellectual property sensitivities with the company that makes the NIBIN equipment that keep me from presenting evidence about how the technology works?*

ANSWER: Yes. Much of the computer science behind NIBIN is proprietary. Both for admissibility and discovery issues, you should resist delving into the computer science behind NIBIN. This, though, is not because the technology is proprietary. This is because the technology is not relevant or foundational to the firearm examiner's expert opinion. This point is made clear in the *NIBIN Language for Discovery Motion Opposition* model provided in the Appendix.

Q13. *Are there demonstratives available to help me explain NIBIN in court?*

ANSWER: Yes. Demonstrative images and diagrams related to NIBIN are provided in the Appendix section of this toolkit.

Q14. *Is the NIBIN process always used before a firearm examiner conducts his or her examination?*

ANSWER: No. You should not assume that NIBIN was used in all cases involving firearm examination. There are times when bullets or cartridge cases not processed through NIBIN come to a firearm examiner for analysis. For example, a bullet may be recovered

from a body during autopsy, and law enforcement simply take the bullet and the firearm they suspect fired it to an examiner and ask him or her to determine whether that firearm fired that bullet. You should remember that in such cases you do not have a problem with your evidence. The lack of NIBIN use is not a flaw that somehow undermines the expert's opinion or its reliability.

6. REFERENCE MATERIALS

- NIBIN SITE, MINIMUM REQUIRED OPERATING STANDARDS (MROS)
The Minimum Required Operating Standards (MROS) were established for NIBIN in 2018 by the National Crime Gun Intelligence Governing Board, which is an ATF administered body consisting of chiefs of police, forensic laboratory directors, ATF executives, and executives from state and federal prosecutor's offices. <https://crimegunintelcenters.org/atf>
- INTERNATIONAL ASSOCIATION OF CHIEFS OF POLICE (IACP)
Support for ATF's NIBIN Program; Firearms Committee (Resolution FIR001.a03, October 2003). The resolution notes the IACP's support for the National Integrated Ballistic Information Network (NIBIN) program and urges Congress to provide sufficient financial resources so that participating law enforcement agencies can gain the maximum benefit from the program.
- INTERNATIONAL ASSOCIATION OF CHIEFS OF POLICE (IACP), FIREARMS COMMITTEE
Support for Development of Comprehensive Crime Gun Intelligence Strategies (Resolution FC.07.t2018); This resolution lists NIBIN as part of best practices for crime gun intelligence strategies.
- ASSOCIATION OF FIREARM AND TOOL MARK EXAMINERS (AFTE)
Certification Program Development.
<https://afte.org/afte-certification/certification-program-development>
Job Description of the Firearm and Toolmark Examiner Classification (AFTE Certification Program Development; Appendix A)
https://afte.org/uploads/documents/appendix_A.pdf
- ASSOCIATION OF FIREARM AND TOOL MARK EXAMINERS (AFTE), SCIENTIFIC WORKING GROUP FOR FIREARMS AND TOOLMARKS (SWGgun)
Admissibility Resource Kit (ARK): Training program/tool to assist firearm examiners in better preparing for evidence admissibility hearings.
<https://afte.org/resources/swggun-ark>
- FIREARM AND TOOLMARK IDENTIFICATION – THE SCIENTIFIC RELIABILITY OF THE FORENSIC SCIENCE DISCIPLINE, ACADEMIC PRESS, RONALD NICHOLS (2018)
This book discusses the scientific foundations of the discipline which, while written for firearm examiners, is also a good resource for prosecutors as it helps to highlight the essential issues and studies that have been done to demonstrate the validity of the discipline. It is a compilation of most of the published work dealing with machine-based studies showing that different tools create different toolmarks, as well as firearm examiner error rate studies.
<https://www.amazon.com/Firearm-Toolmark-Identification-Scientific-Reliability-ebook/dp/B07FMNL4GM/>
- UNIFORM LANGUAGE FOR TESTIMONY AND REPORTS (ULTR), DEPARTMENT OF JUSTICE
Guidance on the submission of scientific statements by the DOJ's forensic examiners when drafting reports or testifying.
 - Approved ULTR for the Forensic Firearms/Toolmarks Discipline – Pattern Examination
 - Approved ULTR for the Forensic Firearms/Toolmarks Discipline – Pattern Match<https://www.justice.gov/olp/uniform-language-testimony-and-reports>

