



TEXAS FORENSIC SCIENCE COMMISSION

*1701 North Congress Ave., Suite 6-107
Austin, Texas 78701*

INVESTIGATIVE PANEL MEETING MINUTES

**Complaint No. 25.77; North Texas Federal Public Defender's Office
(Houston Police Department; Firearms/Toolmarks)**

The Texas Forensic Science Commission (Commission) Investigative Panel for Complaint No. 25.77 met on May 27, 2026, at the Barbara Jordan State Office Building, 1601 Congress Avenue, Room 2.002, Austin, Texas 78701. The meeting was conducted as a videoconference meeting pursuant to Texas Open Meetings Act, Government Code Section 551.127.

Panel Members Present: Jeffrey Barnard, MD, Presiding Officer
Mark Daniel, JD
Patrick Buzzini, PhD

Members Absent: None

Staff Present: Lynn Garcia, General Counsel
Robert Smith, Senior Staff Attorney
Jarrah Kennedy, Scientific Program Coordinator
Leigh Tomlin, Associate General Counsel
Chelsea Estes, Commission Coordinator

The following members attended the meeting via Zoom video conference: Dr. Patrick Buzzini and Mr. Mark Daniel.

During this meeting, the Panel considered and acted on the following items. The Panel took breaks as necessary.

Barnard called the meeting to order at 1:05 p.m. Panel members were present as indicated above.

1. Discuss allegations and evidence related to Complaint No. 25.77.

Smith provided background on Complaint No. 25.77, filed by the North Texas Federal Public Defender's Office on behalf of defendant Charles Mamou. The complaint concerns testimony given in 1999 by a former Houston Police Department (HPD) firearm and toolmark analyst who testified that magazine markings on an unfired cartridge recovered at the scene of the 1998 murder of Mary Carmouche showed the cartridge had been cycled through the same magazine as fired cartridge casings from a separate crime scene associated with Mamou. Mamou was sentenced to death. No weapon or magazine was ever recovered.

The panel noted significant documentation deficiencies in the 1999 case record: no photographs were taken and no detailed analytical notes were kept—only conclusory statements appear in the

technical record. Panel members observed that under modern standards, such documentation failures alone would make meaningful review of the conclusions impossible.

2. Discuss relevant research and scientific papers regarding magazine mark comparisons (MMCs).

The panel reviewed the available scientific literature on MMCs. Smith noted that only two to three relevant articles exist in the Association of Firearms and Toolmark Examiner's (AFTE) Journal on this topic. Key findings from the literature review include:

- a. A 2001 study concluded that magazine marks contain "limited information" and should be examined with "extreme caution," noting that manufacturing methods create a high risk of subclass characteristics.
- b. A 2006 study found that examiners could not differentiate between three consecutively manufactured magazines, and what appeared to be accidental characteristics were in fact subclass characteristics.
- c. Texas case law: *Sexton* (2002) held that magazine mark comparisons failed reliability standards where the examiner lacked knowledge of the manufacturing process and did not have access to the actual magazine for testing.

3. Discuss factors pertaining to the scientific integrity, reliability, and repeatability of MMCs, including the absence of a reference weapon.

The panel identified the following critical scientific gaps:

- a. No isolation studies: No research isolates magazine marks as the sole comparison feature and reports repeatability, reproducibility, or error rates for this subset of examination.
- b. No frame of reference: Examiners lack empirical metrics to determine whether observed marks are rare or common across the population of magazines.
- c. No validation data: Unlike other firearm and toolmark comparisons for which validation studies exist, no comparable dataset exists for magazine mark comparisons used in isolation.
- d. Repeatability testing impossible without the magazine: Without the actual magazine, an examiner cannot test whether alternate magazines produce similar marks or whether marks are stable over time.

Dr. Buzzini emphasized that the presence or absence of the magazine is not the fundamental issue—the core problem is the lack of empirical data defining matching criteria. He noted that anecdotal examiner experience over 20 years does not substitute for measured population rarity. Dr. Buzzini proposed a three-phase validation study framework: 1) examine cartridges before magazine insertion; 2) create lip marks; 3) cycle and fire it to see what they look like (with multiple replications across the same and different firearms of the same caliber). He expressed support for potential investigative use of magazine marks for case-to-case connections (like NIBIN, AFIS, or CODIS) but opposed evaluative or courtroom use absent an empirical foundation.

