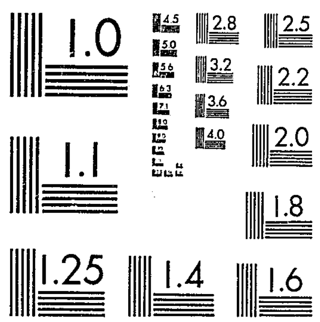

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October 1980

FINAL REPORT

"Forensic Sciences
Certification Program"

A Tax Exempt
Non-Profit Corporation
Identification Number: 237050691

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October 1980

FINAL REPORT

"Forensic Sciences Certification Program"

AUTHORS

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ABSTRACT

In order to meet the increasing demand for forensic science services by all elements of the civil and criminal justice system, while insuring the continued competence of forensic science professionals, certification research planning committees were established in six forensic science disciplines -- toxicology, odontology, physical anthropology, psychiatry, questioned document examination and criminalistics.

These committees were organized to accomplish three primary goals: study the ramification of establishing certification programs for the forensic sciences profession; structure the mechanism and create implementation plans for each of the six disciplines included in the project; and field test the resultant plans.

During the four years of this research program, five of the disciplines achieved operational status as certifying bodies. Toxicology, Odontology, Physical Anthropology, Psychiatry and Questioned Documents developed and implemented individually structured certification program. The sixth discipline, Criminalistics, accomplished a great deal during the research planning phase of its work. However, time did not permit the implementation of an operational certification program.

ACKNOWLEDGEMENT

For his guidance and unstinting contributions to every facet of this research program, the Forensic Sciences Foundation wishes to thank Kurt M. Dubowski, Ph.D. His initial papers on certification (its philosophy and the mechanics thereof) coupled with his tireless participation in the four year duration of this research program were the catalysts to the outstanding success of the project.

Credit for overcoming the traditional inertia that existed at the start of the program belongs to the dedicated scientists on each of the five planning committees and subsequent operational certification boards.

The Criminalistics Certification Study Committee, although not successfull in achieving discipline-wide certification, left its mark through its scholarly study of the myriad problems faced by a discipline with many diverse sub elements. Special thanks are extended to its chairman, W. Jack Cadman.

Without financial support from the National Institute of Justice (NIJ) none of the projects successes could have been achieved. So to John O. Sullivan, NIJ Project Monitor, we say thank you for recognizing the need for this research effort.

Credit for writing Chapter 3 of this report and for assisting in a review of the entire report for consistency goes to Beth Ann Lipskin of the Foundation's professional staff.

The Foundation is grateful for the outstanding support rendered by the project's Administrative Assistant Mrs. Doris T. Rowzee and for the added support of Deborah A. Heath, Marshelle Hailstock, and Nancy Dougherty.

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EXECUTIVE SUMMARY

Background.

The five currently operational forensic science certification programs were conceived in 1974 in the American Academy of Forensic Sciences' "Mason White Papers." Among a number of recommendations for improving the quality of service performed by the several disciplines of the forensic sciences, the Mason White Papers recommended that a study be made as to the desirability and feasibility of certification.

That recommended study was accomplished by a committee within the Academy and in May, 1976 LEAA awarded the first of three research grants to the Forensic Sciences Foundation (FSF) to design and field test certification programs for the profession. In the course of the next four years, five disciplines completed their field tests and commenced operational certification programs for scientists: Forensic Anthropology, Forensic Document Examination, Forensic Odontology, Forensic Psychiatry, and Forensic Toxicology. Criminalistics did not reach an operational status prior to the conclusion of this project.

Forensic Jurisprudence and Forensic Pathology.

Two additional forensic science disciplines were not included in the four year research project. Forensic Jurisprudence was included in the first of the three LEAA grants which supported this project and during that period it partially completed its feasibility study. However, fund limitations in the second and third grants forced LEAA to eliminate Forensic Jurisprudence from further participation in the program. Forensic Pathology was never included in the project because it already had an advanced certification program.

Three Phases of Research.

Although each discipline approached the question of certification in a manner compatible with its unique characteristics and needs, all accomplished the following phases of work.

- A study of the feasibility and desirability of implementing certification programs.
- The design of specific implementation plans.
- The field testing of each plan.

Phase I. The Feasibility Studies.

During this initial phase of work, emphasis was placed on the study of ongoing certification programs in other scientific fields

and an analysis of the general applicability of specific certifying activities and procedures to the forensic science disciplines.

Also during this period, leading professionals in each discipline were queried as to 1.) the need for certification in their field, 2.) the feasibility of the idea, 3.) their availability to assist in the arduous tasks ahead.

The success of this phase of work is, in part, attributed to the excellent communication that existed between those engaged in this phase of work. Studies, findings and conclusions reached on various facets of the problem were passed between discipline oriented groups in a most timely manner. In so doing the needless duplication of effort was avoided and all study groups attained a common, high level of understanding of issues and alternative concepts. Nobody reinvented the wheel during this phase of work.

It was concluded from the feasibility studies that:

- It was mechanically feasible to design and implement certification programs.
- An acceptable number of highly qualified scientists, in each discipline, would contribute their time to the development of implementation plans.

Phase II. The Design of Implementation Plans.

Critical to this phase of the project was the need to gain the support of the leading professional societies related (in some manner) to the forensic sciences. That support was essential for two reasons. Without it, the contemplated program would lack credibility with professionals in the field. Without it, an accusation might be made that the contemplated certification appeared to be 1.) self serving to the interests of a few or 2.) exclusionary for reasons other than genuine ability.

Accordingly, oral and written presentations about the need for certifications and the basic tenets of the plans in question were made to a great number of professional organizations -- resulting in endorsements which made subsequent research efforts relatively easier to accomplish.

Following is a list of organizations that supported and participated in the project.

- American Academy of Forensic Sciences.
- American Academy of Psychiatry and the Law.
- American Society of Crime Laboratory Directors.
- American Society of Questioned Document Examiners.
- Association of Firearms and Toolmark Examiners.
- California Association of Criminalists.
- California Association of Toxicologist.

- Canadian Forensic Science Society.
- Mid-Atlantic Association of Forensic Scientists.
- Midwestern Association of Forensic Scientists.
- Northeastern Association of Forensic Scientists.
- Northwest Association of Forensic Scientists.
- Society of Forensic Toxicologists.
- Southern Association of Forensic Scientists.

Following the gaining of the above endorsements, temporary organizations entitled "Research Planning Committees" were created within each discipline. Their primary function was to assemble necessary information and data (germane to certification) and to design the basic mechanism by which to accomplish certification.

No two planning committees accomplished the above tasks in the same manner. Yet, five certification programs were designed (and became operational) during the four years (1976-1980) of the LEAA project. And a sixth discipline, criminalistics, designed a plausible plan but did not have sufficient time to implement it within that four year time frame.

In the course of the design phase over 150 meetings were held (most of which were funded outside of the LEAA grants) and in excess of 200 papers (individual and committee) were prepared and exchanged intra and inter committee.

Given the success of the design phase of this project it was concluded that:

- Gaining the early endorsement of as wide a spectrum as possible of professional societies which relate to forensic sciences was essential to the subsequent success of the program since said endorsements eliminated accusations of the program being self serving or exclusionary in terms of who was eligible to apply for certification.
- With the exception of criminalistics, each of the forensic sciences disciplines opted to certify its qualified professionals as generalists ... leaving the question of subspecialties for later consideration.
- With the exception of criminalistics, (and having coordinated its planning with the professionals in the field) each of the forensic sciences research committees elected to implement its basic certification plan without seeking the formal approval of a majority of the professionals in the field.
- Certification could only be accomplished on a national basis.

- The use of detailed application forms and brochures were extremely useful in discouraging applications from individuals who lacked the minimum qualifications.
- The use of "grandfather" clauses was essential to the initial acceptance of the proffered programs. ("Grandfathering" is a concept common to most certification programs in their initial stages. Applicants are evaluated during a brief period on the basis of their past work ... without the need to prove their competency through written and oral tests of proficiency.)
- Initial certification (with grandfathering) should be replaced at a specified time (usually three to five years after the initial offering) by a recertification program which considers such concepts as continuing education and testing.
- Publicizing the fact of certification and the names of those professionals who were certified was best accomplished by the distribution of an annual directory of diplomates to key users of forensic science services.
- Other successful means by which to publicize certification included news releases, diplomas and calling cards.
- Sufficient fees were necessary to provide funds for file housekeeping and staff support through the period covered by the certification program (three to five years).

Phase III. The Field Tests.

The field testing phase of this project consumed the greatest amount of project time of the three phases of effort. This resulted from the fact that all five disciplines which reached this level of accomplishment actually conducted research or field testing of several facets of certification beyond the mere mechanics of processing and evaluating applicants ... to wit:

- The study of requirements and procedures for continuing education.
- The design of second generation processing procedures.
- The alternative procedures for oral and written examinations.
- The requirements and procedures for recertifications.

Two alternative approaches were considered for the test cases to be used in exercising the certification systems created: design fictitious cases to be processed and analyzed by mock organizations; or use real applications and have the official certifying structure handle the processing. After two dismal attempts at fabricating test cases it was agreed that the field tests should utilize bona fide applications. (After all, nothing is more varied and unpredictable than the real world.)

Accordingly, the five disciplines which implemented certification programs began the field testing phase of this project by incorporating in the District of Columbia as tax exempt, non-profit certifying boards.

During the Course of this phase of research, the following level of certification was reached.

Discipline*	Queries Received	Applications Received	Number Certified June 30, 1980
ABFT	624	187	141
ABFO	298	67	41
ABFP	599	196	70
ABFA	100	29	25
ABFDE	459	159	126
			403

It was concluded by the five certifying boards that:

- Certification should be initiated in as simple a manner and with as simple a set of procedures as possible. (Murphy's Law was active during the Field Tests, e.g., "that which can go wrong ... will!")
- Organizational viability must be attained and maintained, e.g., every concept and procedure must be considered to be something less than perfect.
- Grandfathering must be terminated at an early date but not before continuing education plans and administration and examination procedures and vehicles have been formulated.
- Recertification plans must be made and announced years ahead of the fact.
- A Directory of Diplomates should be printed annually and given the widest possible distribution.

The Activities of the Criminalistics Certification Study Committee (CCSC)

As stated earlier in this summary, Criminalistics was the only discipline that did not attain an operational status during the course of this project. However, given the diverse nature of this scientific discipline, the advances made toward the development of a viable certification system attest to the efforts and wisdom, of the planners.

The fact is that of five designated criminalistic subspecialties, certification plans have been fully developed for two (serology and drug chemistry) and two others are being developed (firearms & toolmarks and toxicology.) In addition, a certification organizational structure

*ABFT . . . . American Board of Forensic Toxicology
ABFO . . . . American Board of Forensic Odontology
ABFP . . . . American Board of Forensic Psychiatry
ABFA . . . . American Board of Forensic Anthropology
ABFDE . . . American Board of Forensic Document Examiners

exists and the necessary incorporating papers and bylaws are ready for submission to the designated state authorities.

The fact also exists that when the comprehensive certification plan was submitted to the profession as a democratic vote, it failed passage. Sixty-two percent (62%) voted against the plan, as presented. As of this writing, the certification program is in limbo. The planners are uncertain as to what to do next. The profession is awaiting action from the leadership.

Two early decisions by the planners had a lasting impact on the direction and course of criminalistic certification. In early 1977 it became apparent that the profession distrusted the planners and their intentions. As a result comprehensive actions were taken to communicate with the profession at each step in the planning. One such measure was the polling of the profession at each significant decision point in the development of plans. The use of this democratic process included matters which generally constituted little threat to the individual scientists. However, the last poll asked if the voter favored the implementation of certification, as described in the Criminalistic Certification Study Committee (CCSC) report. The majority voted against the plan -- without explanation.

The second of the early committee actions to have a lasting impact on the design of the criminalistics certification effort involved the decision to consider certification by subspecialties as opposed to beginning with one general category. Once a solid case was made for one subspecialty, all subspecialty groups pressed their case. The generalist concept (the relatively simple way to start) was abruptly discarded.

In the development of the subspecialties to be included in the plan, the CCSC began with a list of 18 categories. The unmanageability of this number was quite evident to the planners and the list finally included the following subspecialties.

- Blood and Other Physiological Fluids.
- Drug Chemistry
- Firearms & Toolmarks.
- Trace Evidence (Arson & Explosives; Hair & Fibers; Paint; Glass; Soils; Gunshot Residues)
- Toxicology and Other Controlled Drugs.

The CCSC, recognizing that some existing organizations were logically the ones to develop specific plans, created the following planning structure.

Category	Planning Group	Certifying Organization
SEROLOGY	National Serology Peer Group	American Board of Criminalistics (ABC)
DRUG CHEMISTRY	National Drug Chemistry Peer Group	ABC
TRACE EVIDENCE EXAMINATION	(No Peer Group Formed)	ABC
TOXICOLOGY	(No Peer Group Formed)	American Board of Forensic Toxicology (ABFT)
FIREARM & TOOLMARK EXAMINATION	National Firearms/ Toolmark Peer Group	American Board of Forensic Firearms & Toolmark Examiners (ABFFTE)

As discussed earlier, ABC incorporating papers have been prepared but were not submitted to incorporating authorities because of the rejection of the certification concept. No peer group was formed for the study of trace evidence requirements because of limited grant funds. ABFT is currently considering its requirements for toxicology certification of criminalists. And ABFFTE has been incorporated and certification planning for firearm & toolmark examiners is underway.

The guidelines issued to each peer group included the following tasks:

- determine the type and scope of subjects to be included in certification
- determine the minimum qualifications applicants must possess to be eligible to take the examination
- determine the type of test(s) to be given and prepare a sample examination
- determine the logistics of constructing and administering the proposed certification program.

The Peer Group Committees were to select requirements which were fair, reasonable and relevant, which realistically reflected current practice, and which would be acceptable to the majority of their peers. They were instructed to select as criteria for certification the minimum qualifications a practitioner should possess in order to be competent to examine evidence in a crime laboratory without immediate supervision and to be prepared to qualify and testify properly in court.

In addition to formulating questions on the basic subject matter of each specific discipline, the Peer Group Committees were asked to include in each examination a series of questions designed to test the applicant's understanding of skills common to all disciplines in criminalistics - e.g, basic principles of individualization and identification,

scientific methodology, evidence handling, basic microscopy, communication, legal aspects and court testimony, literature of criminalistics, and general knowledge of criminalistics. The peer groups were also asked to consider preparing training or study guides for the examinations.

The products of two peer group working within these guidelines was included in the CCSC "Certification Proposal - A Final Report to the Profession." This was the document referred to in the ballot question: "Are you in favor of implementation of certification as described in the CCSC Report?"

Epilogue.

In the endless task of increasing the quality of scientific work done by forensic scientists, the products of this project are significant. Certification is a fact in five disciplines of the profession and pending in a sixth.

FINDINGS

1. In a period of four years, five certification boards developed and implemented certification programs. Four hundred ten (410) forensic scientists were certified as Diplomates in their respective disciplines.

2. Although certification programs have been implemented, plans for recertification have not been formulated or finalized and details promulgated to the professionals in the field.

3. Similarly, with the exception of Odontology, formal continuing education programs have not been implemented.

4. A Directory of Diplomates in each discipline was compiled. (See Appendix 3: copy of 1978 and 1979 version). This roster provides the names and adresses of diplomates and a geographical breakdown of their location. Over 3,000 copies of the directory have been distributed to judges, attorneys and law enforcement officials.

5. The realization of forensic science certifying boards and the publication of a Directory of Diplomates has contributed significantly (by identifying qualified experts) to the efficient administration of justice.

6. In the initial phase of this project, a lack of continuous and complete communications between the criminalist planners and the criminalists in the field produced a suspicion of certification that materially slowed the subsequent conduct of study.

7. In an effort to regain the confidence of the criminalistics profession, the decision was made by the planners to poll the profession at significant stages in the planning process. The response to the earlier polls was enthusiastic because those polls sought unofficial support for a concept being considered or were designed for the collection of planning data. The final poll, however, was a decision-making ballot asking if the voter supported the certification program as proposed. The response reflected a gamut of reactions ranging from the original suspicion of the entire concept -- to self-conceived threats to continued employment -- to genuine concern that the proposed programs were inadequate in some way.

8. Because of the diversity of scientific skills required in Criminalistics, it was inevitable that certification by subspecialties would evolve. Never-the-less, a dichotomy developed and persists today. One side, the qeneralists, felt that the certification program

should begin in the most simple form possible -- with a single, overall program. Opposing the generalists were those who reasoned that the scientific abilities requried for each specialty were sufficiently unique as to require separate certification programs. Once a solid case was made for the creation of one subspecialty program, the concept of a single classification was abandoned.

Fortunately, both factions recognized that regardless of the degree of specialization there were a number of required skills that were common to all criminalists.

9. As planning for certification developed, the perception by the planners and the profession of the problems involved increased markedly. That which first appeared to be a minor problem often was found to be quite complex -- and vice versa. Two factors aided in this maturing process: confrontations; and time (four years). It is apparent that the Criminalists arrived at the present concept of certification only through the exchange of ideas at a myriad of well structured meetings wherein divergent views were debated.

10. The repeated use of the work "National" in reference to certification (as in the titles of the Peer Group Subcommittees) reflects the agreement by the leadership of the profession that any certification program for criminalistics must be national in scope.

11. Having determined that five specialty certification programs realistically defined the scientifically diverse, present day criminalistics profession, the planners logically concluded that two of the five specialties should be assigned to organizations currently qualified to execute those certification tasks. Thus the five categories were assigned as follow.

SPECIALTY	PLANNING COMMITTEE	IMPLEMENTING ORGANIZATION
Serology	National Serology Peer Goup	American Board of Criminalistics (ABC)
Firearms & Toolmarks	National Firearms & Toolmarks Peer Group	Association of Firearms and Toolmark Examiners
Drug Chemistry	National Drug Chemistry Peer Group	ABC
Toxicology	None	American Board of Forensic Toxicology
Trace Evidence	None	ABC

12. Whereas the criminalistics profession continuously endorsed the concept of certification and supported the planning accomplished by their peers, in secret ballot they rejected the plans by a vote of 62% opposed.

13. Dispite the vote to reject the plans, as proposed, a majority indicated that they would participate if certification was implemented.

14. No data has been collected as to the specific reasons why individuals voted for or against certification.

15. The Criminalistics Certification Study Committee (CCSC) has developed the necessary papers for incorporation of the American Board of Certification.

16. The CCSC Peer Groups for Serology and for Drug Chemistry have designed vertually complete certification programs for their specialties.

17. The Association of Firearms and Toolmark Examiners have incorporated the American Board of Forensic Firearm and Toolmark Examiners, Inc. and are working on certification plans.

18. The status of toxicology certification for criminalists is unknown.

19. No action has been taken to develop a criminalistics certification plan for Trace Evidence.

RECOMMENDATIONS

1. That, as a matter of priority, the Certifying Boards complete their recertification plans and announce the critical details and dates to practitioners in the field and to users of the forensic science services and products.

2. That companion to recertification, the Boards implement formal continuing education programs at an early date.

3. That the National Institute of Justice, on an annual basis, publish a Directory of Diplomates and provide widest distribution to Courts, and Prosecuting and Defense Attorneys.

4. That the criminalistics profession be queried, at the earlist date possible, as to the substantive reasons why they accepted or rejected the certification plan, as proposed.

5. That this solicitation for constructive comments be conducted as five separate queries (according to the five subspecialties included in the plan) and that the criminalists to be queried in each of the five areas be restricted to those presently engaged in work in that subspecialty.

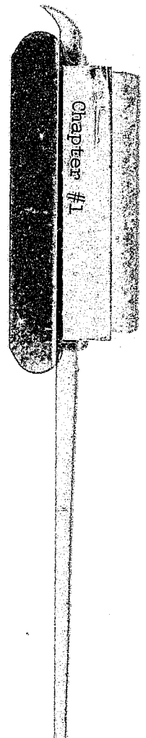
6. That the organizations noted in Finding 11, above execute the queries -- under the aegis of the Criminalistics Certification Study Committee (CCSC) and with the cooperation of the regional societies and the organizations active in the four year project.

7. That, based on the query, corrective action be taken and that the American Board of Criminalistics be incorporated to immediately administer the Serology and Drug Chemistry subspecialties of criminalistics.

8. That a national peer group be formed by the CCSC to plan for certification in Trace Evidence -- taking added guidance from the corrective action taken for serology and drug chemistry.

9. That the organizations responsible for certification in firearm & toolmark examination and for toxicology conclude planning activities and implement their program.

10. Assuming that the canvass of the profession produces workable and acceptable revisions to current plans, and assuming, further that the decision is made to implement certification in one or more subspecialties of criminalistics, then it is recommended that NIJ support the final planning activities with funds for a comprehensive planners' meeting.



CHAPTER 1.

INTRODUCTION

A. BACKGROUND

Former President Mason of the American Academy of Forensic Sciences, through the issuance of the Mason White Papers, February 20, 1974, declared:

> *If the AAFS does not have an operating certification program embracing all of the defined subdivisions of the forensic sciences, thus spelling out requirements for practice at the highest level, then the risk that other agencies will make the recommendations to be imposed becomes very great. It therefore seems proper that the Academy should carefully consider the question of whether to undertake certification. Because of the many issues involved in terms of desirability and the complexities of implementation, it is an appropriate task for a committee which includes members having experience with other certification programs. I have, therefore, appointed such a committee to be charged with (a) making a recommendation regarding desirability and feasibility of an Academy certification program, and (b) if desirable and reasonable, outlining a structure of implementation for consideration.*

In keeping with this mandate, the American Academy of Forensic Sciences' Committee on Certification pursued its assigned task by correspondence,

telephone and through individual personal contact. On February 6, 1975, the Committee Chairman reported as follows (see Appendix 1 for full report):

> *That steps be taken to implement certification immediately, since if not accomplished by the Academy, it would probably be accomplished by another organization or organizations forthwith. The importance of initiating this procedure at once was emphasized and it was suggested that such a process should include not only members of the Academy but all those recognized as experts outside the membership of the Academy. The Committee felt that the vehicle best suited to accomplish this task was the Forensic Sciences Foundation, emphasizing that the Foundation would serve only as an administrative unit to affect the certification procedure enacted by the Academy membership.*

With this initial guidance, the Foundation took over the dual task of seeking funds for the Program and expanding on the initial guidance ... in the form of a research proposal. Requests for funds were dispatched to the Ford Foundation, the National Science Foundation, and to the Law Enforcement Assistance Administration. Both the Ford Foundation and National Science Foundation indicated an interest in the project but lacked funds to offer any financial assistance. LEAA responded favorably and on May 20, 1976 a research grant was approved for $140,434. In 1977 a second LEAA grant was awarded and in 1979 a third and final

grant was approved. In all, LEAA provided $437,692 for the 49 month project. It has been conservatively estimated that the profession contributed in excess of $500,000 in services, labor, and out-of-pocket expenses for travel to meetings.

B. RESEARCH ORGANIZATION

1. Professional Society Sponsorship.

Upon obtaining the initial LEAA certification grant, the Foundation established seven planning committees -- each representing a specific forensic science discipline. The selection of individuals to serve as members of these committees presented a major problem: they could not represent any particular faction or society within the discipline.

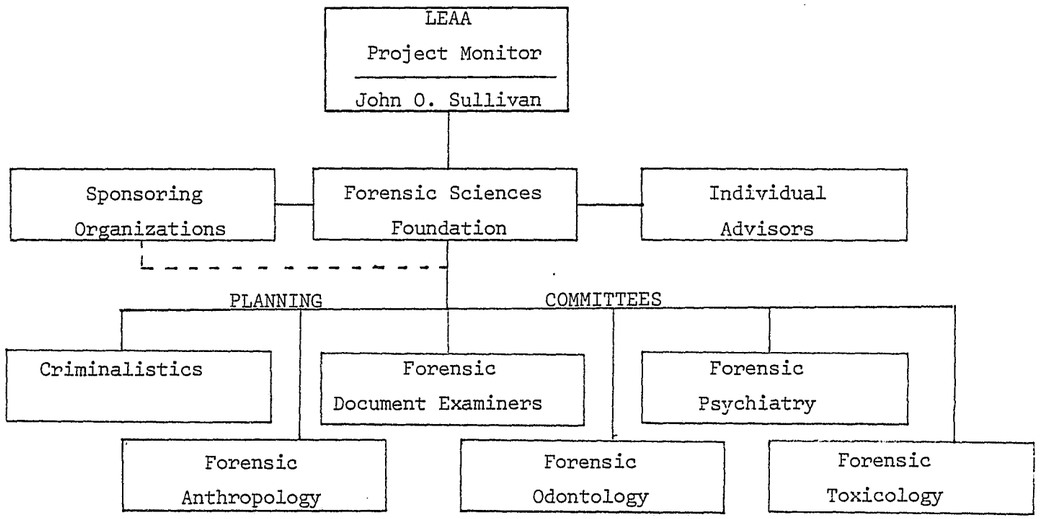
Taking its lead from past court opinions on the exclusionary potentiality of certifying bodies, the Foundation sought the advise of two or three nationally recognized leaders in each discipline. The question asked was, "which professional organizations should be asked to endorse or sponsor the certification concept." Such endorsement was especially critical to the credibility of the program because the American Academy of Forensic Sciences was the initiator of this certification effort...and the Forensic Sciences Foundation is the educational and research arm of the Academy!

In the course of the four years of project work the following organizations endorsed, sponsored, or were officially represented in the deliberations of the various committees.

- American Academy of Forensic Sciences
- American Academy of Psychiatry and the Law
- American Society of Crime Laboratory Directors
- American Society of Questioned Document Examiners
- Association of Firearms and Toolmarks Examiners
- California Association of Criminalists
- California Assoication of Toxicologists
- Canadian Forensic Science Society
- Mid-Atlantic Association of Forensic Scientists
- Midwestern Association of Forensic Scientists.
- Northeastern Association of Forensic Scientists
- Northwest Association of Forensic Scientists
- Society of Forensic Toxicologists
- Southern Association of Forensic Scientists

Without the active, constructive support of these organizations and their representatives it is doubtful that viable certification programs could have been structured and implemented.

2. Operational Relationships.



C. NEEDS, GOALS, OBJECTIVES

At the initial meeting of the proponents of certification the following basic issues were resolved: the need for certification, the project goal, specific objectives, and basic definitions.

1. STATEMENTS OF NEED

a) Quality and Equality

The United States through its people and through its organized network of governments, is continually dedicated to the task of improving the quality and equality of justice -- whether through the enactment of laws or by the improvement of the system in which the laws are implemented.

One of the many facets of the justice system in need of minimum standards is the forensic science work force.

There is a direct correlation between the improvement of the qualifications of an individual in the system and the improvement of the quality of the system. Similarly, there is a direct correlation between the improvement of the qualifications of all related persons in the system and the improvement in national equality of justice.

It is the consensus of opinion of leading law practitioners, legal scholars and students of the law that legal proof is rapidly evolving into a multidisciplinary mosaic of law, science and technology. As a consequence of our modern age, in which increasing specialization is deemed a desirable means of solving difficult problems, *scientific evidence* and *expert testimony* have become indispensible in many types of investigations and in the trial of criminal and civil cases. Adding

to the cause of scientific evidence have been the limitations placed on the traditional methods of suspect interrogation.

b) Quantity

The evidentiary use of the expert witness in the field of forensic science is on the upswing. Scientific evidence is highly credible, both to judges and jurors.* Expert scientific opinions based on scientific analysis of evidence related to a crime provide court input which pushes the probability of an accused's innocence or guilt beyond a reasonable doubt.