7. COMMON TERMS AND DEFINITIONS

- **Acquisition.** The digital imaging of a cartridge case via the BRASSTRAX Acquisition Station, or of a bullet via the BULLETRAX Acquisition Station.
- **BRASSTRAX.** The equipment into which a user inserts a cartridge case and which acquires a high definition, three-dimensional image of that cartridge case and uploads the image for comparison to other cartridge case images in the NIBIN database (and for continued storage in that database).
- **BULLETRAX.** The equipment into which a user inserts a bullet, and which acquires a high definition, three-dimensional image of that bullet that is then uploaded for comparison to other bullet images in the NIBIN database (and for continued storage in that database).
- **Cartridge Case.** The metal container of firearm ammunition that holds all the other components (the gunpowder, the bullet, the primer, the wad) which together comprise a cartridge. Sometimes incorrectly called a shell, shell casing, brass, or hull.
- **CGIC – Crime Gun Intelligence Center.** ATF-led, multi-agency regional groups that use the investigative leads generated by the NIBIN process to identify, investigate, and refer for prosecution those engaged in serial shootings (and other crimes).
- **Firearm and Tool Mark Examiner** (also “Firearm Examiner”). A forensic scientist educated, trained, certified, and experienced in determining whether cartridge cases or bullets were fired by a particular firearm, based on marks each firearm leaves on the cartridge case or bullet when it is fired. This examiner analyzes cartridge cases or bullets under a comparison microscope to reach an expert opinion. This person will be the expert witness for trial.
- **IBIS – Integrated Ballistic Identification System.** IBIS is the technology that underpins NIBIN. It includes the BRASSTRAX Acquisition Stations, BULLETRAX Acquisition Stations, MATCHPOINT Analysis Stations, the Correlation Engines, and Data Concentrators used in the NIBIN process.
- **IBIS Technician** (also “NIBIN Technician”). Includes “acquisition technician” and “correlation review technician”. An acquisition technician is educated, trained, and experienced at acquiring cartridge case or bullet images using BRASSTRAX or BULLETRAX, respectively. A correlation review technician is educated, trained, and experienced at reviewing search results in MATCHPOINT for likely matches. Technicians do not prepare firearm identification reports and are not expert witnesses for trial.

- **MATCHPOINT.** The computer station that projects side-by-side cartridge case or bullet acquisitions on a screen for visual comparison by correlation review technicians and firearm examiners.
- **NIBIN – National Integrated Ballistic Information Network.** This term is broadly used to describe the entire automated process for acquisition, storage, comparison, and review of potentially matching digital images of cartridge cases and bullets.
- **NIBIN Hit.** The information given to law enforcement investigators indicating a firearm examiner has concluded, after examination under a comparison microscope, that the same firearm fired particular cartridge cases or bullets recovered at one or more crime scenes.
- **NIBIN Lead.** The information given to law enforcement investigators indicating that the same firearm likely fired particular cartridge cases recovered at one or more crime scenes. This lead is based on a correlation review technician finding likely matches after reviewing acquisitions on MATCHPOINT, and at least one and sometimes two other technicians or firearm examiners visually confirming a likely match on MATCHPOINT. A NIBIN Lead is not based on microscopic examination by a firearm examiner.
- **NIBIN Site.** A location where law enforcement agencies deploy the NIBIN technologies and process.
- **Serial Shooter.** A person known, through NIBIN and other evidence, to have fired one or more firearms at multiple crime scenes over time. This is different from a “mass shooter”, who shoots multiple people in a single criminal episode.
- **Test Fires.** The cartridge cases or bullets fired under controlled conditions from a firearm recovered by law enforcement. These test-fired cartridge cases or bullets thus bear the unique markings left on them by that recovered firearm. These cartridge cases or bullets, in essence, bear the firearm’s “mechanical fingerprint.” Their digital images are acquired into NIBIN and compared to images of cartridge case or bullet evidence found at prior crime scenes to help determine whether the recovered firearm may have fired the shots at those crime scenes.

APPENDIX: Models

- A1. BASIC DESCRIPTION OF THE NIBIN PROCESS
- A2. NIBIN LANGUAGE FOR WARRANT AND COMPLAINT AFFIDAVITS
- A3. DIRECT EXAMINATION OF EXPERT WITNESS
- A4. DIRECT EXAMINATION OF CASE AGENT WITNESS
- A5. NIBIN LANGUAGE FOR DISCOVERY MOTION OPPOSITION
- A6. NIBIN-RELATED DEMONSTRATIVE DIAGRAMS AND IMAGES

A1. BASIC DESCRIPTION OF THE NIBIN PROCESS

For use in any pleading or courtroom context in which you need to explain what NIBIN is, such as detention hearings, sentencing, or opening/closing.

Your facts:

E.g., "The defendant possessed and fired this firearm on at least three other occasions. We know this from GPS data as well as from his own and other witness statements about those prior shootings."

Standard NIBIN Description:

Law enforcement initially linked the defendant's firearm to those prior shootings using an automated forensic technology network called NIBIN. NIBIN stands for National Integrated Ballistic Information Network. It is the U.S. national automated network that searches for previously unknown links between events involving the same firearm. NIBIN relies on advanced technology called **IBIS®** (*the Integrated Ballistic Identification System*). IBIS uses specialized 3D microscopy to capture the marks left by firearms on fired bullets and cartridge cases, and then uses algorithms to find similarly marked bullets or cartridge cases within the NIBIN database of captured images. IBIS technology is based on the principles of firearm identification.