Dr. Barnard identified similar compounding limitations in a 1999 case where the comparison involved a fired versus unfired cartridge without either a weapon or magazine, representing multiple levels of unsupported analysis stacked on one another.

Mr. Daniel concluded that, based on the literature and studies reviewed, current practice lacks the scientific foundation required to support source-level identification using magazine marks alone.

The panel also canvassed current Texas crime laboratory practices:

- a. Houston PD: Does not perform magazine mark comparisons.
- b. Tarrant County: Permits MMCs only when supported by replication using test exemplars from the actual magazine.
- c. Austin PD: Magazine marks are not often used as the sole basis for an identification; they are typically used to support identifications in conjunction with other marks such as firing pin impressions and breech face marks.

4. Discuss possible consultation with statewide firearms group and/or other subject matter experts regarding scope, observations, and recommendations.

The panel agreed that the draft report will be reviewed by panel members and then submitted to the Texas statewide firearms examiner working group for feedback before finalization. The panel also agreed to consult the firearms task force regarding the existence of relevant empirical data and potential interest in conducting validation studies. The target for presentation of the final report to the full Commission is the July 2025 meeting.

The panel further noted that the scope of the investigation is limited to reliability and best practices. Given the age of the underlying case (1999), the panel is not investigating individual professional negligence.

The panel acknowledged a pending matter regarding the physical evidence: HPD has located the actual cartridge cases from both crime scenes. Those items are available for re-examination should the parties or a court choose to pursue that avenue, although the scientific basis for the original conclusions remains problematic.

The panel commended the North Texas Federal Public Defender's Office for the quality of its complaint submission, describing it as exceptionally well-written, clear, and reflective of a thorough understanding of Commission processes. Panel members noted that the complaint achieved the "Goldilocks" standard of being neither too broad nor too narrow in scope.

5. Discuss observations and recommendations for the Final Investigative Report, including possible accreditation checklist items.

The proposed core finding in the matter is:

A positive source-level identification of two cartridge cases having been cycled through the same specific magazine, based solely on magazine marks and without the magazine, is not currently supported by scientific literature or validation studies.

The panel agreed the final report will include the following supporting observations:

- a. The technical record in the 1999 case makes review of conclusions impossible due to the absence of photographs and detailed analytical notes.
- b. Current literature does not support magazine mark comparisons as a sole method of identification.
- c. Magazine marks are real, observable tool marks that may serve a corroborative function when combined with more robust marks (breech face, firing pin, ejector/extractor marks), but are secondary features.
- d. Small existing studies demonstrate a high risk of subclass carryover and an inability to differentiate consecutively manufactured magazines.
- e. Without the magazine, an examiner cannot test the alternate magazine hypothesis or assess mark stability over time.

The panel's research recommendations for inclusion in the report include:

- f. The field requires empirical data demonstrating that magazines leave unique and stable accidental characteristics.
- g. Controlled studies are needed that measure error rates, repeatability, and reproducibility when magazine marks are used as the sole comparison feature.
- h. A validation study would require Dr. Buzzini's proposed three-phase examination framework: pre-insertion, post-cycling, and post-firing, with multiple replications across the same and different firearms of the same caliber.

The Panel directed staff to incorporate the meeting discussion into a final draft report for the Commission's July 31, 2026, quarterly meeting. Staff will send the two relevant AFTE journal articles to Dr. Buzzini for detailed review of materials and methods sections. Panel members will review and provide comment on the draft report before submission to the statewide firearms working group for review.

MOTION AND VOTE: *Barnard moved to direct staff to draft a final investigative report to include the items discussed throughout the panel meeting, and to present the draft to the statewide firearms working group for review and presentation to the Commission at its July 31, 2026 quarterly meeting. Buzzini seconded the motion. The Panel unanimously adopted the motion.*

6. Public comment.

No members of the public offered public comment.

7. Schedule additional meeting if necessary.

The Panel did not schedule another meeting.

8. Adjourn.

Barnard adjourned the meeting at approximately 2:00 p.m.