Present judicial procedures direct that the trial judge must decide whether a witness is qualified to testify as an expert. Logic suggests that the witness must have special knowledge or experience relating to the subject at hand. Unfortunately, in practice, judges cannot keep up with the rapidly advancing state-of-the-art and, therefore, may base their decision on the question of whether the person has previously testified as an expert in his field of knowledge. Unfortunately, such a means of qualifying may have little real value in measuring current professional qualifications in the forensic sciences. Needed is a national system of individual certification

*LEAA study "Assessment of the Personnel of the Forensic Sciences Profession" -- Grant #73-NI-99-0052-G, June, 1975: of 1363 judges and trial lawyers queried, 92% desire greater utilization of forensic science personnel skills because of their credibility in the legal decision making process and 74% stated that a system of certification was an "important" criteria in determining the qualifications of prospective expert witnesses.

2. Primary Project Goal.

The primary goal of this program is to facilitate the deliberation, research structuring and field testing efforts of six separate forensic science disciplines by providing each with the following: research support, administrative support, the means to conduct working research planning meetings and the capability to promulgate research findings/information/instructions ... to the end that the myriad tasks involved in the research/design of certification programs will be accomplished in an orderly and a timely manner.

3. Specific Project Objectives.

- To organize six separate forensic science discipline-oriented certification planning and research committees composed of nationally recognized leaders in the disciplines concerned.
- To research the problems and requirements unique to each discipline and to formulate separate, detailed plans for the certification of professionals within each discipline.
- To field-test each component of each voluntary certification program as developed ... to include complete systems if developed during the time frame of this project.
- To inform the professionals concerned, the "users" of the end products and the public of the research effort and the value of each program.

D. BASIC DEFINITIONS

1. Professional Credentialing.

Professional credentialing is a complex, multifaceted activity, involving determination and recognition of the professional qualifications of three distinct entities: certification of individuals; accreditation of operating agencies; accreditation of educational and training institutions.

2. Certification.

Certification is a voluntary procedure by which a non-government organization attests to the professional qualifications of specific individuals. The organization is usually a professional society or separate board concerned with the individual's specialized field of work.

3. Forensic Sciences Certification.

Forensic sciences certification is the development of standards of competence by which to facilitate the task of judicial, law enforcement, regulatory, and other personnel in the identification of qualified experts.

4. Criminalistics.

Criminalistics is that profession and scientific discipline directed to the recognition, identification, individualization and evaluation of physical evidence by the application of the natural sciences to law-science matters.

5. Forensic Anthropology.

Forensic anthropology is the application of standard techniques of physical anthroplogy in making identifications of skeletal or otherwise unidentifiable remains and in aiding in the detection of crime or enviromental effects.

6. Forensic Document Examination.

Forensic document examination involves the scientific examination of handwriting, typewriting, printing, ink, paper or any other aspect of a document for the purpose of determining various legal questions asked about the document.

7. Forensic Odontology.

Forensic odontology involves the application of dentistry to legal problems -- to include the examination and evaluation of injuries to the teeth, jaws, oral tissue, and dental remains for purposes of victim identification plus the examination of bite marks to provide suspect identification.

8. Forensic Psychiatry.

Forensic psychiatry is a field of practice of the medical specialty of psychiatry in its special medical - legal context. The forensic psychiatrist promotes an understanding about the relationship of medical and psychological material relevant to legal issues.

9. Forensic Toxicology.

Forensic toxicology is the study and understanding of the harmful effects of such external substances as poisons, drugs, pollutants, and potentially toxic chemicals which may be introduced into living systems.

E. CONTENTS OF THIS REPORT

In Chapter 2, which follows, the basic research methodology will be covered.

Chapter 3 will then present the accomplishments of the five disciplines which attained an operational status; Forensic Toxicology, Forensic Odontology, Forensic Psychiatry, and Forensic Document Examination.

Finally, Chapter 4 will cover, in some detail, the work accomplished by the Criminalists in their endeavor to attain an operational status.

CHAPTER 2

RESEARCH METHODOLOGY

Three phases of research effort were included in this four year grant: a study of the need for and feasibility of certification; the design of a certification program and its accompanying implementation plan; the field testing of alternative concepts.

Although each discipline approached its work in a manner unique to its characteristics, all addressed the issues shown on Schematic 1, Research Methodology.

A. FEASIBILITY STUDIES

1. Research Planning Committees..Membership Criteria

Without question, the heart of each of the certification programs was the Research Planning Committee and its subsequent body --- the Certification Board. Accordingly, it was of paramount concern that members of each committee represent as wide a range of experience as possible. Among the criteria used in selecting committee members were the following:

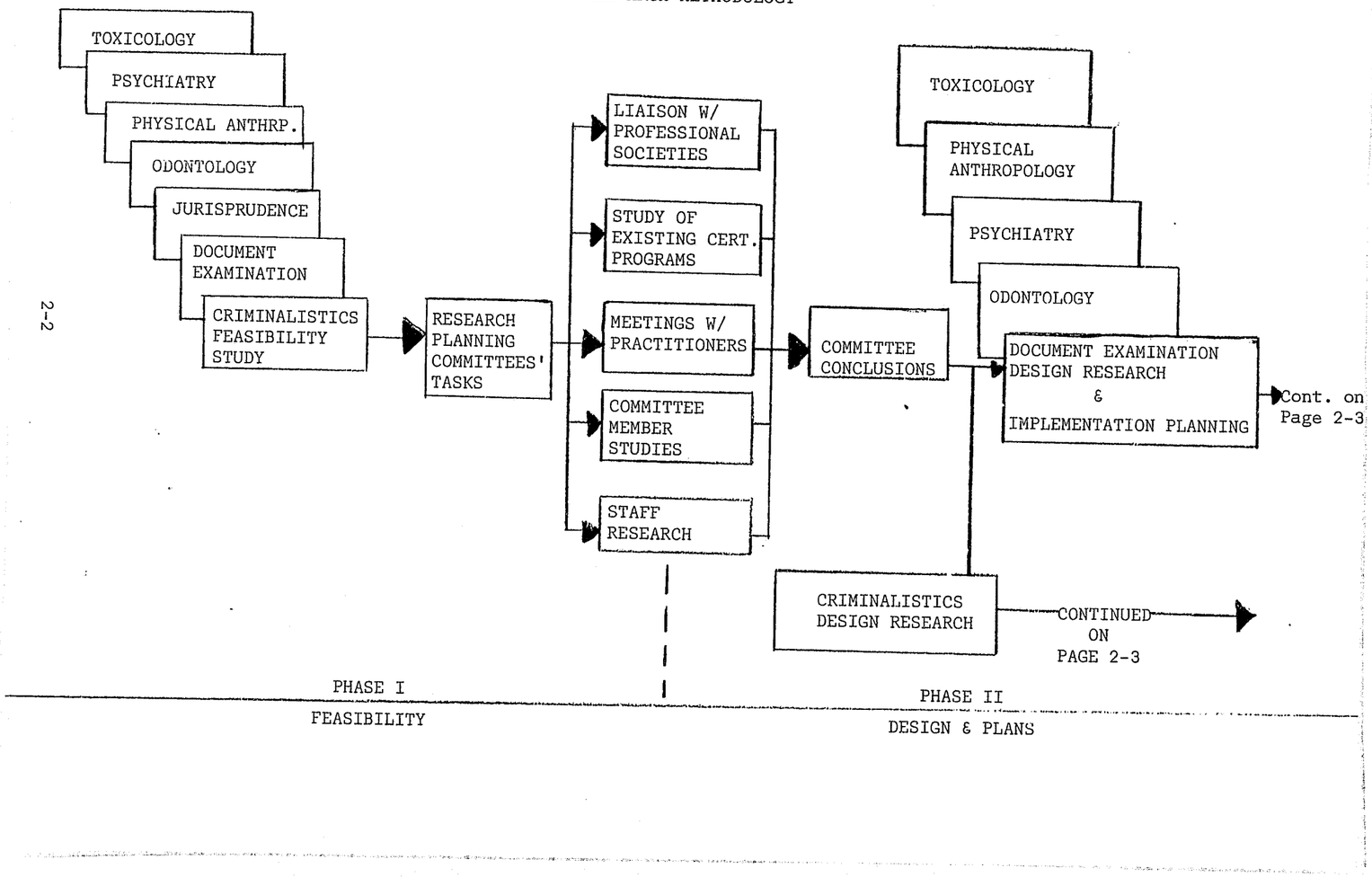
- Leadership in the profession
- Previous exposure to certification
- Interest and ability to serve

Also included in the selection process were the following factors:

- Varied occupations (education, administration, practice)
- Varied organizational relationships (private practice, government, corporate)
- Varied geographic representation (nationwide)

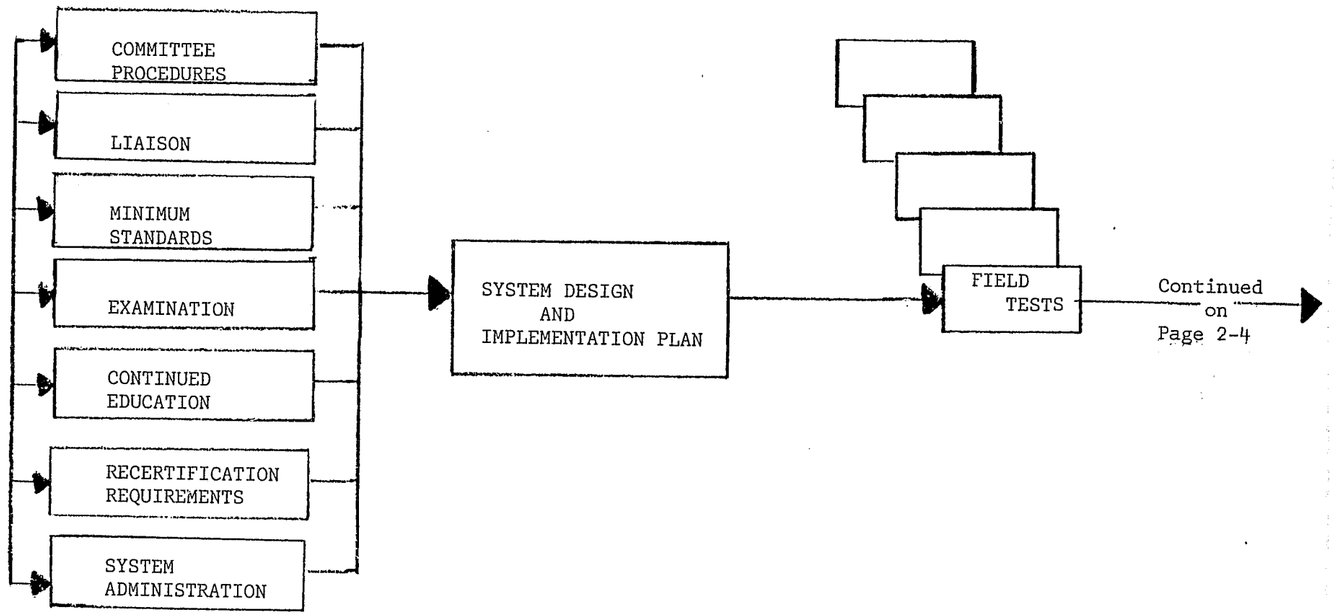
SCHEMATIC 1.

RESEARCH METHODOLOGY



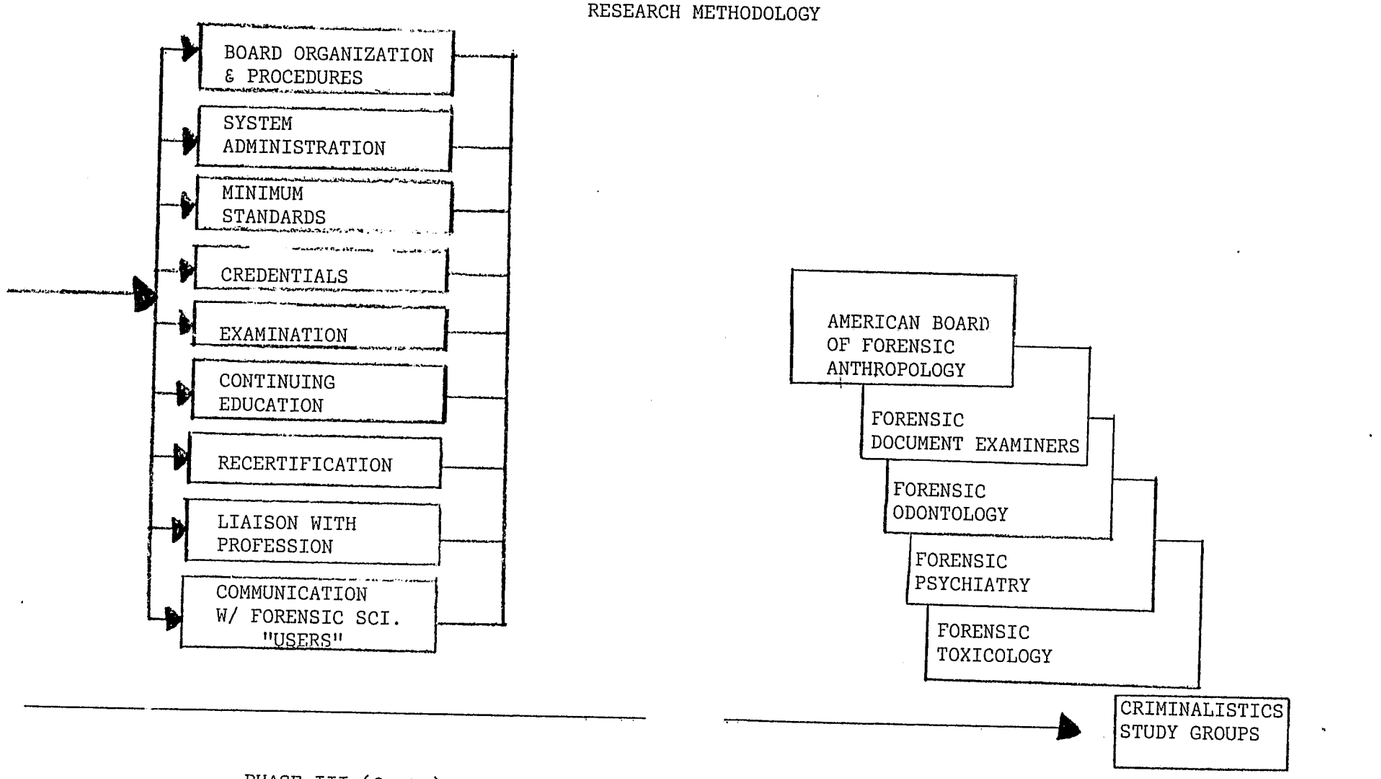
SCHEMATIC 1. (Cont.)

RESEARCH METHODOLOGY



SCHEMATIC 1. (Cont.)

RESEARCH METHODOLOGY



2. Research Planning Committee Goals

The following goals -- assigned to each committee -- were, in fact, derived from the functions of in-being certification boards in other professions such as medicine, engineering and the natural sciences.

- To establish standards of competence.
- To research and devise plans for the investigation, examination and evaluation of applicant competency.
- To maintain close liaison with the profession.
- To establish the mechanism by which to grant credentials.
- To plan for the continuing education of the profession.
- To plan for the education of users of the services offered and the public.

3. Research Planning Committee Meetings

The primary research tools used in this project were committee meetings, individual studies, and staff data collection and analyses.

In excess of 150 meetings were held during the period 1976-1980. Forty-four full committee meetings were funded by LEAA and the remainder were either sponsored by the professional organizations identified with certification or were paid for by the committee members.

It has been estimated that over 200 committee and staff papers were generated during this project. An example of the subject matter of such documents is found in subsequent chapters especially, with Criminalistics in chapter 4.

Essential to the success of the committee work was the development of a close working relationship between the committee members and the project staff. Staff support included the conduct of research, data collection, literature search, the maintenance of files, and the logistical duties related to the conduct of complex meetings. To the maximum extent possible, the staff coordinated the exchange of ideas, papers, and actions between the several planning committees. In several instances it was possible to hold joint meetings of the chairmen of the various planning committees. One of these joint meetings was funded by LEAA; the remainder by the individuals concerned.

B. DESIGN RESEARCH AND IMPLEMENTATION PLANNING

1. Common Committee Tasks

Following are representative matters addressed by the Research Planning Committees during this phase of work.

- Planning Committee/Board operating procedures.
- Liaison with peers and concerned professional bodies.
- Communications procedures.
- Work review procedures: intra and interdisciplinary.
- Task assignments and schedules.
- Eventual certifying board structure, charter, bylaws, officers.
- Minimum standards: general, moral, professional.
- Examinations: record application scrutiny, formal tests (oral or written).
- Continuing education: requirements, course offering, development of an automated filing system for compiling CE opportunities and logging credits earned by each diplomate.

- Recertification: who, when, how.
- System administration: office of record, continuous maintenance of application files, to include mailing of letters of acknowledgement, letters of reference, recording of checks, mailing of certification packets, and the distribution of the "Directory of Diplomates".
- Expulsion criteria and procedures.
- System financing: self supporting fees or dues.

2. Qualification Standards

Perhaps the most critical subtask of the above list was the study of qualification standards such as the following.

- General Qualifications.
- Moral Qualifications.
- Education and Training.
- Professional Proficiency.

In the design of standards the committees weighed the following types of questions.

- Which specialties should be included and to what extent?
- Should certification examination be oral, written or both?
- If written, what part should be theory and what part case oriented?
- Should parts of the test be "open book," accomplished at home, or should they be supervised?
- What is a satisfactory grade?
- Should there be periodic state-of-the-art examinations and if so, covering which areas?

3. Criminalistics .... Peer Group Workshops

The constant support of the professionals in the field was considered to be a critical factor in the design and implementation of certification systems. This was especially so where the profession had several distinct specialities, as in the case of criminalistics.

To ensure peer support for certification, one-half day work seminars were held (at no cost to the government) in conjunction with meetings of the six regional forensic sciences societies in the United States. A total of 12 work seminars were held with the following organizations:

- California Association of Criminalists
- Mid-Atlantic Association of Forensic Scientists
- Northeastern Association of Forensic Scientists
- Midwestern Association of Forensic Scientists
- Northwest Association of Forensic Scientists
- Southern Association of Forensic Scientists

To the extent possible, each workshop was conducted by a member from the Criminalistics Planning/Study Committee. The intent of the work seminars was to formalize the views of professionals in the field and to advise them of progress to date.

C. FIELD TESTING

1. Certification Boards

Preparatory to field testing the conceived certification programs, each discipline (less Criminalistics) created a permanent board to administer the program. The boards were incorporated as non-profit organizations in the District of Columbia. In most cases, the members of the Research Planning Committees were among the organizing members of the boards.

Not surprisingly, the objectives of the boards were similar to those considered during the planning phase:

- To establish and periodically to enhance standards of competence for the practice of a specified profession.

- To conduct investigations, evaluations, and examinations to determine the competence of voluntary applicants.
- To grant and issue certificates of qualification to canidates who successfully demonstrated their fitness therefor.
- To stimulate and assist in the establishment and development of adequate educational and training programs and facilities.
- To advise prospective entrants into the profession concerning recommended courses of study and training required.
- To make available to the public at large and to various interested parties (such as bench and bar) periodically revised lists of persons who had been granted certificates of qualification.

2. Testing Details

The field tests were conducted using actual applications submitted voluntarily, by professionals. In most instances, each procedure devised during the planning phase, was tested in more than one configuration.

The amount of detail involved in the processing of applications was incredible ... as may be surmised from a study of the following sample of subprocedures.

- Applications: forms, receipt of transcripts and letters of reference, accompanying fees.
- Evaluations: forms, establishment of review committees, meetings, reports.
- Examinations: forms, questions, grading, reports, where, when.
- Reexaminations: time limits, new submissions, fee augmentation.
- Certificates: printing, signatures, seal, scripting, packaging.
- Publicity: rosters/directories to "Users", public.

- Continuing Education: Petition for accreditation, individual records, review, reports.
- Cancellations: Petitions, boards, rules, findings, reports.

Not every board completed all of the tasks related to planning and testing during the four years of the project. This was especially true of plans concerning recertification and to a lesser extent, the testing/examination procedures and the grading of various types of continuing education opportunities.

Still, it is evident that the methodology utilized in the project was sound. It was thorough and exacting, yet it was geared ... in time ... to the capabilities of the profession to assimilate the concepts offered.

In the remaining chapters of this report the applications of the above methodology is discussed: chapter 3 - 5 Certification Boards; chapter 4 - Criminalistics.

Chapter #3

CHAPTER 3

CERTIFICATION BOARDS

A. BACKGROUND

Certification Planning Committees in five disciplines achieved full operational status during the course of the four year research program. These five boards, Toxicology, Odontology, Psychiatry, Anthropology and Document Examination are still actively engaged in the certifying process. (See Appendix 2: Brochures and Application Forms).

The realization of functional certification programs in the forensic sciences required the support of diverse individuals and organizations. During the term of the research effort the following organizations joined the American Academy of Forensic Sciences in active support of and participation in certification and accreditation activities leading to the development of viable certifying boards.

- American Academy of Forensic Sciences
- American Academy of Psychiatry and the Law
- American Society of Crime Laboratory Directors
- American Society of Questioned Document Examiners
- Association of Firearms and Toolmarks Examiners
- California Association of Criminalists
- California Association of Toxicologists
- Canadian Forensic Science Society
- Mid-Atlantic Association of Forensic Scientists
- Midwestern Association of Forensic Scientists
- Northeastern Association of Forensic Scientists
- Northwest Association of Forensic Scientists
- Society of Forensic Toxicologists
- Southern Association of Forensic Scientists

The success of this program has been made possible, in large part, by funds provided by the National Institute of Law Enforcement and Criminal Justice coupled with the tremendous amount of time, effort, study and support contributed by the forensic sciences profession both at the organizational and individual levels.

Each of the five boards has gained extensive experience in the first stage of certification - the procedures by which to certify individuals (see Figures 1 & 2). Considerable attention must now be devoted to the second stage -- finalization and implementation of recertification procedures.

A critical element of recertification is continuing education. Support and development of continuing education efforts also require the attention of the certifying boards.

The accomplishments and future plans and needs for each board is discussed below.

B. STATUS BY DISCIPLINE

1. Toxicology

- The American Board of Forensic Toxicology, Inc.

The formation of the American Board of Forensic Toxicology was approved unanimously at a meeting of the Committee on Certification and Standards, Toxicology Section, American Academy of Forensic Sciences in Kansas City, Missouri, August 7, 1975. A second meeting October 18, 1975 saw the promulgation of Bylaws and Resolutions under which the Board would function. The Board was incorporated in the District of Columbia on November 5, 1975 and assumed an operational role with the formal approval of the minutes of its first organizational meeting completed on January 3, 1976.

FIGURE #1 - STATUS OF CERTIFICATION PROGRAM as of June 30, 1980

Disciplines	Initial Planning Group/Board	Incorporated Dist. of Columbia	Bylaws	Standards	Operational Board	Applications Received	Applicants Certified	Examination	Continuing Education Prog.	Recertification Program	Meetings under LEAA Grants 1	2	3	4	5	Phase I*	Phase II*	Phase III*	Remarks
Toxicology	x	x	x	x	x	187	141	x	w	w	x	x	x	x		x	x	w →	
Odontology	x	x	x	x	x	68	41	x	x	x	x x	x	x	x	x	x	x	w →	
Psychiatry	x	x	x	x	x	195	70	x	w	w	x x	x x	x	x	x	x	x	w →	
Anthropology	x	x	x	x	x	30	25	x	w	w	x	x	x	x	x	x	x	w →	
Document Examiners	x	x	x	x	x	200	126	w	w	w	x x	x x	x	x	x	x	x	w →	
Criminalistics (Cert.)	x →	w →			→			w			x x	x x	x x	x x	x x	w →			
Peer Grps AFTE	x →	w →			→			w			x	x	x						
Drug Chem	x			w				w			x	x							
Serology	x			w				w			x	x							

*Phase I: Design of the research mechanism to accomplish the tasks ahead.

Phase II: Research to structure a certification system.

Phase III: Field test of designed components.

LEGEND: x - Task Completed
w - Working to Complete Task

FIGURE #2 - WORK PRODUCTS

Disciplines	Articles of Incorporation	Bylaws	Standards	Brochure	WORK PRODUCTS (June 30, 1980) Letter of Interest	Letter of Instruction	Application	Directory of Diplomates	Benefits of National Certification Program	Regional Distribution of Meeting Minutes	Regional Distribution of Questionnaires: Serology Hair Fibers Drug Chemistry	Remarks
Toxicology	x	x	x	x	x	x	x	x				
Odontology	x	x	x	x	x	x	x	x				
Psychiatry	x	x	x	x	x	x	x	x				
Anthropology	x	x	x	x	x	x	x	x				
Document Examiners	x	x	x	x	x	-	x	x				
Criminalistics (Certification)	-	-	-	-	-	-	-	-	x	x	x	
Pathology	-	-	-	-	-	-	-	-				Board in operation several years. Participation under LEAA Grant was in area of continuing education.

a. Board Membership.

President

ROBERT V. BLANKE, Ph.D.
MCV Hospital Toxicology Laboratory
Richmond, Virginia

Vice President

CHARLES NEAL READING, Ph.D.
Manchester, Connecticut

Secretary

THOMAS A. REJENT, B.A.
County of Erie
Division of Forensic Pathology
and Toxicology
Buffalo, New York

Treasurer

JANE H. SPEAKER, Ph.D.
Office of Medical Examiner
Philadelphia, Pennsylvania

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Evanston, Illinois

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Forensic Sciences Services
Santa Ana, California

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Cuyahoga County Coroner's Laboratory
Cleveland, Ohio

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University of Oaklahoma
College of Medicine
Oklahoma City, Oklahoma

JACK E. WALLACE, Ph.D.
Department of Pathology
The University of Texas
Health Science Center
San Antonio, Texas

JAMES C. GARRIOT, Ph.D.
Southwestern Institute of
Forensic Sciences
Dallas, Texas

LARRY B. HOWARD, Ph.D.
State Crime Laboratory
Atlanta, Georgia

MORTON F. MASON, Ph.D.
Department of Pathology
University of Texas Southwestern
Medical School
Dallas, Texas

b. Certification Requirements

1.) General Qualifications.

a.) Applicants must be persons of good moral character, high integrity, and good repute, and must possess high ethical and professional standing.

b.) Only permanent residents of the United States of America and its territories and possessions, or of Canada and its territories, are eligible for certification.

2.) Education (See also Section 5, below.)

a.) Applicants must possess an earned Doctor of Philosophy or Doctor of Science degree in one of the natural sciences, from an institution acceptable to the Board. (Acceptable institutions are: those accredited by Regional Accrediting Commissions recognized by USOE; those whose pertinent educational programs (e.g., in chemistry) were accredited by national accrediting agencies recognized by USOE; and other institutions at the discretion of the Board.)

b.) Applicants must have had adequate undergraduate and graduate education in biology, chemistry, and pharmacology or toxicology. (An example of adequate undergraduate education in chemistry is satisfactory completion of at least 32 semester hours or 48 quarter hours of college level studies in chemistry including accredited courses in inorganic, organic, analytical, and physical chemistry.)

3.) Professional Experience (See also Section 5, below.)

a.) Applicants must possess at least three (3) years of full-time professional experience (or the part-time equivalent thereof) in forensic toxicology, acceptable to the Board and acquired

subsequent to receipt of the doctorate degree, in one or more of the following categories: (1) postdoctoral education/training in toxicology or closely related discipline(s), (2) practice, (3) research, (4) teaching, (5) administration

b.) At least one (1) year of the professional experience must have been acquired during the five (5) years immediately preceding the date of application.

c.) Applicants are required to document a record of appropriate professional activities in forensic toxicology, in keeping with the concept that "Forensic Toxicology is the study and practice of the application of toxicology to the purposes of the law."

d.) Applicants must be engaged in the practice of forensic toxicology at the time of application for certification.