Firearm identification is a sub-category of toolmark identification. The purpose of firearm identification as a discipline of forensic science is to determine if a bullet, cartridge case, or other ammunition component was fired by a particular firearm. This determination is possible because the surfaces of each fabricated item of the firearm (*such as the firing pin, barrel, ejector, and breech block*) have random tool marks from the manufacturing process that leave marks on components of the fired ammunition. Thus, these components bear the firearm's "mechanical fingerprint" once fired. Law enforcement uses NIBIN as a search tool to find multiple cartridge cases or bullets that were likely fired by the same firearm.

Here's how it works: When law enforcement recovers a firearm like the defendant's, they test fire it, and an acquisition technician puts the test-fired cartridge case into an imaging machine called "BRASSTRAX." *[If appropriate, substitute or add "BULLETRAX" here when dealing with bullets, although NIBIN does not contain millions of bullet acquisitions.]* BRASSTRAX takes a high definition, 3D, digital "picture" of the cartridge case. This is known as "the cartridge case acquisition." BRASSTRAX automatically uploads the cartridge case acquisition onto NIBIN, triggering an automatic search on NIBIN's database of millions of cartridge case acquisitions. NIBIN's infrastructure automatically uses algorithms to determine what cartridge case acquisitions already in the database have markings that are similar to those on the newly entered cartridge case acquisition.

If NIBIN finds any similarly marked cartridge cases in the database, it generates a ranked list of those similar cartridge case acquisitions.

The correlation review technician then uses a machine called “MATCHPOINT” to review the listed comparable acquisitions on-screen, side-by-side with the test-fired cartridge case acquisition. The technician visually determines whether there is a likely match. If the technician determines that there is a likely match, a second *[and third]* peer reviewer *[(technicians or a technician and a firearm examiner)]* reviews that determination. If the technician and peer reviewer(s) all determine that the cartridge cases likely match, they now have what is called a “NIBIN Lead.” This investigative lead is passed to law enforcement investigators. Law enforcement follows the lead where it takes them now that they know there is a potential connection between the firearm and certain prior crime scenes.

Depending on how that investigation pans out, a firearm examiner will eventually collect the actual cartridge cases from the test fire and the crime scenes, and will examine them under a conventional comparison microscope, applying his or her expertise and reliable methods. The examiner will then write a formal expert opinion as to whether the cartridge cases at issue were fired by the same firearm. This opinion is based solely on the firearm examiner’s expertise and application of reliable methods. It does not rely on the NIBIN process or results. Thus, NIBIN’s use is a background step in a process that, if likely matches are found, leads to the firearm examiner’s stand-alone opinion reached after microscopic examination of the actual cartridge cases themselves.

The basic workflow of the entire NIBIN process is depicted in this demonstrative diagram...

[Consider using demonstrative images/diagrams from the Appendix to help explain the NIBIN process.]

In this case....

A2. NIBIN LANGUAGE FOR WARRANT AND COMPLAINT AFFIDAVITS

Prior to Full Expert Opinion from a Firearm Examiner

Your facts:

E.g., *"After recovering the firearm from the defendant's car, the crime lab test fired it and entered the test-fired cartridge case acquisition into the National Integrated Ballistic Information Network (NIBIN)."*

Standard NIBIN Language:

NIBIN is the U.S. national automated network that searches for previously unknown links between events involving the same firearm. NIBIN relies on advanced technology called **IBIS®** (*the Integrated Ballistic Identification System*). IBIS uses specialized 3D microscopy to capture the marks left by firearms on fired bullets and cartridge cases, and then uses algorithms to find similarly marked bullets or cartridge cases within the NIBIN database of captured images. IBIS technology is based on the principles of firearm identification.

The firearm identification discipline is based on the fact that the surfaces of each fabricated item of the firearm (*such as a the firing pin, barrel, ejector, and breech block*) have random tool marks from the manufacturing process that leave marks on components of the fired ammunition. Thus, these components bear the firearm's "mechanical fingerprint" once fired.

Law enforcement uses NIBIN as a search tool to find multiple cartridge cases or bullets that likely were fired by the same firearm. The International Association of Chiefs of Police endorses NIBIN as a best practice. A trained correlation review technician visually examines, side-by-side, on-screen, potentially matching images returned by NIBIN search. If the technician determines a likely match, at least one trained peer reviewer confirms that determination. This whole process is conducted pursuant to Minimum Required Operating Standards mandated and enforced by ATF and a national NIBIN governing board.

Here, the correlation review technician and peer reviewer(s) determined and confirmed, based on digital images, that cartridge case X and cartridge case Y were likely fired by the same firearm, i.e., the firearm recovered from defendant's vehicle. At this stage, a firearm examiner has not performed a microscopic comparison of the actual cartridge cases to reach a final conclusion that they match.