4.) Examinations

a.) Applicants who meet the requirements in Sections 1, 2, and 3 above will be admitted to comprehensive written examinations based upon broad principles of toxicology, and are required to receive passing grades.

b.) Applicants remain eligible to undergo examination within two (2) years after admission to the examination.

c.) Applicants who fail in the examination may apply within one (1) year for one (1) re-examination without additional fee.

5.) Temporary Waivers

a.) For the period ending December 31, 1978, the requirements of an earned doctoral degree and postdoctoral experience was

waived for otherwise qualified applicants who possessed:

(1) An earned baccalaureate or higher academic degree in one of the natural sciences from an institution acceptable to the Board, and

(2) At least six (6) years of full-time, post-baccalaureate experience (or the part-time equivalent thereof) in forensic toxicology, acceptable to the Board, (which) may include graduate education acceptable to the Board).

6.) General Provisons

a.) The right to deny certification is reserved.

b.) Certificates of Qualification in Forensic Toxicology are valid for five (5) years, and are renewable according to standards and under conditions established by the Board, at an appropriate fee.

c.) Persons holding a valid Certificate of Qualification issued by the Board are entitled to use the designation "Diplomate of the American Board of Forensic Toxicology" and the initials "DABFT" whenever professionally appropriate.

d.) Certificates issued by the Board are not transferable. They remain the property of the Board, but every person to whom a certificate has been properly issued is entitled to its continued possession unless and until such certificate is revoked.

e.) Certificates may be suspended or revoked for appropriate cause, under an elaborate system of safeguards for the diplomate concerned.

c. Current Status (June 30, 1980)

During the operation of the LEAA grant:

- One hundred eighty-seven (187) applications were received and or reviewed.
- Thirty-one (31) applicants withdrew their applications or were declared ineligible due to a lack of experience.
- One (1) applicant failed the written examination.
- Fourteen (14) applicants are either in process of taking the examination or are still pending for various reasons.
- One hundred forty-one (141) applicants have been certified as "Diplomates."

The Board continually reviews the written examination to assure its validity.

d. Future Plans

Concurrent with the first stage of certification, the American Board of Forensic Toxicology is concentrating considerable effort toward the creation of a comprehensive, viable program for continuing education and recertification. Because the diplomate status of those toxicologists certified in 1976 expires in 1981, development of a recertification program is of the highest priority.

2. Odontology

- The American Board of Forensic Odontology, Inc.

The formation of the American Board of Forensic Odontology was approved unanimously at a meeting of the Certification Committee in New London, Connecticut, January 11, 1976. This meeting saw the promulgation of Bylaws, Resolutions, and Articles of Incorporation, under which the Board would function. The Board was incorporated in the District of Columbia on February 4, 1976 and assumed an operational role with the formal approval of the minutes of its first organizational meeting completed on February 7, 1976.

a. Board Membership.

President

ARTHUR D. GOLDMAN, DMD
Spring Valley, New York

Vice President

EDWARD D. WOOLRIDGE, DDS, LLB
U.S. Coast Guard Headquarters
Washington, DC

Secretary

HOMER R. CAMPBELL, JR., DDS
Albuqerque, New Mexico

Treasurer

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DIRECTOR AT LARGE

LOWELL J. LEVINE, DDS
Huntington, Station, New York

b. Certification Requirements

1.) General Qualifications

a.) Applicants must be persons of good moral character, high integrity, good repute, and must possess high ethical and professional standing.

b.) Certification is limited to permanent residents of the United States of America, its territories and possessions, or of Canada and its territories.

2.) Professional Education

a.) Applicants must possess a dental degree from an accredited institution, conferring the D.D.S. or D.M.D. degree.

b.) Applicants must have specialized training from an institution(s) acceptable to the Board. Such institutions include: colleges and universities accredited by Regional Accrediting Commissions recognized by the U.S. Office of Education; and those institutions whose pertinent educational programs have been accredited by one or more national, specialized accredition agencies recognized by the U.S. Office of Education.

3.) Professional Experience

a.) Applicants shall have at least two years practical experience in Forensic Odontology, be currently active and formally affiliated with Board accepted institutions such as: Medical Examiner's or Coroner's Office, Law Enforcement Agency, Insurance Company, Federal Dental Service.

b.) Applicants shall participate in twenty-five (25) autopsies attested to by the Medical Examiner or Coroner in charge. This participation will include a dental and oral examination plus a written record of that examination. In combination with or in lieu of the previously mentioned criteria, cases for presentation may also consist of personal injury, malpractice, or peer review.

c.) Applicants will submit three (3) significant cases in Forensic Odontology acceptable to the Board, having complete write-ups, photographs, etc., which will become the property of the Board. This requirement shall be subject to waiver by the Board if the applicant is unable to obtain case material.

d.) Applicants must be engaged in the practice of Forensic Odontology (consulting practice) at the time the application is submitted. Such experience must be in two (2) or more of the following general categories or appropriate combinations thereof:

(1.) Post Doctoral Education

(2.) Training in Forensic Odontology

(3.) Closely related disciplines

(4.) Practice

(5.) Research

(6.) Teaching

(7.) Administration

e.) Applicants must present evidence of one thousand (1,000) qualification points. The applicant is encouraged not to concentrate in one area, but to be will diversified, determination of such to be at the discretion of the Credentials Committee. It is the responsibility of each applicant to submit documentation and a compilation of his/her own

qualifications, to be reviewed by the Credentials Committee. The points are to be accumulated as follows with #7 a must for each applicant:

(1.) One (1) point per hour for attendance at a Board recognized scientific session (meeting) in Forensic Odontology. A maximum of 100 points.

(2.) Fifty (50) points for presenting a lecture or a laboratory demonstration at a recognized session.

(3.) Fifty (50) points for the publication of a paper on forensics (preferably dental) with a reprint or copy to be sent to the Board.

(4.) Two hundred (200) points maximum for the formal affiliation with a Board recognized institution such as: Medical Examiner, Coroner, Law Enforcement Agency, Federal dental service, or Insurance Company. Twenty-five (25) points for each affiliation.

(5.) Forty-five (45) points for the organization of a mass disaster team or a symposium. The points divided as follows: twenty-five for directorship, one (1) point per hour for the organizing activity to a maximum of twenty (20).

(6.) Twenty-five (25) points per case for: a documented routine identification case; a Board recognized procedure such as serology, microscopy, pharmacology, etc.; a bite mark work up. Each case must be documented to the Board.

(7.) Twenty-five (25) points per case for: a documented routine identification case; a Board recognized procedure such as serology, microscopy, pharmacology, etc.; a bite mark work up. Each case must be documented to the Board.

(8.) Twenty-five (25) points for a court deposition, a copy to the Board; for a court appearance, including litigation cases, at the rate of five (5) points per hour with a maximum of twenty-five (25) points per case; twenty-five (25) points for an examination and written report on: malpractice, personal injury, or peer review cases.

(9.) Two hundred and fifty (250) points maximum for a full time course, as a student, in Forensic Sciences in an institution acceptable to the Board.

4.) Examination

a.) Applicants who meet the requirements and qualifications set forth in Section 1), 2), and 3) above, shall be admitted to comprehensive written and/or oral examinations provided by the Board and based upon broad principles of Forensic Odontology, and shall be required to receive passing grades in such examination(s). Applicants remain eligible to undergo examination for a period of two (2) years after admission to examination.

b.) An applicant who fails to pass the examination(s) may apply within one (1) year for re-examination, without payment of an additional fee. After unsuccessful re-examination, an applicant must file a new application and pay an additional fee before examination.

5.) General Provisions

a.) The right to deny certification is reserved.

b.) Certificates granted and issued by the Board may be suspended or revoked for any of the following reasons:

(1.) A misstatement or misrepresentation, or concealment or omission of a material fact or facts in an application or any other communication to the Board or its representative(s).

(2.) Conviction of an applicant for certification or holder of a Certificate of this Board by a court of competent jurisdiction of a felony or any crime involving, in the judgement of the Board of Directors, moral turpitude.

(3.) Issuance of a certificate contrary to or in violation of any of the laws, standards, rules, or regulations governing the Board and its Certification programs at the time of its issuance; or determination that the

person certified was not, in fact, eligible to receive such certificate at the time of its issuance.

(4.) Unethical conduct or other conduct, by a holder of a Certificate of this Board, which, in the judgment of the Board, brings the specialty of Forensic Odontology into disrepute.

c.) Action to suspend or revoke may only be taken after at least thirty (30) days advance notice of the charges or reasons for such action has been given to the individual concerned and an opportunity for such persons to be heard has been provided by the Board.

d.) Applicants who are denied certification by the Board may appeal such action to the Board of Directors, in writing, within sixty (60) days after the issue date of such notification.

e.) Persons holding a valid, unrevoked Certificate of Qualification issued by the Board are entitled to use the designation "Diplomate of the American Board of Forensic Odontology" in conformance with the standards of the American Dental Association.

f.) Certificates of Qualification in Forensic Odontology are valid for five (5) years and renewable according to standards and under conditions established by the Board.

g.) Certificates issued by the Board are not transferable. They remain the property of the Board, but every person to whom a certificate has been properly issued shall be entitled to its continued possession unless and until such certificate is revoked.

c. Current Status (June 30, 1980)

During the operation of the grant:

- Sixty-seven (67) applications have been reviewed.
- Forty-one (41) "Diplomates" have been certified.
- One (1) candidate failed the first examination.
- Five (5) applicants withdrew.
- Ten (10) candidates are eligible for the next examination.
- Seven (7) applicants had their file closed due to lack of interest.
- Four (4) applicants are still pending.

d. Future Plans

A recertification program has been developed by the Board. An outline of the program and fee structure for recertification has been distributed for review to the current diplomates in odontology.

3. Psychiatry

- The American Board of Forensic Psychiatry, Inc.

The formation of the American Board of Forensic Psychiatry was approved unanimously at a meeting of the Certification Committee in San Francisco, California, October 19-20, 1976. This meeting saw the promulgation of Bylaws, Resolutions, Standards and Articles of Incorporation in the District of Columbia on June 24, 1976 and assumed an operational role with the formal approval of the minutes of its first organization meeting completed on August 1, 1977.

a. Board Membership.

President

JONAS R. RAPPEPORT, MD
Medical Service
Criminal Courts Bldg.
Baltimore, Maryland

Vice President

HERBERT C. MODLIN, MD
Menninger Foundation
Topeka, Kansas

Secretary

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USC School of Medicine
LAC/USC Medical Center
Psychiatric Outpatient Clinic
Los Angeles, California

PAST PRESIDENT

MAIER I. TUCHLER, M.D.
Phoenix, Arizona

b. Certification Requirements

1.) General Qualifications

a.) Applicants must be persons of good moral character, scientific integrity, with high ethical and professional standing.

b.) Certification is limited to permanent residents of the United States of America, its territories and possessions, or of Canada.

2.) Professional Education and Licensure

a.) Applicants must possess an M.D., D.O., or a recognized equivalent medical degree.

b.) Applicants must have a valid license to practice medicine in a state, territory, or province of the United States or Canada.

c.) Applicants must be Certified in Psychiatry by the American Board of Psychiatry and Neurology or by the Canadian equivalent.

3.) Professional Experience and Training

a.) Applicants must have a minimum of five years of post-residency experience in clinical psychiatry with substantial experience in forensic psychiatry, including but not limited to, contributions in research, teaching and the administrative aspects of forensic psychiatry.

b.) One year of accredited full time training in forensic psychiatry shall be two years of equivalent credit.

c.) The applicant must provide evidence of all training in forensic psychiatry. Credit will be considered for forensic psychiatric training within an approved psychiatric resi-

dency training program.

d.) On approval by the Committee on Credentials the applicant may apply for examination to be conducted by the Committee on Examination at an appointed time and place.

4.) Examination

a.) Applicants who meet the requirements and qualifications set forth in Sections 1, 2, and 3 above shall be accepted for written examination. Upon successful completion they shall be eligible for an oral examination.

b.) Applicants remain eligible to undergo examination within two years after admission to the examination.

c.) Applicants who fail in either written or oral examination may apply within one year for one re-examination without payment of additional fee. Before a third examination, an additional fee.

5.) General Provisions

a.) The right to deny certification is reserved.

b.) Certificates granted and issued by the Board may be denied, suspended or revoked for any of the following reasons:

(1.) A misstatement, misrepresentation, concealment or omission of a material fact or facts in an application or any other communication to the Board or its representative(s).

(2.) Issuance of a certificate contrary to or in violation of any of the laws, standards, rules or regulations governing the Board and its certification programs at the time of its issuance; or determination that

the person certified was not in fact eligible to receive such certificate at the time of its issuance.

(3.) Conviction of an applicant for certification or holder of a certificate of this Board by a Court of Competent jurisdiction of a felony or any crime involving, in the judgment of the Board of Directors, moral turpitude.

(4.) Unethical conduct or other conduct by an applicant or holder of a certificate of this Board, which in the judgment of the Board brings the specialty of forensic psychiatry into disrepute.

c.) Action to suspend or revoke may only be taken after at least thirty (30) days advance notice of the charges or reasons for such action has been given to the individual concerned and an opportunity for such person(s) to be heard has been provided by the Board.

d.) Applicants who are denied certification by the Board may appeal such action to the Board of Directors, in writing, within ninety (90) days after the issue date of such notification.

e.) Persons holding a valid unrevoked Certificate of Qualification issued by the Board are entitled to use the designation, "Diplomate of the American Board of Forensic Psychiatry."

f.) Certificates issued by the Board are not transferable. Every person to whom a Certificate has been properly issued shall be entitled to its continued possession unless and until such Certificate if revoked.

c. Current Status (June 30, 1980)

During the operation of the grant:

- One hundred eighty-three (183) applications were received and reviewed.
- Nineteen (19) applicants took the written examination in May 1980.
- Ten (10) applicants who have passed the written examination are still due to take the oral examination.
- Thirty-five (35) applicants are still due to take the written examination.
- Five (5) applicants have failed to pass the written examination twice and are required to reapply for certification.
- Two (2) applicants have failed to pass the oral examination twice and are required to reapply for certification.
- Ten (10) applicants have delayed taking the written examination for various reasons.
- Twenty-six (26) applicants are still pending for a variety of reasons and have not been declared eligible for the examination.
- Two (2) applicants are deceased.
- Seventy (70) applicants have been certified "Diplomates" of the Board.

d. Future Plans

The oral and written examinations are being scheduled in October 1980 for eligible candidates. For the year 1981 and thereafter, a written examination will be scheduled in conjunction with the annual meeting of the American Psychiatric Association to be followed by an oral examination in October in conjunction with the annual meeting of American Academy of Psychiatry and Law.

The Board has not yet developed a plan for implementation of a recertification program. However, this remains a high priority and will receive the attention of the Board in the near future.

4. Anthropology

- The American Board of Forensic Anthropology, Inc.

The formation of the American Board of Forensic Anthropology was initiated at a meeting of the Certification Committee in Cleveland, Ohio, October 1-2, 1976 where the Articles of Incorporation, Bylaws, and Standards under which the Board would function were provisionally approved. At their first organizational meeting in San Diego, California, on February 14, 1977 these documents were officially approved by the Board along with the election of Directors and Officers. The Board was incorporated in the District of Columbia on January 10, 1977 and assumed operations as a Board with the formal approval of the minutes of its first organizational meeting completed on October 1, 1977.

a. Board Membership

President

ELLIS R. KERLEY, Ph.D.
Department of Anthropology
University of Maryland
College Park, Maryland

Vice President

CLYDE SNOW, Ph.D.
FAA Aeronautical Center
Oklahoma City, Oklahoma

Secretary

STEPHEN I. ROSEN, Ph.D.
Department of Anthropology
University of Maryland
College Park, Maryland

Treasurer

RICHARD G. SNYDER, Ph.D.
Bio-Medical Department
Highway Safety Research Institute
University of Michigan
Ann Arbor, Michigan

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Smithsonian Institution
Washington, D.C.

RODGER HEGLAR, Ph.D
Department of Anthropology
California State University
San Francisco, California

FREDERICK HULSE, Ph.D.
Professor Emeritus
Department of Anthropology
University of Arizona
Tucson, Arizona

b. Certification Requirements

1.) General Qualifications

a.) Applicants must be persons of good moral character, high integrity, and good repute, and must possess high ethical and professional standing.

b.) Only permanent residents of the United States of America and its territories and possessions, or of Canada and its territories, are eligible for Certification.

2.) Education

Applicants must possess an earned Doctoral degree in Anthropology with an emphasis in Physical Anthropology. This would normally include a substantial number of courses in physical anthropology, osteology, anatomy, or forensic anthropology. The Doctoral degree must be from a credited institution recognized by the Board. Normally the Doctoral degree will be a Ph.D. in Anthropology from a recognized Department of Anthropology in an accredited University.

3.) Professional Experience

a.) Applicants must possess at least three years of full-time professional experience which involved all or in part the practice of forensic anthropology. This experience must be acceptable to the Board and acquired subsequent to the receipt of the Doctoral degree. Such experience may include (1) Post-Doctoral training in forensic anthropology or a closely related discipline, (2) the practice of forensic anthropology, (3) research in one or more areas of forensic anthropology or (4) the teaching of courses in forensic anthropology or osteology.

b.) At least one year of the professional experience must have been acquired during the last five years immediately preceeding the date of application.

c.) Applicants are required to document a record of appropriate professional activities in forensic anthropology, in keeping with the concept that "Forensic Anthropology is the study and practice of the application of the methods of physical anthropology to the process of the law."

4.) Examinations

a.) Applicants who meet the requirements in Sections 1, 2, and 3, above, will be admitted to comprehensive, written and practical examinations based upon broad principles of forensic anthropology and are required to achieve passing grades.

b.) Applicants remain eligible to undergo examination within two years after admission to the examination.

c.) Applicants who fail in the examination may apply within one year for one (1) re-examination, without additional fee.

5.) Temporary Waivers

a.) For the period ending June 30, 1978 certain requirements were waived for those applicants who, in the opinion of the Board, were clearly competent in and have made significant contributions to the field of forensic anthropology. During this period, certification will be based upon the acceptance of submitted credentials for those applicants deemed clearly qualified by all members of the American Board of Forensic Anthropology. Minimum requirements for such certification would include a Doctoral degree with appropriate training and experience in forensic anthropology.

b.) For those applicants that are not deemed qualified by the Board at the time their applications are reviewed, comprehensive, written and practical examinations may be offered to establish their competence.

c.) After July 1, 1978 all applicants will be required to take written and practical comprehensive examinations as a part of the requirements for Board Certification.

6.) General Provisions

a.) The right to deny Certification is reserved.

b.) Certificates of Qualification in Forensic Anthropology are valid for three (3) years, and are renewable according to Standards and under conditions established by the Board, at an appropriate fee.

c.) Persons holding a valid Certificate of Qualification issued by the Board are entitled to use the designation "Diplomate of the American Board of Forensic Anthropology" and the initials "DABFA" whenever professionally appropriate.

d.) Certificates issued by the Board are not transferabel. They remain the property of the Board, but every person to whom a Certificate has been properly issued is entitled to its continued possession unless and until such Certificate is revoked.

c. Current Status (June 30, 1980)

During the operation of the Grant:

- Twenty-nine (29) applications were received and reviewed.
- Twenty-two (22) "Diplomates" have been certified.

d. Future Plans

Because the pool of potential applicants in forensic anthropology is limited, the Board is studying means to accomplish recertification of diplomates and means to provide a firm financial basis for its operations.

5. Document Examiners

- The American Board of Forensic Document Examiners, Inc.

The formation of the American Board of Forensic Document Examiners was approved unanimously at a meeting of the Certification Committee in Arlington, Virginia, March 25-27, 1977. The Board was incorporated in the District of Columbia on January 10, 1977, and assumed an operational role with the formal approval of the minutes of its first organizational meeting completed on December 2, 1977.

a. Board Membership.

President

JOHN J. HARRIS
Los Angeles, California

Vice President

JAMES J. HORAN
Staten Island, New York

Secretary

JAMES H. KELLY
State Crime Laboratory
Atlanta, Georgia

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Postal Inspection Service Crime Laboratory
New York, New York

CHARLES C. SCOTT
Kansas City, Missouri

LYNDAL L. SHANEYFELT
Alexandria, Virginia

b. Certification Requirements

1.) General Qualifications

a.) Applicants must be persons of good moral character, high integrity, good repute and must possess high ethical and professional standing.

b.) Certification is limited to permanent residents of the United States of American, its territories and possessions, or of Canada or Mexico.

2.) Educational Qualifications

Applicants (for certification) must possess an earned baccalaureate degree from an institution acceptable to the Board. (Acceptable institutions are those accredited by Regional Accredition Commissions recognized by the U.S. Office of Education, and other institutions in the discretion of the Board.)

3.) Professional Experience Qualifications

a.) Applicants are required to document a full-time two-year training period in a Forensic Document Laboratory recognized by the Board.

b.) Applicants must be able to demonstrate that they have completed two (2) years of full-time independent document work in a Forensic Document Laboratory recognized by the Board. (If all other requirements have been met the exam-

ination referred to in Section 4(a), below, may be taken before this requirement is completed, but no certificate will be issued until this requirement is met.)

c.) Applicants will be required to submit as references the names and addresses of three (3) Forensic Document Examiners recognized by the Board attesting to his/her qualifications for certification and high ethical character. Current Board members cannot be used as references. (References from persons other than Document Examiners will be evaluated on an individual basis.)

d.) Each applicant shall be required to demonstrate a record of appropriate professional activities in forensic document examination in keeping with the following definitions:

(1) "Forensic document examination is the practice of the application of document examination to the purposes of the law."

(2) "Forensic document examination relates to the identification of handwriting, typewriting, the authenticity of signatures, alterations in documents, the significance of inks and papers, photocopying processes, writing instruments, sequence of writings and other elements of a document in relation to its authenticity or spuriousness."

4.) Examinations

a.) In addition to meeting the requirements in Sections 1, 2, and 3, above applicants shall be required to take a comprehensive written and/or oral examination based upon the broad range of problems frequently encountered in

document examination and achieve passing grades. These problems may include questions concerning the authorship of handwriting, the authenticity or spuriousness of a signature, the source of typewritten material, the presence or absence of alterations, additions or deletions on documents, the comparison of inks, papers and writing instruments, or similar questions as promulgated by the Board.

b.) Applicants are eligible to undergo examination for two (2) years after approval of their applications.

c.) An applicant who fails to pass the examination(s) may apply after one (1) year for re-examination by payment of a nominal fee established by the Board.

5.) Temporary Waivers

a.) For the period ending June 30, 1980, the requirements of an earned baccalaureate degree described in Section 2, above, and the formal training described in Section 3(a), above, are waived for otherwise qualified applicants (on a year-for-year basis) who can document professional full-time experience in forensic document examination in a situation acceptable to the Board. Such experience shall be in addition to the requirements noted in Section 3(b) above.

b.) For the period ending June 30, 1980, the written and/or oral examination(s) will be waived for applicants who, in the judgment of the Board meet the requirements noted in Section 5(a), above. The qualifications of those who desire to apply under this waiver will be reviewed

by the Board to ascertain the diversity of work of which the applicant is capable and to establish his professional ability.

6.) General Provisions

a.) The right to deny certification is reserved by the Board.

b.) Certificates of Qualification in Forensic Document Examination are valid for five (5) years and are renewable according to standards and under conditions established by the Board, at an appropriate fee.

c.) Persons holding a valid Certificate of Qualification issued by the Board are entitled to use the designation "Diplomate of the American Board of Forensic Document Examiners."

d.) Certificates issued by the Board are not transferable. They remain the property of the Board, but every person to whom a certificate has been properly issued is entitled to its continued possession unless and until such certificate is revoked.

e.) Certificates may be suspended or revoked for cause under an appropriate system of safeguards for the Diplomate concerned.

c. Current Status (June 30, 1980)

During the operation of the Grant:

- One hundred fifty-nine (159) applications were received and reviewed.
- Four (4) applicants were declared ineligible.
- Eight (8) applicants are candidates for the examination.
- Ten (10) applications are still pending.
- One hundred thirty-six (136) "Diplomates" have been certified.

A fifty-six (56) page Syllabus/Bibliography has recently been published and distribution is being made to all applicants.

d. Future Plans

Individuals applying after June 30, 1980 will be required to successfully complete a written examination. The Board will continually review the examination to assure its suitability and availability.

Development and implementation of a recertification program will take place concurrent with the ongoing first stage of certification.

C. FINDINGS

1. In a period of four years, five certification boards developed and implemented certification programs. Four hundred ten (410) forensic scientists were certified as Diplomates in their respective disciplines.

2. Although certification programs have been implemented, plans for recertification have not been formulated or finalized and details promulgated to the professionals in the field.

3. Similarly, with the exception of Odontology, formal continuing education programs have not been implemented.

4. A Directory of Diplomates in each discipline was compiled. (See Appendix 3: copy of 1978 and 1979 version). This roster provides the names and addresses of diplomates and a geographical breakdown of their location. Over 3,000 copies of the directory have been distributed to judges, attorneys and law enforcement officials.

5. The realization of forensic science certifying boards and the publication of a Directory of Diplomates has contributed significantly (by identifying qualified experts) to the efficient administration of justice.

D. RECOMMENDATIONS

1. As a matter of priority, the Certifying Boards should complete their recertification plans and announce the critical details and dates to practitioners in the field and to users of the forensic science services and products.

2. Companion to recertification the Boards should implement formal continuing education programs at an early date.

3. The National Institute of Justice should, on an annual basis, publish a Directory of Diplomates and provide widest distribution to Courts, and Prosecuting and Defense Attorneys.

CHAPTER 4

CRIMINALISTICS

A. BACKGROUND

The only discipline -- of the six included in this four year research project -- which failed to achieve operational certification status was Criminalistics.

In retrospect, many of the necessary steps leading to a certification program might have been accomplished in some other manner. (Such is the advantage of 20-20 hindsight.) However, the fact is that actions were taken only after much deliberation by a wide range of outstanding professionals in the field.

The fact that certification was not attained is not as bleak as it might appear. Criminalistics has greater diversification than any of the other disciplines within the forensic sciences profession. In the presence of that formidable obstacle to the attainment of accord, much progress was made and, equally important, much was learned about what remains to be done. Rome wasn't built in a day!

It is a certainty that criminalistics certification will be attained. It is equally certain that without this grant the achievement of an operational program would be years away.

The material which follows is the product of the culling of a great number of individual and committee papers generated since 1976.

B. THE CRIMINALISTICS CERTIFICATION PLANNING COMMITTEE

1. Committee Membership.

Following were the members of this first committee formed to study the question of certification. John Anderson, the committee's initial

chairman, was forced to resign early in 1977 because of ill health -- at which time W.J. Cadman took over.

CRIMINALISTICS CERTIFICATION PLANNING COMMITTEE

Chairman

W.J. CADMAN
Department of Criminal Justice
California State University at Los Angeles
Los Angeles, California

Secretary

WALTER C. MCCRONE, Ph.D.
McCrone Research Institute
Chicago, Illinois

MEMBERS

JAN BASHINSKI
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Criminalistics Section
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DONALD A. FLYNT
Chief Forensic Chemist
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JAMES E. HALLIGAN, JR.
Florida Department of Criminal Law Enforcement
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RICHARD JANELLI
c/o S.I.B.
Nassau County Police Department
Mineola, New York

THOMAS A. KUBIC
c/o S.I.B.
Nassau County Police Department
Mineola, New York

S. F. PAYTON
Crime Detection Laboratory
RCM Police
Regina, Saskatchewan, Canada

EUGENE RIEDER
Laboratory
Federal Bureau of Investigation
Washington, D.C.

STANLEY P. SOBOL
Drug Enforcement Administration
Special Testing and Research Laboratory
McLean, Virginia

WILLARD C. STUVER
Dade County Crime Laboratory
Public Safety Department
Miami, Florida

K.M. SWEENEY
W. Washington State Crime Laboratory
Public Safety Building
Seattle, Washington

2. Early Committee Actions.

a. At the first meeting of the Planning Committee (December, 1976) it was decided to incorporate the "American Board of Criminalistics" (ABC) in the District of Columbia. This was accomplished by the Forensic Sciences Foundation on January 10, 1977.

b. The next meeting of the committee -- an informal orientation session held at the Annual Meeting of the American Academy of Forensic Sciences -- revealed seeds of discontent among the scientists in the field. The criminalists, especially the examiners, were suspicious of the actions of the Planning Committee. The focal point of this denigrating view was the incorporating action taken by the committee. The fact that the Bylaws of ABC were sufficiently flexible to accommodate any plausible form of certification fell on deaf ears. The general membership of the criminalistics discipline viewed the very act of incorporating as an arrogant disregard of the still undefined views of the profession. It was clear that the committee would have to create an effective means of communication with the practitioners in the field if it hoped to survive. It was also clear that semantics were an issue. Thus it was decided to replace the word "planning" with words which emphasized "study."

3. Second Planning Committee Meeting...April 1977.

a. The second official meeting of the planning committee was held in April 1977 and resulted in the following actions.

- The dissolution of The American Board of Criminalists.
- The changing of the committee title from "Planning" to "Study."

In terms of certification, per se, neither of the above two actions was meaningful. However, the credibility of the committee demanded that both be taken.

b. As a means to educate the practitioners as to the value of certification the committee approved the following objectives and lists of potential benefits.

1.) General. A lack of adequate education and training facilities has led to on-the-job training as the major means of acquiring the necessary skills for professionals in criminalistics. Unfortunately, very high case loads, lack of trained personnel and other pressures have lowered the frequency and effectiveness of such training efforts. As a result, in-house and other proficiency testing programs have increasingly revealed a need for some other means of improving the training of professionals in all of the diverse fields of criminalistics. A national program of certification (wherein the responsibility is placed on the individual) seems to hold the greatest promise for:

- defining an acceptable level of professional practice
- pin-pointing the need for training
- guiding the training effort
- monitoring individual progress
- recognizing the abilities of qualified personnel.

2.) Definition. Certification is defined as a voluntary process of peer-review whereby a practitioner is recognized as having accumulated the minimum qualifications necessary to practice in one or more particular disciplines of criminalistics.

3.) Objectives. The objectives of certification are:

- to define an acceptable level of professional practice
- to guide professionals in the attainment and maintenance of an accepted level of competence
- to provide a means of evaluating the competence of practitioners
- to provide a formal process of the recognition of practitioners who have met an accepted level of competence.

4.) Benefits. The benefits of a voluntary, peer-group, national certification program are both direct and indirect, short and long-term, practical and philosophical.

a.) In an overall sense the benefits of the program can be expressed as:

- improvement in the administration and quality of civil and criminal justice
- progress toward nation-wide equality of performance in the examination, analysis and interpretation of physical evidence.

b.) These are further benefits for the active professional:

- increased availability of training and educational opportunities
- setting of goals for professional development
- definition of limits in capabilities of personnel and laboratories
- improved methods for the collection, study, characterization, identification and comparison of physical evidence
- increased proficiency in the application of the above methods
- definition of an acceptable level of professional competence
- recognition of individual attainment of professional competence
- assure that certification is carried out by peer-group evaluation in each of the diverse disciplines of criminalistics
- improved qualification for, and confidence in, court appearances
- enhanced recognition of criminalistics as a profession.

c.) The laboratory administrator will benefit from the greater proficiency of his personnel but other tangible benefits include:

- revelation of areas of need, both in equipment and personnel capability;
- aid in justification of funding for training, equipment, increased salaries and filling positions

d.) Finally there will be benefits to the educational and training system, nation-wide, and to the judiciary:

- guidance in the planning and implementing of educational and training programs adequate both in number and scope
- improved understanding by the legal profession, the judiciary and the public of the capabilities and limitations of expert witnesses in the field of criminalistics.

C. THE CRIMINALISTICS CERTIFICATION STUDY COMMITTEE (CCSC)

1. Third Project Committee Meeting...October 1977 (See Report: appendix 4)

The third meeting of the Criminalistics Certification Committee represented the first positive discussion of the basic issue -- to certify or not to certify, and if so...how.

a. Prior to this meeting CCSC established formal relationships with the following organizations.

- AMERICAN ACADEMY OF FORENSIC SCIENCES
- AMERICAN SOCIETY OF CRIME LABORATORY DIRECTORS
- ASSOCIATION OF FIREARMS AND TOOLMARKS EXAMINERS
- CALIFORNIA ASSOCIATION OF CRIMINALISTS
- CANADIAN FORENSIC SCIENCE SOCIETY
- MID-ATLANTIC ASSOCIATION OF FORENSIC SCIENTISTS
- MIDWESTERN ASSOCIATION OF FORENSIC SCIENTISTS
- NORTHEASTERN ASSOCIATION OF FORENSIC SCIENTISTS
- NORTHWEST ASSOCIATION OF FORENSIC SCIENTISTS
- SOUTHERN ASSOCIATION OF FORENSIC SCIENTISTS

In addition, representatives from the Alcohol, Tobacco and Firearms Forensic Laboratory, the Drug Enforcement Administration Forensic Laboratory and the Federal Bureau of Investigation Laboratory also sit on the Committee.

b. The informal questionnaires used by the regional associations (concerning the feelings of their members on the question of certification) were compared. Composite results are shown on the following page.

1.) On the concept of national, voluntary, peer group certification.

Over 600 members responded.
78% felt that such a concept was acceptable.

2.) On the work of the CCSC.

88% favored the composition of and continued study by the CCSC.

3.) On the regional association continued participation in the study.

all agreed that regional associations should be represented on the CCSC.

c. Additional analysis of the results of the regional polls showed that:

1.) There was no possible agreement on how to group types of physical evidence examinations by discipline.

2.) All examiners should possess the same minimum qualifications for each type of physical evidence examination.

3.) "Grandfathering"* would be necessary

4.) The CCSC should maintain liaison with the American Society of Crime Laboratory Directors in their Accrediation Study. Accreditation and Certification are complementary.

d. In preparation for the next CCSC meeting committees were formed to study:

*"Grandfathering" is the certification of current professionals in the field on the basis of past experience, education, writing, reputation, etc...to be followed, at some future date, by recertification through proficiency examination.

- Types of Physical Evidence to be Certified
- Standards for Grandfathering
- Certification Testing Procedures
- Certification Costs

2. Fourth CCSC Meeting...December, 1977. (See Committee Report: appendix 5)

a. Two significant, far reaching things occured at this meeting.

1.) It was decided to study the need for certification by subspecialties...expecially in the areas of firearms and toolmarks, serology, and drug chemistry. Each regional group, association, laboratory system, or otherwise unrepresented person in all areas of the nationwide criminalistics community were invited to submit nominees for positions on peer group examination boards -- by evidence categories. Each peer group examination board would be responsible for the content of the examination in that category. They would also conduct the examinations. The mechanisms for selecting and pre-screening the nominees for the various examination boards would be determined by the regional group, association, laboratory, or unrepresented person making the nomination. Each nomination should be accompanied by a structured resume stating the nominee's willingness to serve, background, and qualifications (education, experience, publications, etc.).

As will be seen in subsequent committee deliberations and actions, consideration of the ramification of subspecialization absorbed a significant portion of the committee's time from this point on to the end of the project.

2.) It was also agreed that at each step in the study of certification the general membership of the criminalistics profession would be polled as to their views. Obviously, this procedure was implemented

to avoid the type of committee/membership confrontation that occured at the American Academy of Forensic Science meeting the previous February.

b. At the conclusion of Meeting #4, 18 categories of physical evidence were under consideration (see attachments, appendix 5). Knowing that such a large number of categories would probably be unmanageable, committees were organized to study the matter further.

3. Fifth CCSC Meeting...March, 1978. (See appendix 6: Committee Report)

a. At this meeting the 18 categories of physical evidence developed in meeting #4, were first reduced to 15 and then further divided into four peer group examination areas as shown at the above referenced Committee Report for meeting #5.

1.) Firearms and Toolmarks.

2.) Blood and other Physiological Fluids.

3.) Toxicology and other Controlled Drugs.

4.) Trace Evidence: Arson & Explosives; Hair & Fibers; Paint, Glass, Soils & Gunshot Residues.

In conjunction with Firearms and Toolmarks, a Peer Group Examination Board was formed as a pilot model for the other boards.

b. In addition to reducing the priviously large number of subspecialties to a manageable, plausible few, the CCSC also tentatively agreed on a list of skills common to all criminalistics practitioners. This effort is shown at Appendix #3 of the 5th Committee Report which is included at appendix 6 of this report. It is anticipated that this document will prove to be one of the most valuable studies produced

in the project. It represents an in-depth insight into the level of expertise required of any criminalist regardless of subspecialty.

c. As a result of this meeting five questionnaires were designed and administered to the criminalistics community. The first two were directed at the directors of crime laboratories (see appendix 7). Questionnaire #3 dealt with serology (appendix 8). Questionnaire #4 covered hair and fibers (appendix 9) and the fifth questionnaire was directed at criminalists involved with drug chemistry (appendix 10).

The questionnaires were designed to provide background material concerning:

- the state-of-the-art -- that is, what was being done nationwide in the discipline of criminalistics.
- what techniques the criminalistics community felt should be included in a possible certification testing program.
- the background and qualifications of practicing criminalists.

No formal analysis was made of the results. However, results were utilized by subsequent committees in the design of examinations.

4. Sixth, Seventh and Eighth CCSC Meetings (See Committee Report: appendix 11).

The next three meetings of the CCSC (held between June, 1978 and February, 1979) were concerned with the analysis of the questionnaire returns, the creation of peer groups and the development of guidelines for these groups.

a. The Peer Group Subcommittees were created with membership as follows:

1.) NATIONAL SEROLOGY PEER GROUP

Henry C. Lee, Ph.D.
Connecticut State Police Forensic Science Laboratory
New Haven, Connecticut

CONTINUED

1 OF 5

Donald C. MacLaren
Western Washington State Crime Laboratory
Seattle, Washington

Cornelius Glen McWright, Ph.D.
Chief of Research, FBI Laboratory
Washington, D.C.

George F. Sensabaugh, D.Crim.
University of California
Berkeley, California

Mark D. Stolorow
Michigan State Police Forensic
Science Laboratory
Northville, Michigan

Willard C. Stuver (Chairman and Liaison Representative to CCSC)
Dade County Crime Laboratory
Miami, Florida

Sally Williams
Institute of Forensic Sciences
Dallas, Texas

2.) NATIONAL FIREARMS/TOOLMARK PEER GROUP

Stanton O. Berg, Firearms Consultant
Minneapolis, Minn.

A. A. Biasotti (Chairman)
California Department of Justice
Investigative Services Branch
Sacramento, California

John C. Cayton,
Kansas City Missouri Police Department
Regional Crime Laboratory
Independence, Mo.

*Robert Christiansen
Los Angeles Sheriff, Criminalistics Laboratory
Los Angeles, CA

*David Brundage
Illinois Bureau of Scientific Services
Joliet, Illinois

Al Della Penna,
Suffolk Co. Police Dept., C/O Medical Examiner
Hauppauge, NY

Patrick V. Garland
Tenn. Department of Safety
Donelson, Tenn

Evan Hodge
FBI Laboratory
Washington, D.C.

*Monty C. Lutz
Wisconsin State Crime Lab
New Berlin, Wisconsin

Charles R. Meyers
Florida Dept. Of Criminal Law Enforcement.
Regional Crime Laboratory
Sanford, FL

Donald E. Smith
Chicago Police Dept. Crim. Div.
Chicago, Ill

John G. Ward, Sr.
Wisc. Dept. of Justice
New Berlin, Wis.

*Alternate Member

3.) NATIONAL DRUG CHEMISTRY PEER GROUP

Cecil L. Hider (Chairman)
California Department of Justice
Goleta, California

William P. Marshall
Idaho Department of Health and Welfare
Bureau of Laboratories
Boise, Idaho

James M. Moore
Drug Enforcement Administration
Special Testing and Research Laboratory
McLean, Virginia

F. Taylor Noggle, Jr.
Alabama Department of Forensic Sciences
Auburn, Alabama

Alexander M. Stirton, II
Pennsylvania State Police Crime Laboratory
Bethlehem, Pennsylvania

Philip R. Whittle, Ph.D.
Regional Crime Laboratory
Missouri Southern State College
Joplin, Missouri

Liaison Representative to CCSC:

Stanley P. Sobol
Drug Enforcement Administration
Special Testing and Research Laboratory
McLean, Virginia

William McClain
Beaumont Police Department
Beaumont, Texas

A fourth peer group (to study the requirements for trace evidence) was considered but a lack of grant funds to support meetings for this group forestalled its organization.

b. Guidelines for the Peer Group Sub-Committes (see appendix 12) were prepared and distributed. The intent of the guidelines was to insure that the three peer group would parallel each other in efforts. The tasks assigned to each peer group were to:

- determine the type and scope of subjects to be included in certification
- determine the minimum qualifications applicants must possess to be eligible to take the examination
- determine the type of test(s) to be given and prepare a sample examination
- determine the logistics of constructing and administering the proposed certification program.

The Peer Group Committees were to select requirements which were fair, reasonable and relevant, which realistically reflected current practice, and which would be acceptable to the majority of their peers. They were instructed to select as criteria for certification the minimum qualifications a practitioner would possess in order to be competent to examine evidence in a crime laboratory without immediate supervision and to be prepared to qualify and testify properly in court.

In addition to formulating questions on the basic subject matter of each specific discipline, the Peer Group Committees were asked to include in each examination a series of questions designed to test the applicant's understanding of skills common to all disciplines in criminalistics - e.g., basic principles of individualization and identification, scientific methodology, evidence handling, basic microscopy, communication, legal aspects and court testimony, literature of criminalistics, and general knowledge of criminalistics. The peer groups were also asked to consider preparing training or study guides for the examinations. These latter questions relate to the "Common Skills" paper discussed earlier in this report.

c. Finally, the CCSC prepared and approved two documents essential to the future implementation of certification plans: revised Articles of Incorporation and revised Bylaws for the American Board of Criminalistics (ABC) (See appendixes 13 and 14.) Both of these new documents stemmed from the incorporating vehicles for the defunct 1977 ABC (voted into and out of existence in 1977.)

However, in the latest version the Articles and Bylaws -- albeit thorough -- have sufficient builtin flexibility to accommodate whatever type of certification structure the profession desires.

5. CCSC and Peer Group activities: April 1979 to June 1980.

a. During this period, seven official CCSC and Peer Group meetings were held. In addition, nine meetings not financed under this grant were attended by most of the members of the committee and groups. The objective of all of these meetings was to develop plans for the initiation of certification. As such, the onus, was on the Peer Groups to accomplish the objectives established for them by the CCSC at prior meetings.

b. The efforts of this heavy concentration of meetings culminated in the September 1, 1979 publication of the CCSC "Certification Proposal -

A Final Report to the Profession." (See appendix 15.) Following are the significant elements of the proposal/ report:

1.) A review of the value and benefits of certification.

2.) Proposed areas of certification by the American Board of Criminalistics (ABC).

- Serology
- Drug Identification
- Trace Evidence Examination,

3.) Proposed areas in which the indicated organizations would accomplish certification.

- Toxicology .... American Board of Forensic Toxicology (ABFT)
- Firearms and Toolmark Examination ... American Board of Forensic Firearms and Toolmark Examiners (ABFFTE)

4.) The roles and missions of the Peer Groups

5.) Certification Proposals: Serology & Durg Chemistry*

- The Process
- Specific Requirements
- Sample Questions

c. In summary, with the publication of the Report to the Profession the CCSC (with the concurrence of official representatives from the regional associations) presented the profession with a detailed plan by which to: 1.) implement certification in two of the three subspecialties assigned to the ABC 2.) assign responsibility for two other subspecialties to other organizations and 3.) enclosed a sample ballot which, among other matters asked the question "Are you in favor of implementation of certification as described in the CCSC report?"

*Trace Evidence, the third area recommended as at certification specialty, was not studied under this grant because of funding limitations.

6. The Ballot Results

a. In the fall and winter of 1979, ballots were distributed to members of the criminalistics profession. The number distributed is unknown but since the Regional Associations assisted in the task and since announcements concerning the availiability of ballots were posted in several criminalistics publications, it is estimated that at least 90% of the profession had access to a ballot. 1396 ballots were returned via Regional Associations ... the results of which are contained in the Final Report of CCSC. (See appendix 16: Ballot Results.)

b. Highlights of the Voting results are shown below.

1.) Of 1396 votes cast, 870 (62%) did not favor certification, as proposed.

2.) However, a substantial number of those voting indicated that they would apply for certification if it was implemented.

EVIDENCE EXAMINED	NR. EXAMINING	% WOULD APPLY
Controlled Substances	649	80%
Serology	396	77%
Firearms & Toolmarks	227	73%
Toxicology	209	68%

3.) The "Yes" vote for certification) is further broken down by selected categories of voters as follows:

a.) CATEGORY: POSITION (Number)	VOTED "yes"
Managers (177)	45%
Supervisors (298)	41%
Case Examiners (831)	36%
Lab Technicians (60)	37%
Others (86)	35%

b.) CATEGORY: EVIDENCE EXAMINED (Number)	VOTED "yes"
Controlled Substance (816)	32%
Serology (513)	38%
Firearms & Toolmarks (309/347)	(35%/35%)
Toxicology (307)	35%
Trace Evidence (Av. 360)	28%-40%

HOWEVER

When The Respondents Indicated They Examined Only One Category

c.) Category (Number)	VOTED "yes"
Controlled Substance (249)	25%
Serology (72)	53%
Firearms & Toolmarks (13/2)	15%/50%
Toxicology (17)	53%
Trace Evidence	Inconclusive

d.) CATEGORY: GEOGRAPHIC REGION (Number)	VOTED "yes"
Northeast (153)	42%
Mid-Atlantic (131)	38%
Southeast (236)	39%
Midwest (371)	41%
Southwest (171)	32%
Northwest (79)	35%
California (233)	31%

D. FINDINGS

1. In the initial phase of this project, a lack of continuous and complete communications between the planners and the practitioners

produced a suspicion of certification that materially slowed the subsequent conduct of study.

2. In an effort to regain the confidence of the profession, the decision was made by the planners to poll the profession at significant stages in the planning process. The response to the earlier polls was enthusiastic because those polls sought unofficial support for a concept being considered or were designed for the collection of planning data. The final poll, however, was a decision - making ballot asking if the voter supported the certification program as proposed. The response reflected a gamut of reactions ranging from the original suspicion of the entire concept -- to self-concern that the proposed programs were inadequate in some way.

3. Because of the diversity of scientific skills required in Criminalistics, it was inevitable that certification by subspecialties would evolve. Never-the-less, a dichotomy developed and persists today. One side, the generalists felt that the certification program should begin in the most simple form possible -- with a single, overall program. Opposing the generalists were those who reasoned that the scientific abilities required for each specialty were sufficiently unique as to require separate certification programs. Once a solid case was made for the creation of one subspecialty program, the concept of a single classification was abandoned.

Fortunately, both factions recognized that regardless of the degree of specialization there were a number of required skills that were common to all criminalists.

4. As planning for certification developed, the perception by the planners and the profession of the problems involved increased markedly.

That which first appeared to be a minor problem often was found to be quite complex -- and vice versa. Two factors aided in this maturing process: confrontations; and time (four years). It is apparent that the Criminalists arrived at the present concept of certification only through the exchange of ideas at a myriad of well structured meetings wherein divergent views were debated.

5. The repeated use of the word "National" in reference to certification (as in the titles of the Peer Group Sub-committees) reflects the agreement by the leadership of the profession that any certification program for criminalistics must be national in scope.

6. Having determined that five specialty certification programs realistically defined the scientifically diverse, present day criminalistics profession, the planners logically concluded that two of the five specialties should be assigned to organizations currently qualified to execute those certification tasks. Thus the five categories were assigned as follow.

SPECIALTY	PLANNING COMMITTEE	IMPLEMENTING ORGANIZATION
Serology	National Serology Peer Group	American Board of Criminalistics (ABC)
Firearms & Toolmarks	National Firearms & Toolmarks Peer Group	Association of Firearms and Toolmark Examiners
Drug Chemistry	National Drug Chemistry Peer Group	ABC
Toxicology	None	American Board of Forensic Toxicology
Trace Evidence	None	ABC

7. Whereas the criminalistics profession continuously endorsed the concept of certification and supported the planning accomplished by their peers, in secret ballot they rejected the plans by a vote of 62% opposed.

8. Despite the vote to reject the plans as proposed a majority indicated that they would participate if certification was implemented.

9. No data has been collected as to the specific reasons why individuals voted for or against certification.

10. The Criminalistics Certification Study Committee (CCSC) has developed the necessary papers for incorporation of the American Board of Certification.

11. The CCSC Peer Groups for Serology and for Drug Chemistry have designed virtually complete certification programs for their specialties.

12. The Association of Firearms and Toolmark Examiners have incorporated the American Board of Forensic Firearm and Toolmark Examiners, Inc. and are working on certification Plans.

13. The status of toxicology certification for criminalists is unknown.

14. No action has been taken to develop a criminalistics certification plan for Trace Evidence.

E. RECOMMENDATIONS

1. That the criminalistics profession be queried at the earliest date possible as to the substantive reasons why they accepted or rejected the certification plan, as proposed.

2. That this solicitation for constructive comments be conducted as five separate queries (according to the five subspecialties included in the plan) and that the criminalists to be queried in each of the five

areas be restricted to those presently engaged in work in that subspecialty.

3. That the organizations noted in Finding 6, above execute the queries -- under the aegis of the Criminalistics Certification Study Committee (CCSC) and with the cooperation of the regional societies and the organizations active in the four year project.

4. That, based on the query corrective action be taken and that the American Board of Criminalistics be incorporated to immediately administer the Serology and Drug Chemistry subspecialties of criminalistics.

5. That a national peer group be formed by the CCSC to plan for certification in Trace Evidence -- taking added guidance from the corrective action taken for serology and drug chemistry.

6. That the organizations responsible for certification in firearms & toolmark examination and for toxicology conclude planning activities and implement their programs.

7. Assuming that the canvass of the profession produces workable and acceptable revisions to current plans, and assuming, further, that the decision is made to implement certification in one or more subspecialties of criminalistics, then it is recommended that NIJ support the final planning activities with funds for a comprehensive planners' meeting.

AMERICAN ACADEMY OF FORENSIC SCIENCES
11400 ROCKVILLE PIKE, SUITE 515 • ROCKVILLE, MARYLAND 20852 • (301) 881-0537

February 6, 1975

Dr. David A. Crown
President, American Academy of Forensic Sciences
State Department Building, Room 3517
Washington, D. C. 20520

Dear Doctor Crown:

This is a report of the AAFS Committee on Certification, in keeping with instructions to me by the AAFS Executive Committee on May 21, 1974 to delineate mechanisms for certification of forensic scientists.

In the "Mason White Papers" dated February 20, 1974, the section entitled "Concerning Certification of Forensic Scientists" contains the following pertinent statement:

> "I have, therefore, appointed such a committee to be charged with (a) making a recommendation concerning desirability and feasibility of an Academy certification program, and (b) if desirable and reasonable, outlining a structure of implementation for consideration by the Executive Committee..."

In keeping with this charge, the Committee on Certification (roster attached) pursued its deliberation by correspondence, by telephone, and through individual personal contacts. Full consensus and agreement has been reached by the Committee on the policy aspects of the recommendations which follow. On May 21, 1974 we reported to the AAFS Executive Committee as follows:

> "Our initial conclusions are that a suitable scheme for certification of forensic scientists is desirable, and that, on balance, certification of forensic scientists is deemed feasible. In accordance with its charge and its initial conclusions, the Committee on Certification plans to proceed with its further assignment of outlining a structure of implementation for consideration by the AAFS Executive Committee."

The Committee has through further correspondence and individual contact between Committee members considered and developed its recommendations. Our deliberations have led to the following findings and conclusions:

1) Attitudes toward and demand for certification of individual forensic scientists are currently in a state of marked flux, with the entire spectrum represented from strong demand for

certification to total disinterest. In addition to AAFS, several other well-established or newly organized groups with interest in the forensic sciences are contemplating appropriate roles in certification of individuals within their respective professional fields (e.g., American Society of Crime Laboratory Directors, NAME, Society of Toxicology).

2) In several disciplines with a recognized forensic science subspecialty (e.g., pathology), functional and apparently adequate certification programs for forensic science practitioners now exist. No immediate changes in these arrangements seem necessary.

3) In other professions with a recognized forensic science subspecialty (e.g., toxicology), various separate groups are currently active in the formulation and consideration of new certification programs. None of those currently under consideration will adequately meet the needs of forensic practitioners (or meet public need with respect to forensic scientists).

4) No single organization has so far assumed or achieved leadership in the development and implementation of a broadly based certification program ultimately applicable to all major forensic science disciplines. There are strong indications that several of these disciplines will very soon proceed toward certification independently, unless a suitable certification program is rapidly developed and implemented by an appropriate umbrella group within which they can function satisfactorily.

5) It is the consensus of the Committee on Certification that a meaningful certification program in the forensic sciences is unquestionably necessary, that there is great urgency in initiating at least a pilot program of certification of forensic scientists, and that the American Academy of Forensic Sciences and/or the Forensic Sciences Foundation are suitably situated to undertake this task in the immediate future.

The Committee believes that the following guiding principles should underlie the certification effort, being necessary for maintenance of the competence, integrity, and sound development of any certification program:

1) The credentialing process should be entirely separate from AAFS (or other) membership affairs, and available on an equal basis to all qualified persons (not only AAFS members).

2) Credentialing of individuals (i.e., evaluation of qualifications and background, examination, and granting of certificates of qualification) should be carried out as a strict peer-review system. Applicants for certification in a given discipline or field (e.g., criminalistics) should be evaluated entirely and exclusively by recognized practitioners in the same field, with due allowance for subspecialization.

3) The certifying body should be an independent, single-purpose organization, so organized as to be free from inappropriate pressures of any kind from its founders or any other organization, group, or individual. A modular concept should prevail in the organization of the certifying body. Those disciplines currently desiring certification could at once designate parallel but separate credentialing groups of rotationally elected members of their own profession, while other disciplines could subsequently join the operation in a parallel manner. The structure of the certifying body should be subject to change to meet new problems and situations, but by a process of due thought, sound deliberation, and substantial agreement.

4) Qualifications for certification should be initially established at the highest feasible level under present circumstances, and raised if and when subsequent conditions require and permit.

In keeping with the above basic principles, we recommend that a new credentialing body, feasibly called "American Board of Forensic Sciences," be established under the aegis of the Forensic Sciences Foundation. To meet present and future needs for credentialing of forensic scientists while accommodating several highly heterogeneous groups of practitioners with substantially different backgrounds in various basic disciplines, the Board should have the following organizational and operational attributes:

1) An appropriately independent and operationally autonomous certification body should be organized under the aegis of the Forensic Sciences Foundation and/or the American Academy of Forensic Sciences, with provision for subsequent additional sponsorship by other appropriate groups. The FSF would provide an organizational umbrella and necessary support services. (Pertinent models for such relationships and activities exist i.a. in FASEB, the Federation of American Societies for Experimental Biology, which serves as the umbrella and support operation for six constituent member societies which are autonomous corporations; and in the American Board of Medical Microbiology which is sponsored by 10 cognizant societies and operates under the aegis of the American Society for Microbiology.)