A3. DIRECT EXAMINATION OF EXPERT WITNESS

For use in Trial Testimony.

Expert's Background and Qualifications:

1. What do you do for a living? Where?
2. How long have you worked there as a firearm examiner?
3. Does your lab work with particular law enforcement agencies? Which ones?
4. How does the lab work with them?
[answer should describe the basic relationship]
5. How long have you been a firearm examiner overall?
6. What does a firearm examiner do, generally?
[answer should summarize the basics of toolmark identification as a discipline and firearm identification as a sub-discipline – you can use the AFTE's Job Description of the Firearm and Toolmark Examiner referenced in Section 6 as a helpful guide]
7. How did you become a firearm examiner? How long did each stage take?
[training, education]
8. After all that, is there also any certification process? Did you complete that?
[Certification by AFTE is a voluntary process and not required. Also, MROS does NOT require certification of technicians for NIBIN use. The only requirement is to be "trained". Therefore, this line of questioning should be avoided unless the individual is certified.]
9. What is required to get certified?
[see AFTE Certification Program referenced in Section 6]
10. What organization controls that?
[AFTE]
11. Are you a member of AFTE?
12. How does one become a member of AFTE?
13. Are you a member of any other professional organizations?
14. Have you completed any other training or education in firearm examination since you first got certified?
[answer should describe what continuing training and education the expert has had, with particular emphasis on that which is relevant to determining whether cartridge cases [or bullets] were fired by the same firearm]

15. Have you done any teaching, speaking, presenting, or instruction yourself?
[answer should emphasize any that is relevant to determining whether cartridge cases (or bullets) were fired by the same firearm]
16. Have you done any research or published any papers or studies in your field? How many? On what topics?
[consider asking this only if the expert has done any studies or written any papers relevant to determining whether cartridge cases (or bullets) were fired by the same firearm – if so, emphasize those]
17. Let's circle back for a minute to complete your work history. Where was your first job as a firearm examiner? How long were you there?
18. Where was your next job? How long were you there?
[repeat as necessary]
19. How many microscopic examinations of cartridge cases *[or bullets]* have you done over the course of your career as a firearm examiner?
20. Have you testified in court before as an expert in firearm identification? How many times? In what courts?
[only ask these questions if the expert has testified as an expert in the past]
21. More specifically, have you testified before as an expert on whether particular cartridge cases *[or bullets]* were fired by the same firearm?
[only ask these questions if the expert has testified on this specific topic in the past]
22. How many times have you been allowed to testify as an expert in that area? In what courts?

Method used by Firearm Examiners generally:

1. Now let's talk in more detail about your current job – what do you do, day-to-day?
[answer should include something like "one of my most common tasks is to examine cartridge cases or bullets to determine whether they were fired by a particular firearm." The expert should mention and explain the phrase "common source determination" if he or she hasn't already. Also consult AFTE's Job Description of the Firearm and Toolmark Examiner referenced in Section 6 as a guide]
2. Is there a standard, accepted method you apply when asked to do a common source determination? What is that method?
[consult the Firearm and Toolmark Identification book referenced in Section 6 as a helpful guide]
3. Is the method based on any recognized principles? *[yes]* What are they?
[answer should describe the basic principles of the toolmark identification discipline]
4. Is there any variation in the method? *[no]*

5. What facts and data do you need in order to apply this method to reach a reliable conclusion?
[firearm and cartridge cases or bullets – answer should also explain what it means for these objects to be “suitable for comparison,” and why that matters]
6. What, if any, tools and equipment do you use in applying this method?
[answer should mention and describe conventional comparison microscopy]
7. Has the method been validated? *[yes]* How?
[The method of comparison microscopy for firearm identification is validated by error rate studies in which examiners have been provided samples of different bullets and cartridge cases and asked to provide conclusions with respect to common source. There are dozens of published error rate studies. However, these studies do not validate the basic premise that tools make different toolmarks or that different barrels leave unique marks. That aspect has been validated by machine-based studies based on objective similarity data.]
8. Is this method generally accepted by the majority of firearm examiners? *[yes]* How do you know that?
[answer should mention that this is the one method taught, it is the AFTE standard]
9. Is there any competing method other firearm examiners use, or is there just this one method used by all?
[Generally, firearm examiners have the same approach to common source determination using comparison microscopy, where they look for patterns of correspondence. There are examiners who apply a quantitative criterion to striated toolmarks such as those observed on bullets and this is referred to as the CMS (consecutive matching striations) method, which is still based on comparison microscopy but has been referred to as a different method than pattern matching without the quantitative criterion.]