2) A modular concept should prevail: Those disciplines currently desiring certification under the American Board of Forensic Sciences would immediately designate parallel but separate credentialing groups of rotationally elected members of their profession (presumably initially derived from the corresponding AAFS Sections.) Other disciplines could subsequently join in parallel manner and in coequal status. The credentialing decisions of the individual discipline credentialing group (e.g., "Council on Forensic Toxicology" or"Commission on Forensic Toxicology") would be final.

3) The credentialing process should be entirely separate from AAFS or any other membership considerations, and available to all qualified voluntary applicants. Credentialing of individuals should be carried out as a strict peer-review system, and applicants for certification in a given field (e.g., criminalistics) should be evaluated entirely and exclusively by recognized practitioners in the same field.

4) The Board would designate recognized forensic science specialties, and issue certificates of qualification in each such specialty to all voluntary applicants meeting promulgated qualifications and requirements. Certain common qualification elements should apply to certification in all specialties by the Board: Good moral character and high ethical standing, stipulated minimum educational and professional experience requirements (to be established by the Board on recommendation of the several Councils or Commissions), payment of designated fees and charges, successful passing of examinations, etc. (It is recognized that establishment of the required minimum educational level is a difficult and complex issue. While final action in this regard must remain the province of the Board, it seems probable that the initial minimum educational requirement should be at the baccalaureate level, or alternatively at the master's degree level with provision for substitution of acceptable experience for graduate education.) Consideration should be given to an initial "grandfather" period of limited duration, during which waiver of written examinations would be discretionary with the Councils (or Commissions) for otherwise fully qualified applicants of established professional standing.

5) The major emphasis of the requirements and qualifications for certification should be on the *forensic science aspects* of each recognized specialty, especially in those fields with established personnel credentialing programs in the parent discipline.

6) To the extent possible, provision should be made for the certification program to be self-supporting from fees and charges paid by the applicants. In this connection and for other cogent reasons, provision should be made for periodic re-evaluation and re-certification of the continuing qualifications and competence of the diplomates of this Board, with appropriate charges. An initial five-year requalification cycle is recommended. (Based on recent applicable experience of newly established credentialing bodies in other fields, an initial subsidy of about $10,000 to $15,000 will probably be required to begin core operations.)

7) Provision should be made from the start for those elements known to be necessary for full recognition of this certification program by applicable federal, state, and local authorities (including such agencies as the U. S. Civil Service Commission). Accordingly, arrange-

ments are needed for appropriate representation of the public interest, verification and validation of all key applicant background information (such as academic record transcripts, etc.), and administration and grading of written examination on an anonymous basis uniformly applicable to all applicants.

It seems appropriate, and the Committee recommends, that leadership and initial staffing of the peer review groups come from the AAFS through its Sections. A chart outlining a possible organizational structure for the proposed certification body is attached.

Professional credentialing is a complex, multi-faceted activity involving recognition of the professional qualifications of individuals (by certification, licensure, registration, etc.), accreditation of educational programs, and often regulation of operating establishments such as laboratories (by licensure, registration, etc.) A logical and necessary next step after credentialing of individuals via certification is the accreditation of educational programs. The Committee on Certification does not wish to present specific recommendations with regard to this matter, but would like to point to the ultimate need for a scheme for accreditation of educational programs in the forensic sciences. Such accreditation could be accomplished through a mechanism parallel to but separate from the proposed Board, but with liaison to and input from it, as is the case in other fields. National recognition by the U. S. Office of Education requires certain attributes of such accreditation programs (see attachment) and several of these are also applicable to certification programs.

The Committee stands ready to receive any further instructions or assignments the Executive Committee may deem appropriate.

Respectfully submitted,

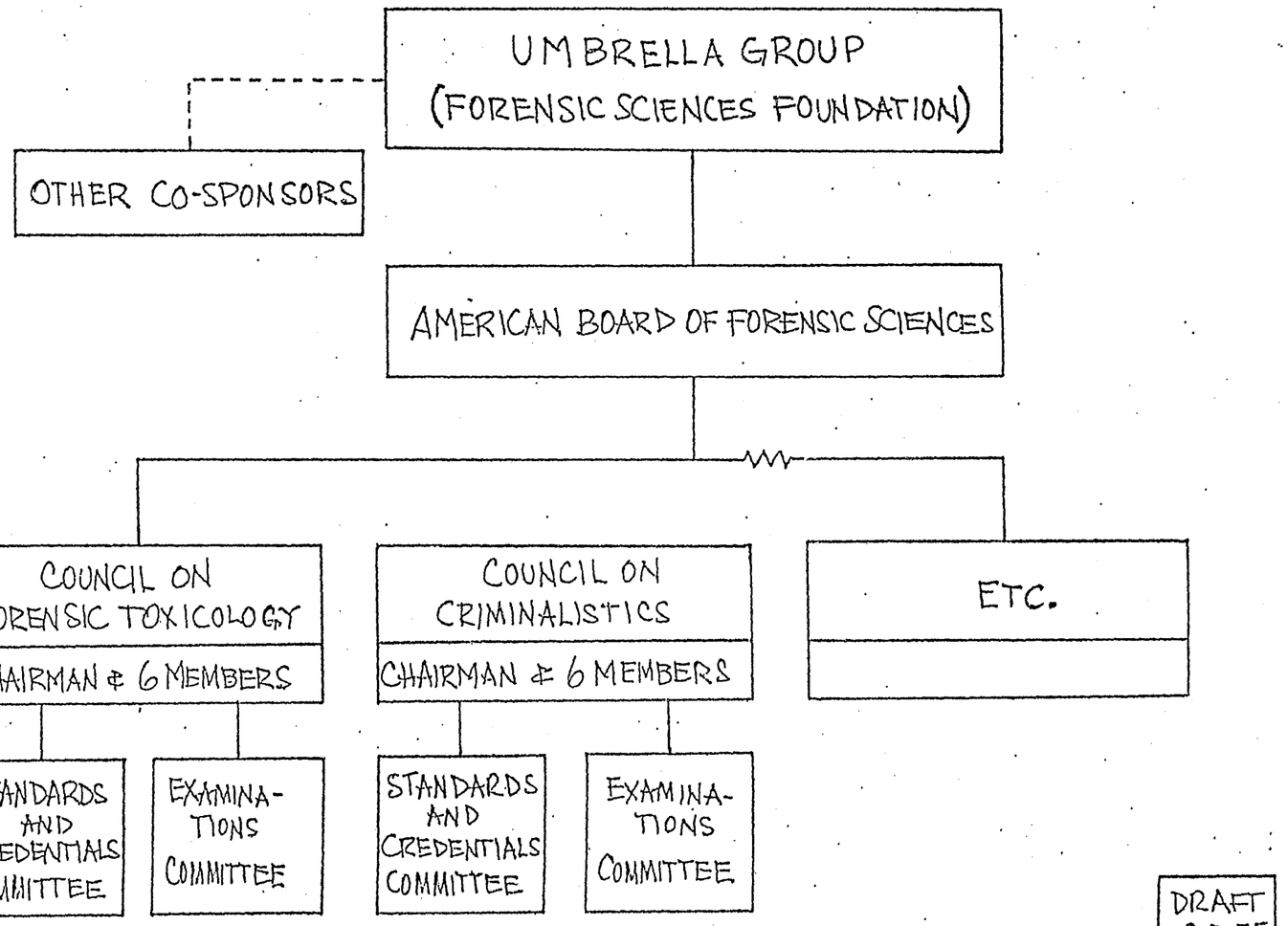
Kurt M. Dubowski, Ph.D.
Chairman
AAFS Committee on Certification

KMD/ne

Attachments

PLEASE REPLY TO:
UNIVERSITY OF OKLAHOMA
HEALTH SCIENCES CENTER
P. O. BOX 26901
OKLAHOMA CITY, OKLA. 73190

POSSIBLE ORGANIZATION OF FORENSIC SCIENCES CERTIFICATION SCHEME



DRAFT
2-2-75

AMERICAN ACADEMY OF FORENSIC SCIENCES

COMMITTEE ON CERTIFICATION

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April 15, 1974

Dr. M. I. Tuchler
4426 North 36th STreet
Phoenix, Arizona 85018

FORENSIC SCIENCES CERTIFICATION PROGRAM

American Board of Forensic Toxicology, Inc.

American Board of Forensic Odontology , Inc.

DIRECTORY OF DIPLOMATES

January 1978

AMERICAN BOARD OF FORENSIC TOXICOLOGY, INC.

SPONSORING ORGANIZATIONS:

American Academy of Forensic Sciences

National Society of Forensic Toxicologists

California Association of Toxicologists

A brief introduction to the nature and purposes of the Board, with a summary of requirements for Certification and application procedures.

December 1975

BACKGROUND, FUNCTIONS, and PURPOSES of the AMERICAN BOARD of FORENSIC TOXICOLOGY, INC.

The need unequivocally to identify forensic scientists qualified to provide essential professional services for the nation's judicial and executive branches of government has been long recognized. In response to this professional mandate, the American Board of Forensic Toxicology was organized in 1975 to provide, in the interest of the public and the advancement of the science, a program of certification in forensic toxicology. In purpose, function, and organization, the ABFT is thus analogous to the certifying boards in various medical specialties and scientific fields.

The objective of the Board is to establish, enhance, and revise as necessary, standards of qualification for those who practice forensic toxicology, and to Certify as qualified specialists those voluntary applicants who comply with the requirements of the Board. In this way, the Board aims to make available to the judicial system, and other publics, a practical and equitable system for readily identifying those persons professing to be specialists in forensic toxicology who possess the requisite qualifications and competence.

Certification is based upon the candidate's personal and professional record of education and training, experience, and achievement, as well as on the results of a formal examination.

The Board is a non-profit organization incorporated in the District of Columbia. Its initial sponsors are the American Academy of Forensic Sciences and the National Society of Forensic Toxicologists. The Board is composed of officers and other directors, who serve staggered terms and are elected from among nominees of designated nominating organizations, or serve at-large.

Excerpts from the Board's STANDARDS FOR CERTIFICATION IN FORENSIC TOXICOLOGY are contained in the statement on "Qualifications and Requirements for Certification in Forensic Toxicology" which follows.

QUALIFICATIONS and REQUIREMENTS for CERTIFICATION in FORENSIC TOXICOLOGY

1. *General Qualifications*
   a. Applicants must be persons of good moral character, high integrity, and good repute, and must possess high ethical and professional standing.
   b. Only permanent residents of the United States of America and its territories and possessions, or of Canada and its territories, are eligible for Certification.

2. *Education* [Also See Section 5 Below]*
   a. Applicants must possess an earned Doctor of Philosophy or Doctor of Science degree in one of the natural sciences, from an institution acceptable to the Board. (Acceptable institutions are those accredited by Regional Accrediting Commissions recognized by USOE, those whose pertinent educational programs, e.g., in chemistry, were at the time accredited by national accrediting agencies recognized by USOE, and other institutions in the discretion of the Board.)
   b. Applicants must have had adequate undergraduate and graduate education in biology, chemistry, and pharmacology or toxicology. (An example of adequate undergraduate education in chemistry is satisfactory completion of at least 32 semester hours or 48 quarter hours of college level studies in chemistry including accredited courses in inorganic, organic, analytical, and physical chemistry.)

3. *Professional Experience* [Also See Section 5 Below]*
   a. Applicants must possess at least three (3) years of full-time professional experience (or the part-time equivalent thereof) in *forensic toxicology*, acceptable to the Board and acquired subsequent to receipt of the doctorate degree, in one or more of the following categories: (1) postdoctoral education/training in toxicology or closely related discipline(s), (2) practice, (3) research, (4) teaching, (5) administration.
   b. At least one (1) year of the professional experience must have been acquired during the five (5) years immediately preceding the date of application.
   c. Applicants are required to document a record of appropriate professional activities in *forensic toxicology*, in keeping with the concept that "Forensic Toxicology is the study and practice of the application of toxicology to the purposes of the law."
   d. Applicants must be engaged in the practice of forensic toxicology at the time of application for Certification.

4. *Examinations*
   a. Applicants who meet the requirements in Sections 1, 2, and 3 above will be admitted to comprehensive written examinations based upon broad principles of toxicology, and are required to achieve passing grades.
   b. Applicants remain eligible to undergo examination within two (2) years after admission to the examination.
   c. Applicants who fail in the examination may apply within one (1) year for one (1) re-examination, without additional fee.

5. *Temporary Waivers**
   a. For the period ending December 31, 1977, the requirements of an earned doctoral degree and *postdoctoral* experience are waived for *otherwise qualified* applicants who possess:
      (1) An earned baccalaureate or higher academic degree in one of the natural sciences from an institution acceptable to the Board, and
      (2) At least six (6) years of full-time postbaccalaureate experience (or the part-time equivalent thereof) in *forensic toxicology*, acceptable to the Board, (which may include graduate education acceptable to the Board).

GENERAL PROVISIONS CONCERNING CERTIFICATION

1. The right to deny Certification is reserved.
2. Certificates of Qualification in Forensic Toxicology are valid for three (3) years, and are renewable according to Standards and under conditions established by the Board, at an appropriate fee.
3. Persons holding a valid Certificate of Qualification issued by the Board are entitled to use the designation "Diplomate of the American Board of Forensic Toxicology" and the initials "DABFT" whenever professionally appropriate.
4. Certificates issued by the Board are not transferable. They remain the property of the Board, but every person to whom a Certificate has been properly issued is entitled to its continued possession unless and until such Certificate is revoked.
5. Certificates may be suspended or revoked for appropriate cause, under an elaborate system of safeguards for the diplomate concerned.

PROCEDURE for APPLICATION and CERTIFICATION

1. Application forms and instructions for their submissions can be obtained from:
   The American Board of Forensic Toxicology, Inc.
   Attn.: The Forensic Sciences Foundation, Inc.
   11400 Rockville Pike, Suite 515
   Rockville, Maryland 20852
   Tel. (301) 770-2722
2. The completed application should be returned to the above address, together with the application fee of $150.00 of which $75.00 is refunded if the applicant is found ineligible for Certification. Hence, only persons who believe they clearly meet stated qualifications and requirements for Certification should submit applications. No refund is made to accepted applicants admitted to examination, whether or not they take an examination.
3. A recent photograph must accompany the application. The applicant must also arrange for submission of three (3) letters of professional and character reference, sent directly to the Board's office by each writer. Official transcripts from *each* college or university attended (irrespective of degrees received) also must be sent directly to the Board's office by the registrar(s).
4. Completed applications are reviewed by the Credentials Committee of the Board, and their recommendation is considered by the full Board of Directors who vote on whether or not to admit the applicant to the examination.
5. Examinations for accepted candidates are prepared and evaluated by the Examination Committee, whose recommendations are considered, as expeditiously as possible, by the full Board of Directors for final action.
6. Successful candidates are issued a Certificate of Qualification in Forensic Toxicology by the Board to attest to their status as Diplomates of the American Board of Forensic Toxicology, and are listed in the next revision of the *Directory of Diplomates*.
7. Qualifications, requirements, and application procedures for Certification are subject to revision by the Board. The latest official version is always obtainable from the above address.

AMERICAN BOARD OF FORENSIC TOXICOLOGY, INC.

WASHINGTON, D.C.

Application No. _____

Date Issued _____

STAPLE SIGNED PHOTOGRAPH IN THIS SPACE

APPLICATION FOR CERTIFICATION IN FORENSIC TOXICOLOGY

Mail completed application to:

American Board of Forensic Toxicology
Attn: The Forensic Sciences Foundation, Inc.
11400 Rockville Pike
Rockville, Maryland 20852

Social Security Number

INSTRUCTIONS TO APPLICANT:

a. *Please type or print all information. Each item in the application must bear an entry; if "None" is applicable, so state. Use extra sheets for additional data or information; identify the material being furnished and show your name and address on each sheet.*

b. *Attach a current, autographed passport-type photograph of yourself no less than 2 x 2 inches in size in the space provided.*

c. *Enclose a fee of $150.00. Make checks or money orders payable to American Board of Forensic Toxicology. Do not send cash or stamps.*

d. *Make certain that each college or university you have attended forwards an official transcript of your academic record(s) directly to the American Board of Forensic Toxicology.*

e. *Attach a complete list of your publications in the scientific literature. Include names of all co-authors, complete title of paper, name of journal, volume, page(s) and year of publication.*

---

1. Name _____ 2. Sex _____
Last First Middle

3. State your name exactly as you wish it to appear on the Certificate (exclude degrees).

_____

4. If you have ever been known by or used another name (e.g., maiden name) please specify:

_____

5. Complete Mailing Address _____
Street

_____
City, State and Zip Code

6. Date of Birth _____ 7. Place of Birth _____
mo/day/yr

8. Citizenship _____. If not a citizen of the U.S.A. or Canada, please *document* your residency status in the U.S.A., Canada, their possessions and/or territories.

9. Have you ever been convicted of a felony or misdemeanor (exclude minor traffic violations)? _____ If *yes*, attach a statement of details.

10. Undergraduate Education:

INSTITUTION	LOCATION	INCLUSIVE DATES	MAJOR	DEGREE	DATE REC'D.

11. Graduate Education:

INSTITUTION	LOCATION	INCLUSIVE DATES	MAJOR	DEGREE	DATE REC'D.

12. Awards and Honor Societies:

13. Military Service:

Branch of Service Inclusive Dates Type of Discharge

14. Professional Experience During the Past Fifteen (15) Years (List chronologically *starting* with your *most recent* position:

a. Organization and Address

Inclusive Dates _____ Exact Title of Your Position _____

Full or Part-Time? _____ If Part-Time, % of Time _____

Brief Statement of your Duties and Responsibilities (emphasize forensic toxicology activities)

Name(s) and Present Address(es) of Immediate Supervisor(s)

b. Organization and Address

Inclusive Dates _____ Exact Title of Your Position _____

Full or Part-Time? _____ If Part-Time, % of Time _____

Brief Statement of your Duties and Responsibilities (emphasize forensic toxicology activities)

Name(s) and Present Address(es) of Immediate Supervisor(s)

c. Organization and Address

Inclusive Dates _____ Exact Title of Your Position _____

Full or Part-Time? _____ If Part-Time, % of Time _____

Brief Statement of your Duties and Responsibilities (emphasize forensic toxicology activities)

Name(s) and Present Address(es) of Immediate Supervisor(s)

15. Membership in Professional or Learned Scientific Societies:

ORGANIZATION	GRADE OF MEMBERSHIP

16. Reference (List the names and addresses of three (3) individuals who have agreed to complete reference forms in your behalf):

NAME	COMPLETE MAILING ADDRESS

17. Additional Information: (Use this space to make any comments regarding your activities in forensic toxicology which might assist the Board in evaluating this application. Include here specialized training or education, membership on commissions, committees, advisory boards, other certifications, etc.

In making this application to the American Board of Forensic Toxicology for the issuance to me of a Certificate of Qualification, all in accordance with and subject to its Articles of Incorporation, Bylaws, and such other governing provisions as, from time to time, are in force (hereinafter collectively referred to as its regulations), I agree to disqualification from the issuance to me of a Certificate; suspension of such Certificate; revocation of such Certificate; or to surrender of such Certificate to the American Board of Forensic Toxicology, in the event of any misstatement or misrepresentation of a material fact in this application or in the event that any of the aforementioned regulations applicable to such Certificate are violated by me, as determined by the American Board of Forensic Toxicology. I further agree to hold the American Board of Forensic Toxicology, its officers, examiners, and agents free from any claim, damage, or liability by reason of action, they, or any of them, may take in respect of this application including, but not limited to, the failure of the American Board of Forensic Toxicology to issue me such Certificate, or the suspension, revocation, or making of any demand for the surrender of an issued Certificate, or the removal of my name from any list of holders of such certificates.

In support of this application, I certify, under oath or affirmation, that all of the statements made herein or associated herewith are true, complete, and correct to the best of my knowledge and belief and are made in good faith.

_____
Signature of Applicant

Subscribed and sworn to before me this _____day of _____, 19 ____

_____

Notary Public in and for the State of _____

(NOTORIAL SEAL)

My Commission expires _____, 19____

AMERICAN BOARD OF FORENSIC ODONTOLOGY, INC.

SPONSORING ORGANIZATION

American Academy of Forensic Sciences

A brief introduction to the nature and purposes of the Board, with a summary of requirements for certification and application procedures.

BACKGROUND, FUNCTIONS, and PURPOSES of the AMERICAN BOARD of FORENSIC ODONTOLOGY, INC.

The need unequivocally to identify forensic scientists qualified to provide essential professional services for the nation's judicial and executive branches of government has been long recognized. In response to this professional mandate, the American Board of Forensic Odontology was organized in 1976 to provide, in the interest of the public and the advancement of the science, a program of certification in forensic odontology. In purpose, function, and organization, the ABFO is thus analogous to the certifying boards in various medical specialties and scientific fields.

The objective of the Board is to establish, enhance, and revise as necessary, standards of qualification for those who practice forensic odontology, and to Certify as qualified specialists those voluntary applicants who comply with the requirements of the Board. In this way, the Board aims to make available to the judicial system, and other publics, a practical and equitable system for readily identifying those persons professing to be specialists in forensic odontology who possess the requisite qualifications and competence.

Certification is based upon the candidate's personal and professional record of education and training, experience, and achievement, as well as on the results of a formal examination.

The Board is a non-profit organization incorporated in the District of Columbia. Its initial sponsor is the American Academy of Forensic Sciences. The Board is composed of officers and other directors, who serve staggered terms and are elected from among nominees of designated nominating organizations, or serve at-large.

Excerpts from the Board's STANDARDS FOR CERTIFICATION IN FORENSIC ODONTOLOGY are contained in the statement on "Qualifications and Requirements for Certification in Forensic Odontology" which follows.

QUALIFICATIONS and REQUIREMENTS for CERTIFICATION in FORENSIC ODONTOLOGY

1. *General Qualifications*
   a. Applicants must be persons of good moral character, high integrity, good repute, and must possess high ethical and professional standing.
   b. Certification is limited to permanent residents of the United States of America, its territories and possessions, or of Canada and its territories.
2. *Professional Education*
   a. Applicants must possess a dental degree from an accredited institution, conferring the D.D.S. or D.M.D. degree.
   b. Applicants must have specialized training from an institution(s) acceptable to the Board.
      Such institutions include colleges and universities accredited by Regional Accrediting Commissions recognized by the U.S. Office of Education, and those institutions whose pertinent educational programs have been accredited by one or more national specialized accrediting agency recognized by the U.S. Office of Education.
3. *Professional Experience*
   a. Applicants shall have at least two years practical experience in Forensic Odontology, be currently active and formally affiliated with Board accepted institutions such as: Medical Examiner's or Coroner's Office, Law Enforcement Agency, Insurance Company, Federal Dental Service.
   b. Applicants shall participate in twenty-five (25) autopsies attested to by the Medical Examiner or Coroner in charge. This participation will include a dental and oral examination plus a written record of that examination. In combination with or in lieu of the previously mentioned criteria, cases for presentation may also consist of personal injury, malpractice, or peer review.
   c. Applicants will submit three (3) significant cases in Forensic Odontology acceptable to the Board, having complete write-ups, photographs, etc. which will become the property of the Board. This requirement shall be subject to waiver by the Board if the applicant is unable to obtain case material.
   d. Applicants must be engaged in the practice of Forensic Odontology (consulting practice) at the time the application is submitted. Such experience must be in two (2) or more of the following general categories or appropriate combinations thereof:
      1. Post Doctoral Education
      2. Training in Forensic Odontology
      3. Closely related disciplines
      4. Practice
      5. Research
      6. Teaching
      7. Administration
   e. Applicants must present evidence of one thousand (1,000) qualification points. The applicant is encouraged not to concentrate in one area, but to be well diversified, determination of such to be at the discretion of the Credentials Committee. It is the responsibility of each applicant to submit documentation and a compilation of his/her own qualifications, to be reviewed by the Credentials Committee. The points are to be accumulated as follows with #7 a must for each applicant.
      1. One (1) point per hour for attendance at a Board recognized scientific session (meeting) in Forensic Odontology. A maximum of 100 points.
      2. Fifty (50) points for presenting a lecture or a laboratory demonstration at a recognized session. Two hundred (200) points maximum.
      3. Fifty (50) points for the publication of a paper on forensics (preferably dental) with a reprint or copy to be sent to the Board. Three hundred (300) points maximum.
      4. Two hundred (200) points maximum for the formal affiliation with a Board recognized institution such as: Medical Examiner, Coroner, Law Enforcement Agency, Federal dental service, or Insurance Company. Twenty-five (25) points per year for each affiliation.
      5. Forty-five (45) points maximum for the organization of a mass disaster team or a symposium. The points divided as follows: twenty-five (25) for directorship, one (1) point per hour for the organizing to a maximum of twenty (20). One (1) point per hour for up to a maximum of ten (10).
      6. Twenty-five (25) points for officiary or chairperson of a committee in a Board recognized Forensic Odontology organization.
      7. Twenty-five (25) points per case for: a documented routine identification case; a Board recognized procedure such as serology, microscopy, pharmacology, etc.; a bite mark work up. Each case must be documented to the Board.
      8. Twenty-five (25) points for a court deposition, a copy to the Board; for a court appearance, including litigation cases, at the rate of five (5) points per hour with a maximum of twenty-five (25) points per case; twenty-five (25 points for an examination and written report on: malpractice, personal injury, or peer review cases.
      9. Two hundred and fifty (250) points maximum for a full time course, as a student, in Forensic Sciences in an institution acceptable to the Board.
4. *Examinations*
   a. Applicants who meet the requirements and qualifications set forth in Sections 1, 2, 3, shall be admitted to comprehensive written and/or oral examinations provided by the Board and based upon board principles of Forensic Odontology, and shall be required to receive passing grades in such examination(s). Applicants remain eligible to undergo examination for a period of two (2) years after admission to examination.
   b. An applicant who fails to pass the examination(s) may apply within one (1) year for re-examination, without payment of an additional fee. After unsuccessful re-examination, an applicant must file a new application and pay an additional fee before examination.

GENERAL PROVISIONS CONCERNING CERTIFICATION

1. The right to deny Certification is reserved.
2. Certificates granted and issued by the Board may be suspended or revoked for any of the following reasons:
   a. A misstatement or misrepresentation, or concealment or omission of a material fact or facts in an application or any other communication to the Board or its representative(s).
   b. Conviction of an applicant for Certification or holder of a Certificate of this Board by a court of competent jurisdiction of a felony or any crime involving, in the judgment of the Board of Directors, moral turpitude.
   c. Issuance of a Certificate contrary to or in violation of any of the laws, standards, rules, or regulations governing the Board and its Certification programs at the time of its issuance; or determination that the person Certified was not in fact eligible to receive such Certificate at the time of issuance.
   d. Unethical conduct or other conduct, by a holder of a Certificate of this Board, which in the judgment of the Board brings the specialty of Forensic Odontology into disrepute.
3. Action to suspend or revoke may only be taken after at least thirty (30) days advance notice of the charges or reasons for such action has been given to the individual concerned and an opportunity for such persons to be heard has been provided by the Board.
4. Applicants who are denied Certification by the Board may appeal such action to the Board of Directors, in writing, within sixty (60) days after the issue date of such notification.
5. Persons holding a valid, unrevoked Certificate of Qualification issued by the Board are entitled to use the designation "Diplomate of the American Board of Forensic Odontology" in conformance with the standards of the American Dental Association.
6. Certificates of Qualification in Forensic Odontology are valid for five (5) years and renewable according to standards and under conditions established by the Board.
7. Certificates issued by the Board are not transferable. They remain the property of the Board, but every person to whom a Certificate has been properly issued shall be entitled to its continued possession unless and until such Certificate is revoked.

PROCEDURE for APPLICATION and CERTIFICATION

1. Application forms and instructions for their submission can be obtained from:
   The American Board of Forensic Odontology, Inc.
   Attn: The Forensic Sciences Foundation, Inc.
   11400 Rockville Pike, Suite 515
   Rockville, Maryland 20852
   Telephone: (301) 770-2723
2. Applications for issuance of a Certificate of Qualification in Forensic Odontology must be submitted on the form(s) available from the Board, and should be returned to the above address, in full compliance with the instructions furnished, and must be accompanied by an application fee of $100.00, non-refundable. No application will be considered by the Board unless accompanied by the application fee.
3. The applicant must arrange for submission of an official transcript of his/her academic record from every institution of higher education attended (irrespective of whether or not a degree was received). Such transcripts must be submitted directly by the registrar of each institution to the Board office.
4. Every application must also be supported by letters of reference from three (3) persons qualified to judge the applicant's character and professional qualifications, sent directly by each such person to the Board office.
5. The examination fee, determined by the Board, is $250.00 to be paid within thirty (30) days of the time an applicant is notified by the Board for acceptance for the examination.
6. If an applicant, for any reason except failure in a Board examination, is deemed ineligible for Certification by the Board, all except $75.00 of the examination fee will be refunded. However, no refund is made after an applicant has been officially accepted by the Board for the examination, whether or not he/she undergoes examination.
7. Diplomates of the American Board of Forensic Odontology are required to pay an annual fee of $75.00 subject to the cost of living operating expense increases to be determined by the Board.

AMERICAN BOARD OF FORENSIC ODONTOLOGY, INC.

WASHINGTON, D.C.

Application No. _____

Date Issued _____

APPLICATION FOR CERTIFICATION IN FORENSIC ODONTOLOGY

Social Security Number

Mail completed application to:

American Board of Forensic Odontology
Attn: The Forensic Sciences Foundation, Inc.
11400 Rockville Pike
Rockville, Maryland 20852

INSTRUCTIONS TO APPLICANT:

a. *Please type or print all information. Each item in the application must bear an entry; if "None" is applicable, so state. Use extra sheets for additional data or information; identify the material being furnished and show your name and address on each sheet.*

b. *Enclose a fee of $100.00. Make checks or money orders payable to American Board of Forensic Odontology. Do not send cash or stamps.*

c. *Make certain that each college or university you have attended forwards an official transcript of your academic record(s) directly to The American Board of Forensic Odontology.*

d. *Attach a complete list of your publications in the scientific literature. Include names of all co-authors, complete title of paper, name of journal, volume, page(s) and year of publication. Also include papers presented with subject matter, organization, place, and date.*

---

1. Name _____ 2. Sex _____
Last First Middle

3. State your name exactly as you wish it to appear on the Certificate (exclude degrees).

_____

4. If you have ever been known by or used another name (e.g., maiden name) please specify:

_____

5. Complete Mailing Address _____
Street

_____
City, State and Zip Code

6. Date of Birth _____ 7. Place of Birth _____
mo/day/yr

8. Citizenship _____. If not a citizen of the U.S.A. or Canada, please *document* your residency status in the U.S.A., Canada, their possessions and/or territories.

9. Have you ever been convicted of a felony or misdemeanor (exclude minor traffic violations)?_____. If *yes*, attach a statement of details.

10. Undergraduate Education:

INSTITUTION	LOCATION	INCLUSIVE DATES	MAJOR	DEGREE	DATE REC'D.

11. Graduate Education:

INSTITUTION	LOCATION	INCLUSIVE DATES	MAJOR	DEGREE	DATE REC'D.

12. Post Doctoral Education:
(include short courses)

INSTITUTION	NATURE of the COURSE	DATES	LENGTH of COURSE

13. Awards and Honor Societies:

14. Military Service:

Branch of Service Inclusive Dates Type of Discharge

15. Professional Experience Since Graduation from Dental School. (List chronologically *starting* with your *most recent* position):

a. Organization and Address

Inclusive Dates _____ Exact Title of Your Position

Full or Part-Time? _____ If Part-Time, % of Time

Brief Statement of your Duties and Responsibilities (emphasize forensic odontology activities)

Name(s) and Present Address(es) of Immediate Supervisor(s)

b. Organization and Address

Inclusive Dates _____ Exact Title of Your Position

Full or Part-Time? _____ If Part-Time, % of Time

Brief Statement of your Duties and Responsibilities (emphasize forensic odontology activities)

Name(s) and Present Address(es) of Immediate Supervisor(s)

c. Organization and Address

Inclusive Dates _____ Exact Title of Your Position

Full or Part-Time? _____ If Part-Time, % of Time

Brief Statement of your Duties and Responsibilities (emphasize forensic odontology activities)

Name(s) and Present Address(es) of Immediate Supervisor(s)

16. Membership in Professional or Learned Scientific Societies:

ORGANIZATION	GRADE OF MEMBERSHIP

17. Do you now hold a position with a medical examiner's, coroner's office, or insurance company?_____. Give details of your position, and length of your association.

_____

_____

_____

18. References (List the names and addresses of three (3) individuals who have agreed to complete reference forms in your behalf):

NAME	COMPLETE MAILING ADDRESS

19. Additional Information: (Use this space to make any comments regarding your activities in forensic odontology which might assist the Board in evaluating this application. Include here specialized training or education, membership on commissions, committees, advisory boards, other certifications, etc.)

_____

_____

_____

_____

_____

In making this application to the American Board of Forensic Odontology for the issuance to me of a Certificate of Qualification, all in accordance with and subject to its Articles of Incorporation, Bylaws, and such other governing provisions as, from time to time, are in force, (hereinafter collectively referred to as its regulations), I agree to disqualification from the issuance to me of a Certificate; suspension of such Certificate; revocation of such Certificate; or to surrender of such Certificate to the American Board of Forensic Odontology, in the event of any misstatement or misrepresentation of a material fact in this application or in the event that any of the aforementioned regulations applicable to such Certificate are violated by me, as determined by the American Board of Forensic Odontology. I further agree to hold the American Board of Forensic Odontology, its officers, examiners, and agents free from any claim, damage, or liability by reason of action, they, or any of them, may take in respect of this application, including, but not limited to, the failure of the American Board of Forensic Odontology to issue me such Certificate, or the suspension, revocation, or making of any demand for the surrender of an issued Certificate, or the removal of my name from any list of holders of such certificates.

In support of this application, I certify, under oath or affirmation, that all of the statements made herein or associated herewith are true, complete, and correct to the best of my knowledge and belief and are made in good faith.

_____
Signature of Applicant

Subscribed and sworn to before me this _____day of _____, 19_____

_____

Notary Public in and for the State of _____

(NOTORIAL SEAL)

My Commission expires _____, 19_____

AFBO/2-76

AMERICAN BOARD OF FORENSIC PSYCHIATRY, INC.
WASHINGTON, D.C.

Application No._____

Date Issued_____

STAPLE SIGNED PHOTOGRAPH IN THIS SPACE

Social Security Number

APPLICATION FOR CERTIFICATION IN FORENSIC PSYCHIATRY

Mail completed application to:

American Board of Forensic Psychiatry, Inc.
Attn: The Forensic Sciences Foundation, Inc.
225 S. Academy Blvd.
Colorado Springs, Colorado 80910

INSTRUCTIONS TO APPLICANT:

a. *Please type or print all information. Each item in the application must bear an entry; if "None" is applicable, so state. Use extra sheets for additional data or information; identify the material being furnished and show your name and address on each sheet.*

b. *Attach a current, signed passport-type photograph of yourself no less than 2 x 2 inches in size in the space provided.*

c. *Enclose a fee of $75.00 Make checks or money orders payable to American Board of Forensic Psychiatry. Inc. Do not send cash or stamps.* $150.00

d. *A copy of the following must accompany this application:*
   1. *Medical school diploma*
   2. *Current state registration to practice medicine in one state, province or territory.*
   3. *Certificate from American Board of Psychiatry & Neurology.*

e. *Attach a complete list of your publications in the scientific literature. Include names of all co-authors, complete title of paper, name of journal, volume, page(s) and year of publication.*

1. Name _____ 2. Sex_____
Last First Middle

3. State your name exactly as you wish it to appear on the Certificate.

_____

4. If you have ever been known by or used another name (e.g., maiden name) please specify:

_____

5. Complete Mailing Address _____
Street

_____
City, State and Zip Code ( )
Telephone No.

6. Date of Birth _____ 7. Place of Birth _____
mo/day/yr

8. Citizenship _____. If not a citizen of the U.S.A. or Canada, please *document* your residency status in the U.S.A., Canada, their possessions and/or territories.

9. Have you ever been convicted of a felony or misdemeanor (exclude minor traffic violations)? _____If *yes*, attach a statement of details.

10. Undergraduate Education:

INSTITUTION	LOCATION	INCLUSIVE DATES	MAJOR	DEGREE	DATE REC'D.

11. Graduate Education:

INSTITUTION	LOCATION	INCLUSIVE DATES	MAJOR	DEGREE	DATE REC'D.

12. List all licenses to practice medicine with date and certificate number.

13. List all specialty certifications (ABPN, etc.) with latest certificate No.

14. Awards and Honor Societies:

15. Military Service:

Branch of Service Inclusive Dates Type of Discharge

16. Professional Experience During the Past Fifteen (15) Years (List chronologically *starting* with your *most recent* position:

a. Organization and Address

Inclusive Dates Exact Title of Your Position

Full or Part-Time? If Part-Time, % of Time

% of time spent in Forensic Psychiatry at a particular job or private practice

Brief Statement of your Duties and Responsibilities (emphasize forensic psychiatry activities)

Name(s) and Present Address(es) of Immediate Supervisor(s)

b. Organization and Address

Inclusive Dates Exact Title of Your Position

Full or Part-Time? If Part-Time, % of Time

% of time spent in Forensic Psychiatry at a particular job or private practice

Brief Statement of your Duties and Responsibilities (emphasize forensic psychiatry activities)

Name(s) and Present Address(es) of Immediate Supervisor(s)

(Use additional sheets if necessary)

17. Membership in Professional or Learned Scientific Societies:

ORGANIZATION	GRADE OF MEMBERSHIP

18. List the names and addresses of three(3) individuals who have agreed to complete reference forms in your behalf. One must be certified by the ABPN with forensic experience (Indicate below with (x) individual certified by ABPN). No reference can be a member of the Board of Directors of the American Board of Forensic Psychiatry, Inc.

NAME	COMPLETE MAILING ADDRESS

19. Additional Information: (Use this space to make any comments regarding your activities in forensic psychiatry which might assist the Board in evaluating this application. Include here specialized training or education, membership on commissions, committees, advisory boards, other certifications, etc.

In making this application to the American Board of Forensic Psychiatry, Inc. for the issuance to me of a Certificate of Qualification, all in accordance with and subject to its Articles of Incorporation, Bylaws, and such other governing provisions as, from time to time, are in force (hereinafter collectively referred to as its regulations), I agree to disqualification from the issuance to me of a Certificate; suspension of such Certificate; revocation of such Certificate; or surrender of such Certificate to the American Board of Forensic Psychiatry, Inc., in the event of any misstatement or misrepresentation of a material fact in this application or in the event that any of the aforementioned regulations applicable to such Certificate are violated by me, as determined by the American Board of Forensic Psychiatry, Inc. I further agree to hold the American Board of Forensic Psychiatry, Inc., its officers, examiners, and agents free from any claim, damage, or liability by reason of action they, or any of them, may take in respect of the application including, but not limited to, the failure of the American Board of Forensic Psychiatry, Inc. to issue me such Certificate, or the suspension, revocation, or making of any demand for the surrender of an issued Certificate, or the removal of my name from any list of holders of such Certificates.

In support of this application, I certify, under oath or affirmation, that all of the statements made herein or associated herewith are true, complete, and correct to the best of my knowledge and belief and are made in good faith.

_____
Signature of Applicant

Subscribed and sworn to before me this _____ day of _____, 19____

_____

Notary Public in and for the State of _____

My Commission expires _____, 19____

(NOTORIAL SEAL)

ABFP/2A-78

AMERICAN BOARD OF FORENSIC PSYCHIATRY, INC.

SPONSORING ORGANIZATIONS

American Academy of Forensic Sciences
American Academy of Psychiatry and the Law

A brief introduction to the nature and purposes of the Board, with a summary of requirements for certification and application procedures.

September, 1979

BACKGROUND, FUNCTIONS, and PURPOSES of the AMERICAN BOARD of FORENSIC PSYCHIATRY, INC.

The need unequivocally to identify forensic scientists qualified to provide essential professional services for the nation's judicial and executive branches of government has long been recognized. In response to this professional mandate, the American Board of Forensic Psychiatry was organized in 1976 to provide, in the interest of the public and the advancement of the science, a program of certification in forensic psychiatry. In purpose, function and organization, the ABFP is thus analagous to the certifying boards in various medical specialties and scientific fields.

The object of the Board is to establish, and enhance, and revise as necessary, standards of qualification for those who practice forensic psychiatry and to certify as qualified specialists those voluntary applicants who comply with the requirements of the Board. In this way, the Board aims to make available to the judicial system, and other interested parties a practical and equitable system readily identifying those persons professing to be specialists in forensic psychiatry who possess the requisite qualifications and competence.

Certification is based upon the candidate's personal and professional record of education and training, experience and achievement, as well as on the results of a formal examination.

The Board is a non-profit organization incorporated in the District of Columbia. Its initial sponsors are the American Academy of Forensic Sciences and the American Academy of Psychiatry and the Law. The Board is composed of officers and other directors, who serve staggered terms and are elected from among nominees of designated nominating organizations or serve at-large.

Excerpts from the Board's Standards for Certification in Forensic Psychiatry are contained in the statement on "Qualifications and Requirements for Certification in Forensic Psychiatry" which follows.

QUALIFICATIONS and REQUIREMENTS for CERTIFICATION in FORENSIC PSYCHIATRY

1. General Qualifications.
   A. Applicants must be persons of good moral char
   scientific integrity, with high ethical and professional stan
   B. Certification is limited to permanent residents c
   United States of America, its territories and possessions
   Canada.
2. Professional Education and Licensure.
   A. Applicants must possess an M.D., D.O., or a reco
   equivalent medical degree.
   B. Applicants must have a valid current license to practic
   cine in a state, territory, or province of the United States or Ca
   C. Applicants must be Certified in Psychiatry b
   American Board of Psychiatry and Neurology or by the Ca
   equivalent.
3. Professional Experience and Training.
   A. Applicants must have a minimum of five years of po
   dency experience in clinical psychiatry with substant
   perience in forensic psychiatry, including but not limi
   contributions in research, teaching and the administra
   pects of forensic psychiatry.
   B. One year of accredited full time training in forens
   chiatry shall be two years of equivalent credit.
   C. The applicant must provide evidence of all tra
   forensic psychiatry. Credit will be considered for foren
   chiatric training within an approved psychiatric residenc
   ing program.
   D. On approval by the Committee on Credentials th
   cant may apply for examination to be conducted by th
   mittee on Examination at an appointed time and place.
4. Examination.
   A. Applicants who meet the requirements and qualif
   set forth in Sections 1, 2, and 3 above shall be acce
   written examination. Upon successful completion they
   eligible for an oral examination.
   B. Applicants remain eligible to undergo examinatio
   two years after admission to the examination.
   C. Applicants who fail in either written or oral exar
   may apply within one year for one re-examination with
   ment of additional fee. Before a third examination, an a
   must file a new application and pay an additional fee.

GENERAL PROVISIONS CONCERNING CERTIFICATION

1. The right to deny Certification is reserved.
2. Certificates granted and issued by the Board may
   suspended or revoked for any of the following reasons
   A. A misstatement, misrepresentation, concealme
   sion of a material fact or facts in an application or any
   munication to the Board or its representative(s).
   B. Issuance of a Certificate contrary to or in viola
   of the laws, standards, rules or regulations governing
   and its certification programs at the time of its issua
   termination that the person certified was not in fact
   receive such Certificate at the time of its issuance.
   C. Conviction of an applicant for certification or holder of a Certificate of this Board by a Court of competent jurisdiction of a felony or any crime involving, in the judgment of the Board of Directors, moral turpitude.
   D. Unethical conduct or other conduct by an applicant or holder of a Certificate of this Board, which in the judgment of the Board brings the specialty of forensic psychiatry into disrepute.
3. Action to suspend or revoke may only be taken after at least thirty (30) days advance notice of the charges or reasons for such action has been given to the individual concerned and an opportunity for such person(s) to be heard has been provided by the Board.
4. Applicants who are denied certification by the Board may appeal such action to the Board of Directors, in writing, within ninety (90) days after the issue date of such notification.
5. Persons holding a valid, unrevoked Certificate of Qualification issued by the Board are entitled to use the designation, "Diplomate of the American Board of Forensic Psychiatry."
6. Certificates issued by the Board are not transferable. Every person to whom a Certificate has been properly issued shall be entitled to its continued possession unless and until such Certificate is revoked.

PROCEDURE for APPLICATION and CERTIFICATION

1. Application forms and instructions for their submission can be obtained from:
   The American Board of Forensic Psychiatry, Inc.
   ATTN: The Forensic Sciences Foundation, Inc.
   11400 Rockville Pike, Suite 515
   Rockville, MD. 20852 Phone: (301) 770-2723
2. Applications must be submitted on the form furnished by the Board in compliance with the instructions, accompanied by a non-refundable application fee of $75.00. $150.00
3. Every application must be supported by letters of reference from at least three (3) persons qualified and willing to provide professional and character references. The Board will directly contact these references and may, on its own initiative, seek other references.
4. The applicant must present evidence that he possesses a valid medical degree or its equivalent and current license to practice and is Certified in Psychiatry by the American Board of Psychiatry and Neurology.
5. Completed applications are viewed by the Credentials Committee of the Board and their recommendation is considered by the Board of Directors who vote whether or not to admit the applicant to the examination.
6. The examination fee currently determined by the Board is $250.00 to be paid within thirty (30) days of the time an applicant is notified by the Board of acceptance for the examination. $350.00
7. If an applicant, for any reason, is unable to take the examination as scheduled and does not give notice of withdrawal from the examination at least thirty (30) days prior to the scheduled examination, all except $150.00 will be refunded. If for any reason the Board cancels the eligibility for the examination, a full refund of the examination fee will be made.
8. Examinations for accepted candidates are prepared, administered and evaluated by the Examinations Committee, whose recommendations are considered as expeditiously as possible, by the Board of Directors for final action.
9. Successful candidates are issued a Certificate of Qualification in Forensic Psychiatry by the Board to attest to their status as Diplomates of the American Board of Forensic Psychiatry.

AMERICAN BOARD OF FORENSIC DOCUMENT EXAMINERS, INC.

WASHINGTON, D.C.

Application No. _____

Date Issued _____

STAPLE SIGNED PHOTOGRAPH IN THIS SPACE

Social Security Number

APPLICATION FOR CERTIFICATION IN DOCUMENT EXAMINATION

Mail completed application to:

American Board of Forensic Document Examiners, Inc.
Attn: The Forensic Sciences Foundation, Inc.
11400 Rockville Pike
Rockville, Maryland 20852

INSTRUCTIONS TO APPLICANT:

a. *Please type or print all information. Each item in the application must bear an entry; if "None" is applicable, so state. Use extra sheets for additional data or information; identify the material being furnished and show your name and address on each sheet.*

b. *Attach a current signed passport-type photograph of yourself no less than 2 x 2 inches in size in the space provided.*

c. *Enclose a fee of $150.00. Make checks or money orders payable to American Board of Forensic Document Examiners, Inc. Do not send cash or stamps.*

d. *Make certain that the college or university from which you received your baccalaureate degree forwards an official transcript of your academic record directly to the American Board of Forensic Document Examiners, Inc.*

e. *Attach a complete list of your publications in the scientific literature. Include names of all co-authors, complete title of paper, name of journal, volume, page(s) and year of publication.*

1. Name _____ 2. Sex _____
Last First Middle

3. State your name exactly as you wish it to appear on the Certificate (exclude degrees).

_____ _____

4. If you have ever been known by or used another name (e.g., maiden name) please specify:

_____

5. Complete Mailing Address _____
Street

_____ ( )
City, State and Zip Code Telephone No.

6. Date of Birth _____ 7. Place of Birth _____
mo/day/yr

8. Citizenship _____. If not a citizen of the U.S.A., Canada, or Mexico please *document* your residency status in the U.S.A., Canada, Mexico, their possessions and/or territories.

9. Have you ever been convicted of a felony or misdemeanor (exclude minor traffic violations)? _____ If *yes*, attach a statement of details.

10. High School (from which diploma received).

NAME	LOCATION	INCLUSIVE DATES	YEAR OF GRADUATION

11. University or College:

INSTITUTION	LOCATION	INCLUSIVE DATES	MAJOR	DEGREE	DATE REC'D.

12. Awards and Honor Societies:

13. Military Service:

Branch of Service Inclusive Dates Type of Discharge

14. All Professional Experience (List chronologically *starting* with your *most recent* position):

a. Organization & address

Inclusive Dates Exact Title of Your Position

Full or Part-Time? If Part-Time, % of Time

Brief Statement of your Duties and Responsibilities

Name(s) and Present Address(es) of Immediate Supervisor(s)

b. Organization & address

Inclusive Dates Exact Title of Your Position

Full or Part-Time? If Part-Time, % of Time

Brief Statement of your Duties and Responsibilities

Name(s) and Present Address(es) of Immediate Supervisor(s)

USE ADDITIONAL SHEETS IF NECESSARY

15. Basic Training in Questioned Document Examination (where, by whom, dates of training, full or part time, mailing address if appropriate)

16. List any document examiners in addition to your basic training with whom you have worked outside of your office or agency.

Name	*Date*	*Nature of Association*	*Mailing Address if Appropriate*

17. Expert Witness Testimony

a. Where and when did you first testify as a Questioned Document Examiner?

b. In what states, provinces and countries have you so testified. Specify types of courts (Federal, State, Municipal.).

c. Approximately how many times have you testified in the past five years?

d. How many times during the past year?

e. Indicate if you have testified regarding the following:

Disputed Handwriting/Handprinting

Signatures

Typewriting and Other

Mechanical Impressions

Altered Documents

Other Document Problems (Describe)

f. Do you testify as an expert in other specialized fields? (Describe)

18. Reports and Examinations:

A. Do you regularly submit written document reports?

B. Approximately how many document reports did you prepare during the past 3 months , 12 months , 36 months .

19. Laboratory equipment, reference files, and library owned by you or in the Laboratory in which you are employed.

20. Do you regularly take and process your own document photographs? YES NO

21. Do you regularly use photographic techniques and procedures in document examination? YES _____ NO _____.

If yes, Explain _____

22. References (list the names and addresses of three (3) Forensic Document Examiners who have agreed to complete reference forms in your behalf, preferably Forensic Document Examiners who are familiar with your background and qualifications. References from persons other than Forensic Document Examiners will be evaluated on an individual basis).

NAME	*COMPLETE MAILING ADDRESS*

23. Additional Information: (Use this space to make any comments regarding your activities in Forensic Document Examination which might assist the Board in evaluating this application. Include here Professional Societies, specialized training or education, membership on commissions, committees, advisory boards, other certifications, etc.)

In making this application to the American Board of Forensic Document Examiners, Inc. for the issuance to me of a Certificate of Qualification, all in accordance with and subject to its Articles of Incorporation, Bylaws, and such other governing provisions as, from time to time, are in force (hereinafter collectively referred to as its regulations), I agree to disqualification from the issuance to me of a Certificate; suspension of such Certificate; revocation of such Certificate; or surrender of such Certificate to the American Board of Forensic Document Examiners, Inc., in the event of any misstatement or misrepresentation of a material fact in this application or in the event that any of the aforementioned regulations applicable to such Certificate are violated by me, as determined by the American Board of Forensic Document Examiners, Inc. I further agree to hold the American Board of Forensic Document Examiners, Inc., its officers, examiners, and agents free from any claim, damage, or liability by reason of action they, or any of them, may take in respect of this application including, but not limited to, the failure of the American Board of Forensic Document Examiners, Inc. to issue me such Certificate, or the suspension, revocation, or making of any demand for the surrender of an issued Certificate, or the removal of my name from any list of holders of such Certificates.

In support of this application, I certify, under oath or affirmation, that all of the statements made herein or associated herewith are true, complete, and correct to the best of my knowledge and belief and are made in good faith.

_____
Signature of Applicant

Subscribed and sworn to before me this _____ day of _____, 19_____.

_____
Notary Public in and for the State of

_____

(Notarial Seal)

My commission expires _____, 19_____

AMERICAN BOARD OF FORENSIC DOCUMENT EXAMINERS, INC.

SPONSORING ORGANIZATIONS:

American Academy of Forensic Sciences
American Society of
Questioned Document Examiners

A brief introduction to the nature and purposes of the Board, with a summary of requirements for certification and application procedures.

May 1978

BACKGROUND, FUNCTIONS, and PURPOSES of the AMERICAN BOARD of FORENSIC DOCUMENT EXAMINERS, INC.

The need to identify forensic scientists qualified to provide essential professional services for the nation's judicial and executive branches of government as well as the community in general has been long recognized. In response to this professional mandate, the American Board of Forensic Document Examiners, Inc. was organized in 1977 to provide, in the interest of the public and the advancement of the science, a program of certification in forensic document examination. In purpose, function, and organization, the ABFDE is thus analogous to the certifying boards in various other scientific fields.

The objective of the Board is to establish, enhance, and maintain as necessary, standards of qualification for those who practice forensic document examination and to certify as qualified specialists those voluntary applicants who comply with the requirements of the Board. In this way, the Board aims to make available to the judicial system, and other publics, a practical and equitable system for readily identifying those persons professing to be specialists in forensic document examination who possess the requisite qualifications and competence.

Certification is based upon the candidate's personal and professional record of education and training, experience, and achievement, as well as on the results of a formal examination.

The Board is a non-profit organization incorporated in the District of Columbia. Its initial sponsors are the American Academy of Forensic Sciences and the American Society of Questioned Document Examiners. The Board is composed of officers and other directors who serve staggered terms and are elected from among nominees of designated nominating organizations or serve at-large.

The Board's STANDARDS FOR CERTIFICATION IN FORENSIC DOCUMENT EXAMINATION are contained in the statement on "Qualifications and Requirements for Certification in Forensic Document Examination" which follows.

QUALIFICATIONS and REQUIREMENTS for CERTIFICATION in FORENSIC DOCUMENT EXAMINATION

1. *General Qualifications*
   a. Applicants must be persons of good moral character, high integrity, good repute and must possess high ethical and professional standing.
   b. Certification is limited to permanent residents of the United States of America, its territories and possessions, or of Canada or Mexico.

2. *Educational Qualifications*
   Applicants (for certification) must possess an earned baccalaureate degree from an institution acceptable to the Board. (Acceptable institutions are those accredited by Regional Accrediting Commissions recognized by the U.S. Office of Education, and other institutions in the discretion of the Board.)