NIBIN Role:

1. Did you apply this method while examining and reaching an opinion about any evidence in this case being tried here today?
2. Did you have sufficient data to apply the method and reach an opinion?
3. What data did you have?
4. Take a look at exhibits X and Y. Do you recognize them? What are they?
5. Were they “suitable for comparison”?
[if the cartridge cases or bullets were damaged but still suitable, the expert should embrace the damage and explain how and why he or she concluded that they were nonetheless suitable for comparison]

6. Did you do a microscopic examination and reach an opinion about these exhibits?
7. Before we talk about that examination, how is it you came to be examining these particular cartridge cases *[or bullets]* out of the thousands that may be in the evidence rooms of those law enforcement agencies you said your lab works with?
[answer should include mention of NIBIN]
8. What is NIBIN?
[answer should be consistent with the explanation in Section 2]
9. Is NIBIN commonly used by law enforcement in the U.S.?
[yes, by over 5,000 law enforcement agencies. Consider having the expert mention that NIBIN has been endorsed by the International Association of Chiefs of Police as a best practice (see IACP Resolution referenced in Section 6)]
10. How does the NIBIN process work?
[consider using demonstrative images/diagrams from the Appendix to help explain the NIBIN process, and make sure that the answer is consistent with the description in Sections 2 and 3]
11. Are there national standards that govern the use of NIBIN?
[yes, they are called the Minimum Required Operating Standards and apply to all labs and sites that use NIBIN (the MROS are referenced in Section 6)]
12. Were you involved in this NIBIN process you've described, and if so how?
[It is possible that the firearm examiner was involved in the peer-review of the NIBIN investigative lead, or they were not involved in the NIBIN process.]
13. To reach your opinion using your microscope to examine exhibits X and Y (which I promise we'll get to in a minute), did you rely on NIBIN? *[no]*
14. Did you rely on anything the technicians or anyone else in your lab told you about exhibits X and Y? *[no]*
15. Before you even turned on your microscope, did you have your mind made up that exhibits X and Y were fired by the same firearm? *[no]*
16. What, if anything, do you do to ensure that you've isolated your examination from any NIBIN influence and that you are not biased by a NIBIN Lead?
[Knowledge that there was a NIBIN lead is considered contextual information that could be biasing, at a subconscious level. Processes that could truly isolate the individual would be: 1) not knowing that there was a NIBIN connection by having that isolated from case information; 2) blind verification in which a second examiner is asked to examine and compare the evidence without knowing the results of the previous examination; 3) complete documentation including narrative in notes and photographs that allow for better verifiability of the examiner's conclusions.]
17. Did you do that here?

Expert Opinion and How It Was Reached:

1. Okay, now let's talk about what you did with exhibits X and Y. Please walk us through the steps.
2. Did those steps vary at all from the standard method you described earlier?
3. Did you encounter any problems in applying that standard method?
4. Did you have sufficient data to apply that standard method as you've been trained?
5. Again, did you rely on anything else?
6. Were you influenced by anything else?
7. After using your training and experience to apply that standard method to exhibits X and Y, were you able to reach an opinion?
8. What did you conclude?
[here is where the expert expresses his or her formal opinion]
9. What specifically about exhibits X and Y is your conclusion based on?
[here is where he or she can explain what the regions of interest are, what marks each has, their similarities, how many similarities there are, etc.]
10. How confident are you about your determination?
[per AFTE, the answer could include "The likelihood that this cartridge case was fired by a different firearm is so remote as to be considered a practical impossibility." Or per DOJ's ULTR, the answer could include "The probability that the two toolmarks were made by different sources is so small that it is negligible." (See Q10 in Section 5 for more on certainty language)]
11. Why?

[Move to admit exhibits X and Y if you have not already done so.]

A4. DIRECT EXAMINATION OF CASE AGENT WITNESS

For use in grand jury, at preliminary hearings, detention hearings, violations hearings, motions hearings, sentencing hearings, or trials.

1. What, if anything, did you do next in your investigation?
[answer should be, e.g., "I began looking at existing evidence and gathering further evidence from a shooting that happened a month before the incident in this case"]
2. Why were you doing follow-up investigation related to an incident that occurred at a different location and prior to the incident in this case?
[answer should be something like "because our forensic intelligence indicated the incident in this case was connected to the prior incident"]
3. What forensic intelligence indicated that the incidents were connected?
[answer should include mention of NIBIN and "NIBIN Lead notification"]
4. What is NIBIN?
[answer should be consistent with the description of NIBIN set forth in Section 2]
5. How does the NIBIN process work, generally?
[answer should be consistent with the description of the NIBIN process set forth in Section 3]
6. What does NIBIN tell you?
[answer should again mention "NIBIN Lead"]
7. Is NIBIN commonly used by law enforcement in the U.S.?
[yes, by over 5,000 law enforcement agencies, and it is endorsed as a best practice by the International Association of Chiefs of Police (see IACP Resolution referenced in Section 6)]
8. Are there national standards that govern this NIBIN process?
[yes, they are called the Minimum Required Operating Standards, and they apply to all labs and sites that use NIBIN (the MROS are referenced in Section 6)]
9. And you said NIBIN was used here? Using the same process that you described?
10. The national standards that you described – were they followed here?
[during prep, make sure that your case agent checks with someone at the lab/site and therefore can say, "yes, the standards were followed"]
11. What specifically was done in this case?
[answer should be consistent with the description of the NIBIN process set forth in Section 3]
12. Where? By whom?