3. *Professional Experience Qualifications*
   a. Applicants are required to document a full-time two-year training period in a Forensic Document Laboratory recognized by the Board.
   b. Applicants must be able to demonstrate that they have completed two (2) years of full-time independent document work in a Forensic Document Laboratory recognized by the Board. (If all other requirements have been met the examination referred to in Section 4(a) below may be taken before this requirement is completed, but no certificate will be issued until this requirement is met.)
   c. Applicants will be required to submit as references the names and addresses of three (3) Forensic Document Examiners recognized by the Board attesting to his/her qualifications for certification and high ethical character. Current Board members cannot be used as references. (References from persons other than Document Examiners will be evaluated on an individual basis.)
   d. Applicants must be engaged in the full-time practice of forensic document examination at the time of application for certification or be able to demonstrate that they have had such experience for at least one of the five (5) years immediately preceding the date of application. (Exceptions will be evaluated on an individual basis.)
   e. Each applicant shall be required to demonstrate a record of appropriate professional activities in forensic document examination in keeping with the following definitions:
      (1) "Forensic document examination is the practice of the application of document examination to the purposes of the law."
      (2) "Forensic document examination relates to the identification of handwriting, typewriting, the authenticity of signatures, alterations in documents, the significance of inks and papers, photocopying processes, writing instruments, sequence of writings and other elements of a document in relation to its authenticity or spuriousness."

4. *Examinations*
   a. In addition to meeting the requirements in Sections 1, 2, and 3 above applicants shall be required to take a comprehensive written and/or oral examination based upon the broad range of problems frequently encountered in document examination and achieve passing grades. These problems may include questions concerning the authorship of handwriting, the authenticity or spuriousness of a signature, the source of typewritten material, the presence or absence of alterations, additions or deletions on documents, the comparison of inks, papers and writing instruments, or similar questions as promulgated by the Board.
   b. Applicants are eligible to undergo examination for two (2) years after approval of their applications.
   c. An applicant who fails to pass the examination(s) may apply after one (1) year for reexamination by payment of a nominal fee established by the Board.

5. *Temporary Waivers*
   a. For the period ending June 30, ~~1979,~~ 1980, the requirements of an earned baccalaureate degree described in Section 2 and the formal training described in Section 3(a) are waived for *otherwise qualified* applicants (on a year-for-year basis) who can document professional full-time experience in forensic document examination in a situation acceptable to the Board. Such experience shall be in addition to the requirements noted in Section 3(b) above.
   b. For the period ending June 30, 1979, the written and/or oral examination(s) will be waived for applicants who, in the judgment of the Board meet the requirements noted in Section 5(a). The qualifications of those who desire to apply under this waiver will be reviewed by the Board to ascertain the diversity of work of which the applicant is capable and to establish his professional ability.

GENERAL PROVISIONS CONCERNING CERTIFICATION

1. The right to deny certification is reserved by the Board.
2. Certificates of Qualification in Forensic Document Examination are valid for five (5) years and are renewable according to standards and under conditions established by the Board, at an appropriate fee.
3. Persons holding a valid Certificate of Qualification issued by the Board are entitled to use the designation "Diplomate of the American Board of Forensic Document Examiners."
4. Certificates issued by the Board are not transferable. They remain the property of the Board, but every person to whom a Certificate has been properly issued is entitled to its continued possession unless and until such Certificate is revoked.
5. Certificates may be suspended or revoked for cause under an appropriate system of safeguards for the Diplomate concerned.

PROCEDURE for APPLICATION and CERTIFICATION

1. Application forms and instructions for their submission can be obtained from:
   The American Board of Forensic Document Examiners, Inc.
   Attn: The Forensic Sciences Foundation, Inc.
   11400 Rockville Pike, Suite 515
   Rockville, Maryland 20852
   Telephone (301) 770-2722
2. The completed application should be returned to the above address, together with the application fee of $150.00 of which $50.00 is refunded if the applicant is found ineligible for certification. Hence, only persons who believe they clearly meet stated qualifications and requirements for certification should submit applications. No refund is made to accepted applicants admitted to examination, whether or not they take an examination.
3. A recent photograph must accompany the application.
4. An official transcript from the college or university from which the applicant's baccalaureate degree was obtained must be sent directly to the Board's office by the registrar.
5. Successful candidates are issued a Certificate of Qualification in Forensic Document Examination by the Board to attest to their status as Diplomates of the American Board of Forensic Document Examiners and are listed in the next revision of the Directory.
6. Diplomates of the American Board of Forensic Document Examiners are required to pay an annual fee of $35.00 beginning the year following certification.
7. Qualifications, requirements, fees, and application proceaures for Certification are subject to revision by the Board. The latest official version is always obtainable from the above address.

EXPLANATION OF TERMS

1. "Full-time" should be construed as meaning that a major portion of the applicant's activities was devoted to either training in, or the examination of, questioned documents.
2. "Acceptable to the Board" and "Recognized by the Board" as used are not intended to be selective or restrictive. They mean any established Laboratory or individual whose reputation can be demonstrated or is known to be favorable.

AMERICAN BOARD OF FORENSIC ANTHROPOLOGY, INC.

WASHINGTON, D.C.

Application No. _____

Date Issued _____

APPLICATION FOR CERTIFICATION IN FORENSIC ANTHROPOLOGY

Social Security Number

Mail completed application to:

American Board of Forensic Anthropology
Attn: The Forensic Sciences Foundation, Inc.
11400 Rockville Pike
Rockville, Maryland 20852

INSTRUCTIONS TO APPLICANT:

a. *Please type or print all information. Each item in the application must bear an entry; if "None" is applicable, so state. Use extra sheets for additional data or information; identify the material being furnished and show your name and address on each sheet.*

b. *Enclose a fee of $100.00. Make checks or money orders payable to American Board of Forensic Anthropology. Do not send cash or stamps.*

c. *Attach a curriculum vitae including a complete list of your publications in the scientific literature. Include names of all co-authors, complete title of paper, name of journal, page(s) and year of publication.*

d. *Include all other materials requested in the accompanying instructions.*

---

1. Name _____ 2. Sex ____
Last First Middle

3. State your name exactly as you wish it to appear on the Certificate (exclude degrees).

_____

4. If you have ever been known by or used another name (e.g., maiden name) please specify:

_____

5. Complete Mailing Address _____
Street

_____
City, State and Zip Code

6. Date of Birth _____ 7. Place of Birth _____
mo/day/yr

8. Citizenship _____. If not a citizen of the U.S.A. or Canada, please *document* your residency status in the U.S.A., Canada, their possessions and/or territories.

9. Have you ever been convicted of a felony or misdemeanor (exclude minor traffic violations)? _____. If yes, attach a statement of details.

10. Undergraduate Education:

INSTITUTION	LOCATION	INCLUSIVE DATES	MAJOR	DEGREE	DATE REC'D

11. Graduate Education:

12. Awards and Honor Societies:

13. Military Service:

Branch of Service: Inclusive Dates Type of Discharge

14. Professional Experience During the Past Fifteen (15) years (List chronologically *starting* with your *most recent* position):

a. Organization and Address

Inclusive dates _____ Exact Title of Your Position _____

Full or Part-Time? _____ If Part-Time, % of Time _____

Brief Statement of your Duties and Responsibilities (emphasize forensic anthropology activities)

Name(s) and Present Address(es) of Immediate Supervisor(s)

b. Organization and Address

Inclusive dates _____ Exact Title of Your Position _____

Full or Part-Time? _____ If Part-Time, % of Time _____

Brief Statement of your Duties and Responsibilities (emphasize forensic anthropology activities)

Name(s) and Present Address(es) of Immediate Supervisor(s)

15. Membership in Professional or Learned Scientific Societies:

ORGANIZATION	GRADE OF MEMBERSHIP

16. Reference (List the names and addresses of three (3) individuals who have agreed to complete reference forms in your behalf):

NAME	COMPLETE MAILING ADDRESS

17. Additional Information: (Use this space to make any comments regarding your activities in forensic anthropology which might assist the Board in evaluating this application. Include here specialized training or education, membership on commissions, committees, advisory boards, other certifications, etc.)

In making this application to the American Board of Forensic Anthropology for the issuance to me of a Certificate of Qualification, all in accordance with and subject to its Articles of Incorporation, Bylaws, and such other governing provisions as, from time to time, are in force (hereinafter collectively referred to as its regulations), I agree to disqualification from the issuance to me of a Certificate; suspension of such Certificate; revocation of such Certificate; or to surrender of such Certificate to the American Board of Forensic Anthropology in the event of any misstatement or misrepresentation of a material fact in this application or in the event that any of the aforementioned regulations applicable to such Certificate are violated by me, as determined by the American Board of Forensic Anthropology I further agree to hold the American Board of Forensic Anthropology, its officers, examiners, and agents free from any claim, damage, or liability by reason of action, they, or any of them, may take in respect of this application including, but not limited to, the failure of the American Board of Forensic Anthropology to issue me such Certificate, or the suspension, revocation, or making of any demand for the surrender of an issued Certificate, or the removal of my name from any list of holders of such certificates.

In support of this application, I certify, under oath or affirmation, that all of the statements made herein or associated herewith are true, complete, and correct to the best of my knowledge and belief and are made in good faith.

_____
Signature of Applicant

Subscribed and sworn to before me this ____ day of _____, 19 __

_____

Notary Public in and for the State of_____

(NOTORIAL SEAL)

My Commission expires_____, 19__

AMERICAN BOARD OF FORENSIC ANTHROPOLOGY, INC.

SPONSORING ORGANIZATION:

American Academy of
Forensic Sciences

A brief introduction to the nature and purposes of the Board, with a summary of requirements for Certification and application procedures.

August 1977

BACKGROUND, FUNCTIONS, and PURPOSES of the AMERICAN BOARD of FORENSIC ANTHROPOLOGY, INC.

The need unequivocally to identify forensic scientists qualified to provide essential professional services for the nation's judicial and executive branches of government has been long recognized. In response to this professional mandate, the American Board of Forensic Anthropology was organized in 1977 to provide, in the interest of the public and the advancement of the science, a program of certification in forensic anthropology. In purpose, function, and organization, the ABFA is thus analogous to the certifying boards in various medical specialities and scientific fields.

The objectives of the Board are: (a) to encourage the study, improve the practice of, establish and enhance standards for, and advance the science of forensic anthropology; (b) to encourage and promote adherence to high standards of ethics, conduct, and professional practice in forensic anthropology; (c) to grant and issue certificates, and/or other recognition, in cognizance of special qualifications in forensic anthropology to voluntary applicants who conform to the standards established by the Board and who have established their fitness and competence therefor; (d) to inform the appropriate branches of federal and state governments and private agencies of the existence and nature of the American Board of Forensic Anthropology and the professional quality of its diplomates for the practice of forensic anthropology; (e) to maintain and furnish lists of individuals who have been granted certificates by the Board. In this way, the Board aims to make available to the judicial system, and other publics, a practical and equitable system for readily identifying those persons professing to be specialists in forensic anthropology who possess the requisite qualifications and competence.

Certification is based upon the candidate's personal and professional record of education and training, experience, and achievement, as well as on the results of a formal examination.

The Board is a non-profit organization incorporated in the District of Columbia. Its initial sponsors are the American Academy of Forensic Sciences and the Forensic Sciences Foundation. The Board is composed of officers and other directors, who serve staggered terms and are elected from among nominees of designated nominating organizations, or serve at-large.

Excerpts from the Board's STANDARDS FOR CERTIFICATION IN FORENSIC ANTHROPOLOGY are contained in the statement on "Qualifications and Requirements for Certification in Forensic Anthropology" which follows.

QUALIFICATIONS and REQUIREMENTS for CERTIFICATION in FORENSIC ANTHROPOLOGY

1. General Qualifications
   A. Applicants must be persons of good moral character, high integrity, and good repute, and must possess high ethical and professional standing.
   B. Only permanent residents of the United States of America and its territories and possessions, or of Canada and its territories, are eligible for Certification.
2. Education
   A. Applicants must possess an earned Doctoral degree in Anthropology with an emphasis in Physical Anthropology. This would normally include a substantial number of courses in physical anthropology, osteology, anatomy, or forensic anthropology. The Doctoral degree must be from a credited institution recognized by the Board. Normally the Doctoral degree will be a Ph.D. in Anthropology from a recognized Department of Anthropology in an accredited University.
3. Professional Experience
   A. Applicants must possess at least three years of full-time professional experience which involved all or in part the practice of forensic anthropology. This experience must be acceptable to the Board and acquired subsequent to the receipt of the Doctoral degree. Such experience may include (1) Post-Doctoral training in forensic anthropology or a closely related discipline, (2) the practice of forensic anthropology, (3) research in one or more areas of forensic anthropology or (4) the teaching of courses in forensic anthropology or osteology.
   B. At least one year of the professional experience must have been acquired during the last five years immediately preceding the date of application.
   C. Applicants are required to document a record of appropriate professional activities in forensic anthropology, in keeping with the concept that "Forensic Anthropology is the study and practice of the application of the methods of physical anthropology to the process of the law."
4. Examinations
   A. Applicants who meet the requirements in sections 1, 2 and 3 above will be admitted to comprehensive, written and practical examinations based upon broad principles of forensic anthropology and are required to achieve passing grades.
   B. Applicants remain eligible to undergo examination within two years after admission to the examination.
   C. Applicants who fail in the examination may apply within one year for one (1) re-examination, without additional fee.
5. Temporary Waivers
   A. For the period ending June 30, 1978 certain requirements may be waived for those applicants who, in the opinion of the Board, are clearly competent in and have made significant contributions to the field of forensic anthropology. During this period certification will be based upon the acceptance of submitted credentials for those applicants deemed clearly qualified by all members of the American Board of Forensic Anthropology. Minimum requirements for such certification would include a Doctoral degree with appropriate training and experience in forensic anthropology.
   B. For those applicants that are not deemed qualified by the Board at the time their applications are reviewed, comprehensive, written and practical examinations may be offered to establish their competence.
   C. After July 1, 1978 all applicants will be required to take written and practical comprehensive examinations as a part of the requirements for Board Certification.

GENERAL PROVISIONS CONCERNING CERTIFICATION

1. The right to deny Certification is reserved.
2. Certificates of Qualification in Forensic Anthropology are valid for three (3) years, and are renewable according to Standards and under conditions established by the Board, at an appropriate fee.
3. Persons holding a valid Certificate of Qualification issued by the Board are entitled to use the designation "Diplomate of the American Board of Forensic Anthropology" and the initials "DABFA" whenever professionally appropriate.
4. Certificates issued by the Board are not transferable. They remain the property of the Board, but every person to whom a Certificate has been properly issued is entitled to its continued possession unless and until such Certificate is revoked.

PROCEDURE for APPLICATION and CERTIFICATION

1. Application forms and instructions for their submissions can be obtained from:
   The American Board of Forensic Anthropology
   Attn: The Forensic Sciences Foundation, Inc.
   11400 Rockville Pike, Suite 515
   Rockville, Maryland 20852
   Tel. (301) 770-2723
2. The completed application should be returned to the above address, together with the application fee of $100.00 of which $50.00 is refunded if the applicant is found ineligible for Certification. *Hence, only persons who believe they clearly meet stated qualifications and requirements for Certification should submit applications.* No refund is made to accepted applicants admitted to examination.
3. A photocopy of the Doctoral diploma should be submitted with the application.
4. Completed applications are reviewed by the Credentials Committee of the Board, and their recommendation is considered by the full Board of Directors who vote on whether or not to admit the applicant to the examination.
5. Examinations for accepted candidates are prepared and evaluated by the Examination Committee, whose recommendations are considered, as expeditiously as possible, by the full Board of Directors for final action.
6. Successful candidates are issued a Certificate of Qualification in Forensic Anthropology by the Board to attest to their status as Diplomates of the American Board of Forensic Anthropology, and are listed in the next revision of the Directory of Diplomates.
7. Qualifications, requirements, and application procedures for Certification are subject to revision by the Board The latest official version is always obtainable from the above address.

FORENSIC SCIENCES CERTIFICATION PROGRAM

American Board of Forensic Toxicology, Inc.

American Board of Forensic Odontology, Inc.

American Board of Forensic Psychiatry, Inc.

American Board of Forensic Anthropology, Inc.

American Board of Forensic Document Examiners, Inc.

1979 DIRECTORY OF DIPLOMATES

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FOREWORD

This Directory, the publication of which has been made possible through grants from the Law Enforcement Assistance Administration (LEAA), is intended to fulfill a serious need in the Criminal Justice System:

> *To identify forensic scientists qualified to provide essential professional services for the nation's judicial and executive branches of government by means of structured Certifying Boards whose objective is to establish, enhance, and maintain as necessary, standards of qualification for those who practice forensic science and to certify as qualified specialists those voluntary applicants who comply with the requirements of the Boards*

Listings within the Directory are both alphabetical and geographical.

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The "expertise" of individuals listed in this document has been determined by their respective Boards and does not represent the official sanction or approval of their qualifications by the U.S. Department of Justice.

AMERICAN BOARD OF FORENSIC TOXICOLOGY, INC.

SPONSORING ORGANIZATIONS

- American Academy of Forensic Sciences
- Society of Forensic Toxicologists
- California Association of Toxicologists

1979 DIRECTORY OF DIPLOMATES

The listings appearing herein reflect information available as of January 1, 1979: Corrections or changes should be sent to:

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SECTION 1

Forensic Toxicology is the study and understanding of the harmful effects of external substances introduced into living systems within a medicolegal context. There are three major case load areas in most forensic toxicology laboratories: drug abuse — cases resulting from the illegal use of drugs/ police cases — toxicological aspects of criminal investigations; and postmortem cases — analytical studies in support of the medical examiner to determine the cause of death. In addition, many forensic toxicology laboratories assist local hospitals and physicians with clinical diagnoses and patient care in emergency poisoning cases or with those patients requiring complex drug therapy.

Source: Forensic Sciences Foundation, Inc.

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Forensic Odontology is the branch of dentistry which deals with the proper handling and examination of dental evidence, and the proper evaluation and presentation of dental findings in the interest of justice. Often working closely with the forensic pathologist, the forensic odontologist examines and evaluates injuries to the teeth, jaws and oral tissues, and examines dental remains for the purpose of victim identification. He examines bite marks in cases of homicide, battered children and sexual assault for the elimination or possible identification of a suspect as the originator. The forensic odontologist is frequently called upon to examine and evaluate personal injury, malpractice and dental fraud cases.

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SECTION 3

Forensic Psychiatry is a field of practice of the medical specialty of psychiatry in its special medical-legal context. Like other forensic sciences, its goal is to improve the administration of justice. The forensic psychiatrist achieves this objective by providing the legal system with understanding about the relationship of medical and psychological material relevant to legal issues. The forensic psychiatrist promotes this understanding through opinions based on his investigations, identification, clarification, and interpretation of psychiatric theory and practice, and especially on his meaningfully relating significant clinical data to these issues.

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CRIMINALISTICS CERTIFICATION STUDY COMMITTEE REPORT

Source: W. Jack Cadman
Chairman
Criminalistics Certification Study Committee
The Forensic Sciences Foundation, Inc.

The third meeting of the Criminalistics Certification Study Committee was held in Chicago during September 30 - October 1, 1977. Representatives of the major professional organizations and the private sector were present and participated actively in the discussions. Also present and contributing to the deliberations were representatives of the ATF, DEA, FBI, and academe.

The results of surveys conducted by the regional groups and AFTE were compared and compiled in an interim report of the study group. This iterim report will be widely distributed soon through the professional organizations represented. Very briefly it was found that of the over 600 persons who responded 78% agreed with the concept of national, voluntary peer group certification. The overwhelming majority (88%) felt that the study group should continue to study the feasibility and desirability of certification. All associations polled on the question of continued representation on the Certification Study Committee favored having a representative of that association continue on the Certification Study Committee. Those associations indicated they would provide travel funds for the representative to attend meetings if it became necessary due to lack of funding from LEAA.

Data from the questionnaires indicated there was no possible agreement on how to group types of physical evidence examinations by disciplines, therefore the most practical approach at this time is not to group by specialties. The group decided it would be much more practical to utilize the types of physical evidence examinations. It was also agreed that all examiners should possess the same minimum qualifications for each type of physical evidence examination.

Based on the data and discussions the group agreed that "grandparenting" using some combination of experience, education, publications, reputation, and contributions to forensic sciences would be necessary to initiate a certification program. Those persons certified by grandparenting would be required to pass the same examination as non-grandparented individuals by a specified date (three years).

The committee supports and wishes to maintain liaison with the voluntary peer group accreditation study of laboratories being conducted by the Laboratory Evaluation and Standards Committee of ASCLD. It is considered that both efforts are complimentary and probably desirable in the public interest, if found to be feasible and acceptable.

Gauging by the results of the regional association questionnaires, the study committee determined that it was not necessary at this time to issue a national questionnaire. In the interest of avoiding repetitive, time consuming (for those answering) questionnaires, it was decided the committee had gathered sufficient information for this stage of the study. All committee members plan to meet with their respective memberships in internal committees both to inform them of progress made by the study committee and to solicit additional study input (see below).

The matter of drafting a possible set of By-Laws are considered (By-Laws responsive to the needs of the entire criminalistics community, if certification is eventually recommended as desirable and feasible). The study committee decided such By-Laws would be premature to attempt until more fundamental policy matters are resolved.

The Forensic Sciences Foundation has been funded by LEAA for at least three additional meetings through June 1978. The next meeting will be in Miami, Florida, on December 9-10, 1977. The committee also selected tentative dates for the additional meetings (March 31-April 1, 1978 and June 23-24), with those sites to be selected later.

In preparation for the next meeting the committee identified four areas in which more study is needed. Sub-committees were formed to undertake these task areas for the consideration of the full committee in December. These task areas and the volunteers accepting the responsibility for setting up "straw men" are as follows:

1. (A list of) The Types of Physical Evidence Examinations to be Certified
   Chairperson: Antonio A. Cantu, Bureau of ATF, Washington, DC
   Donald A. Flynt, OK Bureau of Invest., Oklahoma City, OK
   James E. Halligan, FL Dept. of Crim. Law. Enf., Tallahassee, FL
   Francis D. Silas, FBI Lab., Washington, DC

2. Standards for Grandparenting Each Type of Physical Evidence Examiner
   Chairperson: Thomas A. Kubic, Nassau County PD, Mineola, NY
   Richard Janelli, Nassau County PD, Mineola, NY

3. Certification Testing Procedures for Each Type of Physical Evidence Examiner
   a. Procedures for Selection of "Peer Groups" to Design Test
   b. Development of Types of Tests to be Used
   c. Mechanism for Administering Tests
   Chairperson: Jan Bashinski, Oakland PD, Oakland, CA
   Robert A. Boese, Chicago PD, Chicago, IL
   Richard Janelli, Nassau Co. PD, Mineola, NY
   Walter C. McCrone, McCrone Research Inst., Chicago, IL
   Willard C. Stuver, Dade Co. Crime Lab., Miami, FL
   K. M. Sweeney, W. Washington State Crime Lab., Seattle, WA

4. The Feasibility and Cost of Certification
   Chairperson: Joseph L. Peterson, FSF, Rockville, MD
   W. J. Cadman, CA State Univ. at L.A., Los Angeles, CA

There is an obvious need for the four sub-committees to have a continuing interchange of information during this relatively brief period before the work products of these task areas are presented to the entire Certification Study Committee in December. It is not so obvious that each sub-committee needs input from as many peers as possible in order to obtain those work products which are responsive to the needs of the entire nationwide criminalistics community. Input from all peer persons is earnestly solicited by the Certification Study Committee whether or not they are a member of any association. Please be assured that the committee does not want to move any faster or further than the peer groups feel we should go.

* * * * *

Appendix #5

CRIMINALISTICS CERTIFICATION STUDY REPORT

The fourth meeting of the Criminalistics Certification Study Committee was held in Miami (Hollywood) Florida on December 9-10, 1977. Committee members representing the major professional associations, AAFS, AFTE, ASCLD, CAC, MAAFS, NEAFS, NWAFS, SAFS, federal laboratories, and the private sector were present and participated in the deliberations. Attachment #1 is a roster of the committee members. John Sullivan, LEAA/NILECJ and Edward Whittaker, AAFS President were also present and particpated in the discussions as interested persons.

This meeting of the CCSC was devoted primarily to a discussion and modification of the reports of the sub-committees appointed at the last meeting (Chicago, September 30-October 1, 1977). Discussion of the reports were detailed and demonstrated concern for the interest of the individuals (peers) examining physical evidence in the nationwide criminalistics community. Modifications made in the work products by the full committee were the result of the same peer group concern. The CCSC members want the nationwide criminalistics community to receive, read, discuss, and comment on these findings through the individual committee members. The interim work product below is subject to review and ratification or rejection by the entire criminalistics community.

(Proposed) TYPES OF PHYSICAL EVIDENCE EXAMINATIONS TO BE CERTIFIED

The persons engaged in the practice of criminalistics are called upon to examine a wide variety of physical evidence categories. The CCSC found during the previous meetings that it would be impractical to certify by disciplines. As a result, it was decided at the last meeting to utilize the types of physical evidence examinations as a basis (categories) for the certification of individuals. An individual could, of course, be certified in more than one category if he has the same minimum qualifications for each as set by the peers in those categories.

Eighteen (18) independent or semi-independent physical evidence categories evolved from the lengthy discussions at this meeting. Attachment #2 designates these categories using roman numerals. A nineteenth category was also developed for those types of physical evidence examinations which it would probably not be feasible to certify at first due to the relatively rare incidence of cases, relatively few persons involved in such examinations, or other complicating factors, i.e., testing for competence. The list of categories is critical to the remaining studies of the CCSC. It is not to be considered finalized until it has been ratified by the nationwide criminalistics community.

Some categories such as IX. Toxicology overlap existing areas presently being certified. After much discussion, it was the consensus of the CCSC that there is a need for this category of certification by the persons in criminalistics laboratories who analyze and interpret blood, urine, and breath alcohol and drug levels in living persons. The matter of the overlap with the American Board of Forensic Toxicology probably can be resolved in cooperation with the ABFT. Details remain to be worked out by the peers selected by the processes below.

(Proposed) STANDARDS FOR GRANDPARENTING EACH CATEGORY
At the last meeting of the CCSC, it was determined that it will probably be necessary to "grandparent" qualified individuals if national voluntary peer group certification is found to be feasible and desireable through ratification of the CCSC findings by the nationwide criminalistics community. Those persons certified by grandparenting would be required to pass the same examinations as non-grandparented individuals by a specified date (three years). At this meeting of the CCSC, it was the consensus of the members that certification by grandparenting would be based on the same documentation required to qualify to take the examinations for certification. The actual combination of educational background, experience, publications, cases worked, and other factors remain to be worked out by the peers elected in each category (see below).

(Proposed) CERTIFICATION TESTING PROCEDURES FOR EACH CATEGORY
After lengthy discussion, the CCSC members arrived at a consensus on a mechanism for the selection of peer group Examinations Boards in the evidence categories.

a. Each regional group, association, laboratory system, or otherwise unrepresented person in all areas of the nationwide criminalistics community will be invited to submit nominees for positions on the peergroup Examination Boards by categories. Each peer group Examination Board will be responsible for the content of the examinations in that category. They will also conduct the examinations. The mechanisms for selecting and pre-screening the nominees will be determined by the regional group, association, laboratory, or unrepresented person making the nomination. Each nomination must be accompanied by an application and a structured resume stating the nominee's willingness to serve, background, and qualifications (education, experience, publications, etc.).
b. The CCSC (or its equivalent successor) consisting of representatives selected from each regional organization and professional group will select the members of the peer Examination Boards from the lists of nominees in each category. These selections will be based on qualifications of the nominees and such points as geographic representation, etc. The persons selected will probably not be "expert's experts". Instead, they will be the recognized competent peers of the persons who would be certified. An attempt will be made to obtain a base of representation as broad as possible on each Examination Board. The Examination Boards will be subjected to review and approval of the criminalistics community on a national basis before they become final.