13. What, if any, conclusion did they reach?
[e.g., that the firearm recovered from the defendant was likely the firearm fired during the prior incident]
14. How many technicians or firearm examiners agreed that there is a likely match between the cartridge cases *[or bullets]* in this case and those from the prior incident?
[during prep, make sure that the case agent knows exactly who did the initial review and who did the peer review(s)]
15. Did a firearm examiner then examine the cartridge cases *[or bullets]* under a microscope and reach an expert opinion? What was the firearm examiner's opinion?
[Ask these two questions only if a firearm examiner has indeed conducted a full analysis and you are having the case agent testify in a context where the rules of evidence do not apply]
16. Did this NIBIN process tell you the defendant is the one who possessed and fired the firearm at that prior incident?
[no]
17. Then what, if anything, did it tell you?
[e.g., "that the same firearm was likely used at both incidents, and the incidents had to be investigated further"]
18. What, if anything, did you do then with that forensic intelligence from NIBIN?
[here is where the case agent can explain what witness, phone, GPS, video, or other evidence was unearthed following the NIBIN Lead]
19. What, if anything, did you find as a result of that further investigation?

A5. NIBIN LANGUAGE FOR DISCOVERY MOTION OPPOSITION

Information Related to How NIBIN Functions Is Not Discoverable.

1. The defendant has moved to compel the production of information related to the functioning of NIBIN's automated components. Specifically, the defendant requests the production of _____.
2. The Court should deny this request because it is beyond the scope of Rule 16.
3. NIBIN stands for National Integrated Ballistic Information Network. It is the U.S. national automated network that searches for previously unknown links between events involving the same firearm. NIBIN relies on advanced technology called **IBIS®** (*the Integrated Ballistic Identification System*). IBIS uses specialized 3D microscopy to capture the marks left by firearms on fired bullets and cartridge cases, and then uses algorithms to find similarly marked bullets or cartridge cases within the NIBIN database of captured images. IBIS technology is based on the principles of firearm identification.
4. When that technology finds bullets or cartridge cases that likely "match" (*i.e., they were likely fired by the same firearm*), a trained technician reviews the images of the cartridge cases or bullets that the technology has found. If he or she determines that there is indeed a likely match, at least one "peer reviewer" then reviews the images. If the reviewing technician and all the peer reviewers agree that there is a likely match, a "NIBIN Lead notification" is sent to law enforcement for further investigation of the potential connection between the incidents which they now believe likely involved the same firearm.
5. If that investigation leads to a prosecution which requires proof of the connection between the incidents, a forensic firearm examiner is directed to retrieve the actual bullets or cartridge cases and analyze them independently using that profession's standard, accepted method of microscopic examination. Based only on that examination of the actual bullets or cartridge cases under a conventional comparison microscope, the firearm examiner reaches an expert opinion.
6. To form his or her opinion, the firearm examiner does not rely on any data or determination from the NIBIN technicians, the peer reviewers, the NIBIN equipment, or its operation. The foundation of the firearm examiner's analysis and expert opinion is his or her own microscopic comparison of the physical bullets or cartridge cases using his or her training and experience to apply the profession's standard method to that physical data. NIBIN is deployed as a search tool to find likely matches; it is used to prevent the firearm examiner from having to compare

many thousands of actual bullets or cartridge cases by hand to search for possible matches linking other crimes. NIBIN is not used to influence or inform the expert's own independent opinion in any way.

7. The firearm examiner's opinion in no way relies on the accuracy of NIBIN's search. The search accuracy of the NIBIN equipment is not necessary for the firearm examiner's opinion to be reliable. The search results are non-quantified and are irrelevant to the opinion. The NIBIN search just happens to be how the examiner came to be examining these particular items.
8. Rule 16(a)(1)(E) requires the government to disclose documents if it intends to use them in its case-in-chief or if they are material to preparing the defense. The government does not intend to use documents related to the NIBIN function in its case-in-chief. The government intends to use testimony from the firearm examiner whose independent expert opinion has already been disclosed to the defendant. Accordingly, disclosure of NIBIN-function information would only be required if that information were material to preparing the defense.
9. The defendant has made no showing that it is, nor could he. Again, the accuracy of NIBIN's search of cartridge case (*or bullet*) images has nothing to do with the expert's conclusion, after microscopic comparison of the cartridge cases (*or bullets*) themselves, that they were fired by the same firearm. Nor does the accuracy of NIBIN's search bear on any other fact, element, issue, or defense in this case.
10. It appears that the defendant's request for NIBIN-function information rests only on his misunderstanding about NIBIN and its relationship to the firearm examiner's expert opinion. Because the firearm examiner's opinion is wholly separate from NIBIN's function, there are no grounds for disclosure under Rule 16(a)(1)(E).
11. Given that the requested NIBIN information has no relevance to the expert's opinion, that information also is not discoverable under Rule 16(a)(1)(G). Nor would it even be subject to disclosure as "underlying facts and data" under F.R.E. 705.
12. Therefore, there are no grounds supporting disclosure of the requested NIBIN-function information, and the Court should deny the defendant's request.

A6. DEMONSTRATIVE DIAGRAMS AND IMAGES

The remaining pages of the toolkit include demonstrative images and diagrams for common courtroom presentations.

- A6-1. NIBIN Process Overview (Example)
- A6-2. Firearm Components: Breech, Firing Pin, and Ejector
- A6-3. Cartridge Components (Centerfire)
- A6-4. Fired Cartridge Case
- A6-5. IBIS BRASSTRAX Acquisition Unit
- A6-6. IBIS BRASSTRAX Acquisition Unit (Inserting a Cartridge Case Holder)
- A6-7. IBIS BULLETTRAX Acquisition Unit
- A6-8. IBIS MATCHPOINT Analysis Station
- A6-9. IBIS MATCHPOINT Analysis Station Screen – Display Example

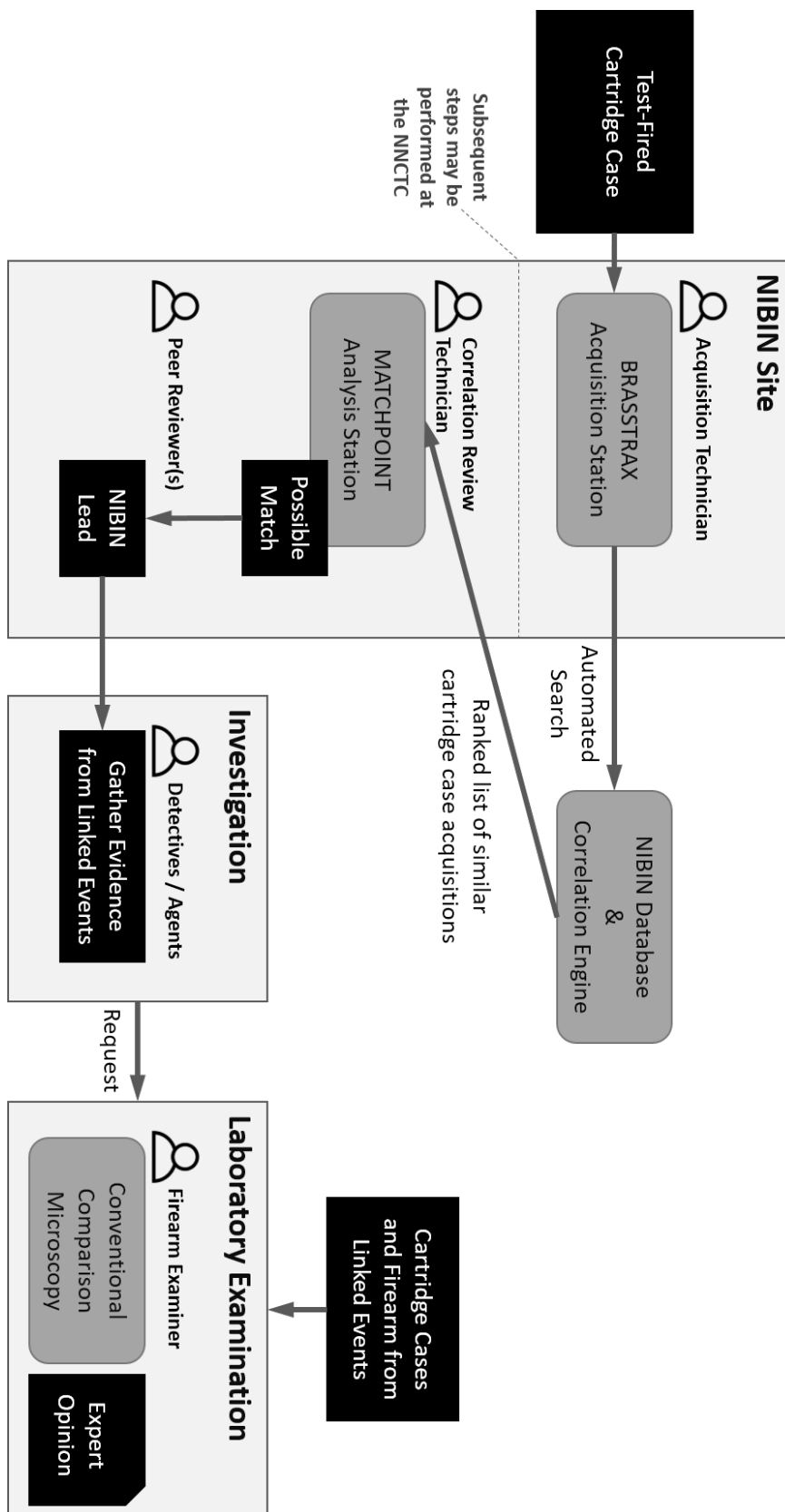


FIGURE A6-1 – NIBIN PROCESS OVERVIEW (EXAMPLE FOR CARTRIDGE CASE FROM RECOVERED FIREARM)

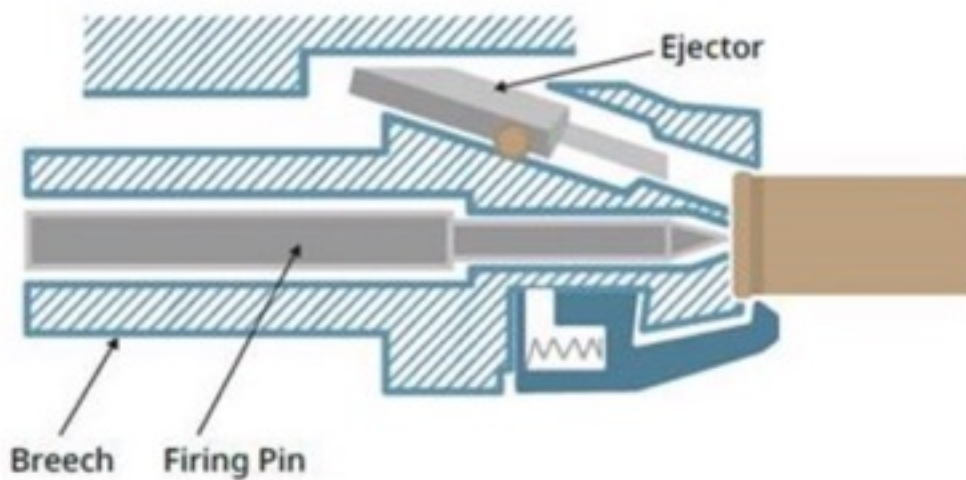


FIGURE A6-2 – FIREARM COMPONENTS: BREECH, FIRING PIN, AND EJECTOR

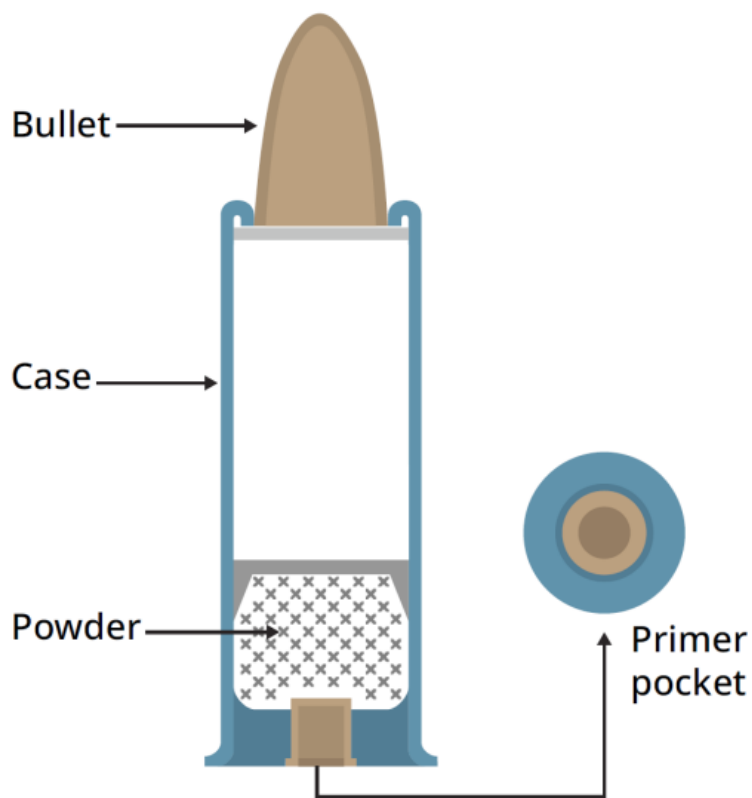


FIGURE A6-3 – CARTRIDGE COMPONENTS (CENTERFIRE)



FIGURE A6-4 – FIRED CARTRIDGE CASE



FIGURE A6-5 – IBIS BRASSTRAX ACQUISITION UNIT



FIGURE A6-6 – IBIS BRASSTRAX ACQUISITION UNIT (INSERTING A CARTRIDGE CASE HOLDER)



FIGURE A6-7 – IBIS BULLETRAX ACQUISITION UNIT



FIGURE A6-8 – IBIS MATCHPOINT ANALYSIS STATION



FIGURE A6-9 – IBIS MATCHPOINT ANALYSIS STATION SCREEN – DISPLAY EXAMPLE