It will be up to each Examiniation Board to determine exactly what type of test will be given in each category. The CCSC (or its equivalent successor) consisting of representatives selected from each regional organization and professional group will establish general outlines for the tests. The latter will also make policy decisions regarding certification matters on a national basis.

The CCSC was in general agreement that the modes of testing which should be explored for feasibility are as follows:

a. Written Examination: The process would require a structured resume of the background, education, and experience of the applicant. The examination would contain objective questions on specific subject matter for that category. It could also include some questions fundamental to all categories of criminalistics. Further certification testing of the applicant would be contingent upon passing the written examination.
b. Proficiency Testing: This would consist of an analysis and written report by the applicant on simulated case evidence materials.
c. Written or Oral Presentation of Proficiency Test Results: This will include in-depth examination of the methodology used, comparison standards, explanation of potential interferences, reasons for the selection of the methods, etc. Although somewhat subjective, the test will be given following fixed national guidelines by trained peer examiners.

THE FEASIBILITY AND COST OF CERTIFICATION:
It was the consensus of the CCSC that it is premature to say whether or not the certification of persons in criminalistics is feasible. The CCSC is keenly aware that there are many persons in the field who feel that the cost will prove to be too high even if it is otherwise feasible. It may be possible to obtain LEAA funding through the phase of developing the examinations which would be used. If this is the case, it would materially reduce the cost to the individual being certified.

The CCSC reached general agreement that the size of the Examination Boards will have to be limited to three to nine members for reasons of cost and feasibility. The size will be a function of the category and other factors to be determined by CCSC through further study. Depending on the peer nominess, selection, and ratification by the criminalistics community, an Examination Board member may serve on more than one category Examination Board.

The determination of the feasibility and cost of certification must wait until the study is more nearly completed.

Under current LEAA grant to the Forensic Sciences Foundation, the CCSC is funded for two more meetings. The next meeting is set for March 30 through April 1 in New Orleans and the following will be in Chicago, June 23-24, 1978. It was indicated that LEAA will probably support the study for another year.

PREPARATION FOR THE NEXT CCSC MEETING
In preparation for the next meeting, the CCSC agreed upon the following tasks:

1. A sub-committee to Investigate the Skills Common to All Categories was appointed.
   Chairperson: James E. Halligan, Florida Dept. Crim. Law Enforcement
   Antonio A. Cantu, Bureau of ATF, Washington, D. C.
   Richard Frank, DEA, Washington, D. C.
   Francis D. Silas, FBI, Washington, D. C.
   Richard Janelli, Nassau Co. PD, Mineola, NY
2. Develop a questionnaire on the Types of Examinations Basic to VII. Blood and VIII. Other Physiological Fluids
   Chairperson: Willard C. Stuver, Dade Co. Crime Lab., Miami, Florida
   The CCSC will review and comment and return to Bud before it is sent to serologists and interested persons.
3. Develop a questionnaire on the Types of Examinations Basic to XIV. Hair and XV. Natural and Synthetic Fibers
   Chairperson: Walter C. McCrone, Chicago, Illinois
   The CCSC will review and return before it is sent to the criminalistics community.
4. Develop a List of Nominees for the Examination Board(s) in the categories of I. Firearms Examination, II. Bullet Flight Path Determination, III. Serial Number Restoration, IV. Toolmarks
   Chairperson: Richard Janelli, Nassau Co. PD, Mineola, NY
   The CCSC will submit nominees for consideration by the AFTE Board of Directors.
5. Develop a Method for the Selection of Nominees to the Peer Examination Boards for All Categories.
   Chairpersons: Each regional representative on the CCSC and others.
6. Investigation of the Cost of Implementation Oral Examinations vs. Written Exams
   Chairperson: Thomas A. Kubic, Nassau Co, PD, Mineola, NY
7. Revision of the List of Categories to be Certified
   Chairperson: Antonio A. Cantu, ATF, Washington, D. C.
8. Report on the Findings of the Criminalistics Certification Study Committee to Date to the Criminalistics Section of the AAFS.
   Chairperson: W. J. Cadman, Cal State U LA, Los Angeles, CA

The meeting concluded with a short review of the history of this committee. The committee must proceed as though we intend to pursue certification for certain in order to make progress. The point was made that this committee would be the first to vote against certification if it appears that it will not be feasible or too costly to the persons who would be applicants for certification. When the formal study is completed, in the opinion of the members of the CCSC, the entire tentative program for certification will be submitted to the nationwide criminalistics community for ratification or rejection.

All persons in the criminalistics community are urged to discuss any questions or problems they find in this report or any other work product of the CCSC with any member of the committee. This is your committee. We need your input to complete this study.

Copies of the full minutes of this meeting are available to all persons who request them.

Respectfully submitted,

W. J. Cadman, Chairman CCSC

WJC:lj

attachments

Attachment #1

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Attachment #2

I. FIREARMS EXAMINATION
   - A. Operability of Firearms
   - B. Bullet and Cartridge Case Comparison
   - C. Powder and Shot Pattern (Distance Determination)
   - D. Weapon Determination from Discharged Case and/or Bullet

II. BULLET FLIGHT PATH DETERMINATION (Ballistics)

III. SERIAL NUMBER RESTORATION - On Metal Surfaces

IV. GUNSHOT RESIDUE

V. TOOLMARKS

VI. OTHER IMPRINT EVIDENCE
   - A. Tire
   - B. Fabric
   - C. Shoe
   - D. Teeth
   - E. Others

VII. BLOOD
   - A. Preliminary Examination, Confirmation of Species Origin and Antigen-Antibody Identification
   - B. Polymorphism Protein Characteristics

VIII. OTHER PHYSIOLOGICAL FLUIDS - Examined by Serological Techniques, e.g., Semen, Saliva, Feces, etc.
   - A. Identification as the Basic Biological Substance by Chemical Tests and other Examinations
   - B. Genetic Marker Characterization

IX. TOXICOLOGY - Qualitative and quantitative analysis and interpretation NOT including cause of death in humans
   - A. Blood/Alcohol
     1. Blood
     2. Urine
     3. Breath
   - B. Poisons
   - C. Drug Screening from Blood and Urine

X. CONTROLLED DRUGS OTHER THAN MARIHUANA

XI. MARIHUANA

XII. ARSON MATERIALS

XIII. EXPLOSIVES AND THEIR RESIDUES

XIV. HAIR
   - A. Characterization - Animal and Human
   - B. Possible Common Origin

XV. NATURAL AND SYNTHETIC FIBERS - Including Fabrics

XVI. PAINT

XVII. GLASS

XVIII. SOIL

XIX. OTHERS - These were discussed and found unsuitable as categories for Certification at this time
   - A. Source Identification of Tablets and Capsules - Pill Die Marks
   - B. Alcoholic Beverages
   - C. Plastics and Rubber
   - D. Cosmetics and Toiletries
   - E. Oil and Grease
   - F. Unknown Stains
   - G. Inks, Dyes, and Pigments
   - H. Wool
   - I. Paper
   - J. Ceramics and Building Materials
   - K. Safe Insulation
   - L. Minerals and Gems
   - M. Metals
   - N. Forensic Photography
   - O. Cryptanalysis
   - P. Gambling
   - Q. Crime Scene Search

FIFTH INFORMATION BULLETIN
FROM THE
CRIMINALISTICS CERTIFICATION STUDY COMMITTEE

The fifth meeting of the Criminalistics Certification Study Committee (CCSC) was held in New Orleans, Louisiana on March 30 - April 1, 1978. All regular committee members were present. Appendix #1 lists the members and the professional association represented by each. The results of the detailed deliberations of the committee are summarized here for the information of the nationwide criminalistics community. The CCSC members need the maximum possible input from concerned persons involved in any aspect of criminalistics. It is the desire of each CCSC member that this report be read and fully understood by all. Questions, comments, and suggestions should be addressed to the CCSC member who best represents the interests of that concerned person.

This meeting was started with a review of the feedback received by each CCSC member since our last meeting on December 9-10, 1977. The results of that review are as follows:

- By far the majority of the nationwide criminalistics community is in favor of the study being made and the manner in which the certification study is being conducted.
- There are still persons who are concerned because they do not favor the grandparenting of individuals.
- There are many persons who expressed concern regarding the possible cost of certification to the individual.
- There are some persons who consider that the mechanics of certifying a long list of categories is not feasible.
- There are many concerned persons who have received, but have either not read or have not understood the previous CCSC reports.

It was apparent that most of the concerns heard were due to a breakdown in communication. Grandparenting of individuals is an example of this communication breakdown, so the findings of the CCSC are repeated in this report. The other concerns regarding possible cost to the individual and the mechanics are treated in this report also. The final recommendations will be contingent on the findings of the peer groups formed for the categories evolved as the study progresses.

(Proposed) GRANDPARENTING

NEED: The CCSC believes grandparenting will be necessary initially in order to raise the money to establish certification.*

*If national voluntary peer group certification is found to be feasible and desirable through ratification of CCSC findings by the nationwide criminalistics community.

LOGISTICS: Peer group examination boards in the various categories will be nominated by the regional groups and AFTE. Baseline qualifications for each category will be set by the peer group examination boards. After approval by the CCSC (or its successor) and ratification by the nationwide criminalistics community, certification of obviously qualified individuals by grandparenting will proceed. All persons applying for this initial form of certification will be carefully screened on the basis of documentation covering all baseline qualifications. This will only be an interim certification until the examinations are completed and offered. All persons so certified must later take the same examinations as subsequent applicants to retain certification. All persons applying for this initial form of certification will be advised that it would be better not to be certified by grandparenting if there is any doubt that they could later pass the same examinations.

THE COST OF CERTIFICATION TO THE INDIVIDUAL:

The cost of certification of persons employed may be borne by the employing agency. Even so the cost of certification to individuals not so covered entered the discussions of the CCSC at many points during this meeting as it has in previous meetings. Every effort will be made to hold this cost down to a level the individual can afford.

A preliminary examination cost study was submitted and discussed. The intent of this report was to provide an information base "from which examination or certification costs per candidate may be estimated in the future." Four possibilities were considered in this examination cost study. The committee's tentative findings regarding these four possibilities were as follows:

1. A "Take Home Test" seems inappropriate for certification.
2. A "Written Filing of Qualifications Followed by Proficiency Tests and an Oral Defense" appeared to be too costly and was rejected.
3. A "Written Test Given at Central Locations in Each Region" was considered acceptable.
4. A "Written Filing of Qualifications Followed by Proficiency Test(s)" was the method most favored by the committee.

The actual types and content of the examinations will be set by the peer group examination boards. Even though these peer group boards may be subsidized through the writing of the examinations, the program from that point on should be financially self-sustaining.

THE MECHANICS OF CERTIFYING A LONG LIST OF CATEGORIES:

The tentative list of categories to be certified was reworked at this meeting of the CCSC. As a result of these discussions several modifications resulted (see Appendix #2). It was decided that four peer group examination boards could probably handle the fifteen evidence categories through an appropriate regrouping of related areas. Through the careful selection of peer group nominees to the examination boards it is planned to find complimentary qualifications in each of the categories which have been grouped. The cost related problems of certifying a long list of categories will thereby be reduced. There will probably be further revisions in the categories and peer groups as the results of the planned questionnaires and other feedback from the national criminalistics community are received and studied by the committee.

The details of the mechanics of certification must await further study. The cost of certification to the individual will be a function in part of the complexity of the certification process and the number of persons applying to be certified in each category. In order to be feasible the process must be kept as simple as possible and include the maximum number of persons in each category and peer group. On the other hand the process can not be made so simple that the values of certification will be lost. The CCSC is dedicated to resolving this problem.

(Proposed) LIST OF SKILLS COMMON TO PRACTITIONERS IN THE FIELD OF CRIMINALISTICS:

The CCSC received and discussed a list of areas of knowledge and/or skills from the subcommittee appointed at the last meeting. Appendix #3 is the list as modified by the full CCSC. Because each peer group examination board will incorporate these skills in setting the requirements for each category, every person should read and understand the intent to use the concepts of common skills as tools in the certification process. Questions, comments, and suggestions for possible modifications will be of value to the CCSC in future deliberations.

FORENSIC SEROLOGY QUESTIONNAIRE:

In order to study the possible certification of persons examining blood and other physiological fluids the CCSC received and reviewed a draft questionnaire which had been under development. Modifications suggested by the CCSC were incorporated. Since this meeting the questionnaire has been subjected to a pilot evaluation by selected laboratories. The changes indicated have also been incorporated. The finalized questionnaire is now being distributed by each of the regional associations, the Crime Laboratory Digest, and Microgram in order to get the widest possible circulation. All individuals actually analyzing blood and other physiological fluid stains are urged to completely answer this questionnaire and return it promptly to aid the CCSC in completing this phase of the study. The answers obtained represent an extremely important step in establishing a professional basis for this discipline, whether certification becomes a reality or not. The answers to the questionnaire will remain anonymous. If certification is found to be feasible and desirable, the questionnaire findings will be used in defining certifiable categories which will be meaningful.

PEER GROUP EXAMINATION BOARD "A" FORMED: FIREARMS AND TOOLMARKS:

The CCSC decided at the previous meeting to proceed with the nomination of persons to a tentative pilot peer group examination board for the categories of firearms and related areas. The names and resumes of twelve nominees were received and reviewed. After much discussion it was decided to set the size of this peer examination board at nine members with three alternates initially. All nominees were acceptable.

The peer group examination board has since met briefly on April 26 and 27 in Nashville during the annual meeting of the Association of Firearms and Toolmark Examiners (AFTE). A. A. Biasotti was elected chairman and John Cayton secretary of this pilot peer board. Appendix #4 is the report of that meeting. If LEAA funding is obtained, this board plans to meet again on September 16-18 or October 7-9 in Chicago.

OTHER COMMITTEE ACTIVITIES:

A draft questionnaire designed to obtain information to study the possible certification of persons examining hairs and/or fibers was received and reviewed. The CCSC concluded that further work was needed to optimize the questionnaire even though it was obvious that a great deal of work had already gone into it.

PREPARATION FOR THE NEXT CCSC MEETING:

The CCSC set the following tasks in preparation for the next meeting to be held in Chicago at the McCormick Inn on June 22 - 24, 1978:

1. Complete Serology Questionnaire, Do Pilot Evaluation, and Start to Compile Responses as Mailings are Returned.

   Chairman: Willard Stuver, Dade County, Florida

   Subcommittee Members:

   Jan Bashinski, (CAC)
   Oakland P.D., CA

   Robert A. Boese, (MAFS)
   Chicago P.D., IL

   Paul Ferrara, (MAAFS)
   Virginia State Crime Laboratory System

   James Halligan, (SAFS)
   Florida Department of Criminal Law Enforcement

   Thomas Kubic, (NEAFS)
   Nassau County P.D., NY

   K. M. Sweeney, (NWAFS)
   W. Washington State Crime Laboratory

   Joseph Peterson, (FSF)
   Rockville, MD

2. Start to Implement Plans to Select Nominees to Peer Groups Regional/National Chairpersons: Each Regional Association Representative above

3. Meet with Pilot Peer Group Examination Board for Firearms and Toolmarks
   Chairman: Richard Janelli, (AFTE), Nassau County P.D., NY

4. Investigate the Concepts to be Included in the Bylaws (if certification is found to be feasible and desirable by the nationwide criminalistics community).
   Chairman: Thomas Kubic, Nassau County P.D., NY

5. Continue to Develop and Modify Questionnaires on Hairs and Fibers,
   Chairman: Walter McCrone, Private Sector, Chicago, IL

6. Start to Develop a Questionnaire on the Techniques Necessary to do Toxicology, Controlled Substances, and Marihuana
   Chairman: Paul Ferrara, Virginia State Crime Laboratory System (MAAFS)
   Subcommittee Members:

   Jan Bashinski, (CAC)
   Oakland P.D., CA

   Robert Boese, (MAFS)
   Chicago P.D., IL

   Donald Flynt (ASCLD)
   Oklahoma State Bureau of Investigation

   Richard Frank, (DEA)
   Washington, DC

It is the intent of this committee to involve all interested persons possible in this study of the desirability and feasibility of certification. One of the important ways in which this can be done is through the nomination and selection of qualified peers to serve on regional committees. These regional committees can serve the invaluable function of advising the national peer group examination boards. It is also quite probable that these regional boards may actually serve in the implementation of certification procedures if certification becomes a reality.

All persons are urged to discuss this report and any other work product of the CCSC. Any unresolved questions or concerns should be directed to the appropriate committee member.

All persons who desire copies of the full minutes of this meeting may obtain them by writing the Forensic Sciences Foundation, 11400 Rockville Pike, Suite 515, Rockville, MD 20852.

Respectfully submitted,

W. J. Cadman, Chairman CCSC

APPENDIX #1

CRIMINALISTICS CERTIFICATION STUDY COMMITTEE

ROSTER

Name	Representing
Jan Bashinski Oakland Police Dept. Criminalistics Section 455 7th Street, Rm. 608 Oakland, CA 94607 (415) 273-3386	California Association of Criminalists
Robert A. Boese Chicago Police Dept. Criminalistics Div. 1121 S. State Street Chicago, IL 60605 (312) 744-5528	Midwestern Association of Forensic Scientists
W. J. Cadman Dept. of Criminal Justice Ca. State University 5151 State University Dr. Los Angeles, CA 90032 (213) 224-3713	California State University at Los Angeles
Antonio A. Cantu Bureau of A.T.F. Identification Branch Washington, DC 20226 (202) 566-6677	Alcohol, Tobacco and Firearms
Paul Ferrara Bu. of Forensic Science 1 North 14th Street Richmond, VA 23219 (804) 786-4706	Mid-Atlantic Association of Forensic Scientists
Donald A. Flynt Chief Forensic Chemist Crime Detection Laboratory Oklahoma State Bu. of Investigation P.O. Box 11497 Cimarron Station Oklahoma City, OK 73111 (405) 427-5421	American Society of Crime Lab. Directors
Richard S. Frank Chief, Forensic Sciences Division Drug Enforcement Admin. 1405 Eye Street, N.W. Washington, DC 20537 (202)382-4691	Drug Enforcement Administration
James E. Halligan, Jr. Florida Dept. of Crim. Law Enforcement P.O. Box 654 Tallahassee, FL 32302 (904) 487-2503	Southern Association of Forensic Scientists

Name	Representing
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Thomas A. Kubic S.I.B. Nassau Co. Police 1490 Franklin Ave. Mineola, NY 11501 (516) 535-4256	Northeastern Association of Forensic Scientists
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S. F. Payton RCM Police Box 6500 Regina, Sask. Canada S4P 3J7 (306) 569-5812	Canadian Society of Forensic Scientists
Morris S. Clark F.B.I. Laboratory Washington, DC 20535 (202) 324-3000	Member at Large
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* * * * * *

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APPENDIX #2

CRIMINALISTICS CATEGORIES FOR CERTIFICATION

Evidence Categories		Peer Groups
I (I)*	Firearms Examination A. Operability of Firearms B. Bullet and Cartridge Case Comparison C. Powder and Shot Pattern (Distance Determination) D. Weapon Determination from Discharged Case and/or Bullet	A
II (III)	Serial Number Restoration	A
III (V)	Toolmarks	A
IV (VII)	Blood A. Preliminary Examination, Confirmation of Species Origin and Antigen-Antibody Identification B. Polymorphic Protein Characterization	B
V (VIII)	Other Physiological Fluids- Examined by Serological Techniques (e.g., Semen, Saliva, Feces, etc.) A. Identification as the Basic Biological Substance by Chemical Tests and Other Examinations B. Genetic Marker Characterization	B
VI (IX)	Toxicology - Qualitative and Quantitative Analysis and Interpretation - NOT to Include Cause of Death in Humans A. Blood/Alcohol - (Blood, Urine, Breath) B. Poisons C. Drug Screening from Blood and Urine	C
VII (X)	Controlled Drugs Other Than Marihuana	C
VIII (XI)	Marihuana	C
IX (XII)	Arson Materials	D
X (XIII)	Explosives and Their Residues	D

*Original numerals as used in Miami in Dec. 1977.

Evidence Categories		Peer Groups
XI (XIV)	Hair A. Characterization - Animal and Human	D
XII (XV)	Natural and Synthetic Fibers - Fabrics Included	D
XIII (XVI)	Paint	D
XIV (XVII)	Glass	D
XV (XVIII)	Soils	D
XVI (IV)	Gunshot Residue - Found on Hands	D
XVII (XIX)	Others - These were discussed and found unsuitable as categories for certification at this time: A. Source Identification of Tablets and Capsules - Pill Die Marks B. Alcoholic Beverages C. Plastics and Rubber D. Cosmetics and Toiletries E. Oil and Grease F. Unknown Stains G. Inks, Dyes and Pigments H. Wood I. Paper J. Ceramics and Building Materials K. Safe Insulation L. Minerals and Gems M. Metals N. Forensic Photography O. Cryptanalysis P. Gambling Q. Crime Scene Search R. Imprint Evidence other than Fingerprints	

APPENDIX #3

PROPOSED

LIST OF SKILLS COMMON TO PRACTITIONERS IN THE FIELD OF CRIMINALISTICS

These are areas of knowledge and/or skills that are required for all practitioners in the field of criminalistics regardless of their particular expertise. Each peer group examination board shall incorporate each of these areas of knowledge and/or skills into their testing procedures, at a level that is appropriate for each type of evidence examined.

I. Basic Principles of Identification and Individualization

A thorough understanding of the principles of identification to include:

a. The stages of the identification process: analysis, comparison and evaluation.
b. The related concepts of class and individual characteristics.
c. The necessity for background information and reference standards as they pertain to individualization.
d. The degree of specificty of analytical data.
e. Basic statistical concepts such as rules of probability.

II. Scientific Methodology

An understanding of scientific methodology of controlled experimentation and basic analytical concepts of measurement theory such as accuracy, precision, reliability, confidence limits, etc. A familiarity with problem solving processes including the basics of research design and methodology.

III. Evidence Handling

Demonstrated skill in the proper collection and handling of physical evidence including marking, labelling, packaging of various types of physical evidence, maintenance of custody records and an understanding of the legal requirements for the authentication of evidence for court purposes. An understanding of the proper handling of evidence in the laboratory for examination by other sections.

IV. Basic Microscopy

The microscope is a basic tool for most forensic examinations. Everyone in the field of criminalistics must understand the use of the microscope to the degree required for his or her area of expertise.

V. Communication

Basic ability or skill in clear and concise communication. This would involve the ability to express a concept or a result in both writing and speech, as demonstrated in the examination process.

VI. Legal Aspects and Court Testimony

Basic knowledge of courtroom procedures and the role of the expert witness. An understanding of the acceptability of physical evidence in judicial procedings.

VII. Literature of Criminalistics

Familiarity with the literature of the forensic sciences with special emphasis on the developmental aspects pertinent to his/her own area of evidence category.

VIII. General Knowledge of Criminalistics

A general knowledge of the capabilities of each discipline and subdiscipline within the criminalistics area. The practitioner should know the types of examinations that should be performed on the item(s) of evidence to obtain the most useful information in a given investigation. The ability to evaluate the

significance of a particular item(s) of evidence in relation to the investigation.

James E. Halligan, Jr.
Criminalistics Certification
Study Committee
Southern Association of
Forensic Scientists

APPENDIX #4

AFTE NATIONAL PEER GROUP ON CERTIFICATION

Report on First Meeting, April 27, 1978, Nashville, Tennessee.

On Wednesday, April 26, the peer group met briefly and elected A. A. Biasotti, Chairman, and John Cayton, Secretary. At the request of Dick Janelli, the peer group selected two alternative meeting dates (September 16-18 or October 7-9) in anticipation of LEAA funding for a future meeting in Chicago as part of the Criminalistics Certification Study Committee (CCSC) project.

On Thursday, April 27, Biasotti chaired the first meeting of the AFTE peer group. A roster of names and addresses was compiled. All members were present except alternate member R. Christiansen.

The purpose of this meeting was to determine the feeling of the group on the issues and problems involved in certifying persons doing firearms and toolmark identification work; and to formulate an interim work plan for the meeting in September or October.

The consensus of the group on the general concepts of a certification program were:

1. That some type of "certification" (i.e., by examination) is necessary to upgrade and insure the quality of firearms and toolmark examinations.

2. That if AFTE did not develop a "certification" process, that other groups would.

3. That while certification is a desirable and worthwhile goal, "certification" may not be feasible because of cost and the many other problems associated with attempts at certification.

For the purposes of discussion, the IAI, Latent Print Certification requirements was used as an outline to identify and prioritize problems that this group will be expected to develop solutions for:

I. GENERAL QUALIFICATIONS:

The moral and ethical character of the individual should be established through endorsement by peers, teachers, judges etc.

II. EDUCATIONAL QUALIFICATIONS:

The group felt that a time table should be established requiring formal educations beyond high school for all future applican Recommendations for the level (i.e., A.A. or B.A.), and specific course requirements (i.e., chemistry, math, physics), should be developed for discussion at the September meeting.

III.& IV. TECHNICAL TRAINING AND EXPERIENCE:

How to weigh training and/or experience as a certification requirement presents a major problem because of the lack of formal training courses. On the job training (OJT) experience by qualified examiners is probably not a realistic alternative because of the absences of any uniform standards and/or accredited labs to provide acceptable OJT training. Training and experience requirements will therefore be of secondary importance to a comprehensive examination requirement.

V. ENDORSEMENTS: (See I. GENERAL QUALIFICATIONS)

VI. EXAMINATIONS:

The group feels that an examination process designed to determine who has the aptitude, knowledge, and ability to perform firearms and toolmark examinations will be the key element of any successful certification effort.

An examination process which incorporates a written, practical, and oral examination by a peer group appears to be the primary and perhaps the only feasible alternative to a training and/or experience requirement in determining who will be certified. The written and the practical exams could be administered nationally to screen out the obviously unqualified. An oral board examination by regional peer groups would be the final step in the exam process. To reduce the cost and maintain the integrity of the written and practical exams, the applicant could be required to go to a designated regional peer group lab to be tested.

The group concluded that their primary task between now and September will be to study minimum types of examinations that would define a firearms and/or toolmark examiner. It was agreed that comparative analysis (identification of common origin) is the distinguishing and core element of firearms and/or toolmark identification as a discipline. The problem is in defining what other knowledge and/or ability should be included as part of this core element. For example, firearms examinations may include any of the following: (a) operability and functioning of firearms, (b) bullet and cartridge case comparisons, (c) powder and shot pattern (distance determinations), (d) weapon type determination from discharged case and/or bullets, (e) bullet flight path determinations. Which of the above should be certified individually or in combination with comparative analysis, presents some interesting problems that must be solved before other aspects of certification can be logically considered.

John Cayton will include with this report various background material which have been assembled from various sources to assist the peer group in developing solutions to the problems discussed in this report.

I am confident that the efforts of this group will not have been wasted in advancing firearms and toolmark identification to professional status regardless of whether or not certification proves to be practically or economically feasible.

AFTE NATIONAL PEER GROUP ON CERTIFICATION

(Formed 4/25/78, Nashville, Tenn.)

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12. John G. Ward, Sr., Firearms Examiner
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*Alternate Members

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11400 ROCKVILLE PIKE
ROCKVILLE, MARYLAND 20852
(301) 770-2723

QUESTIONNAIRE NUMBER 1

WHICH EVIDENCE CATEGORIES ARE EXAMINED BY INDIVIDUAL CRIMINALISTS?

The Criminalistics Certification Study Committee (CCSC) is taking this poll of crime laboratory directors to help the CCSC decide how the various evidence categories might best be grouped for possible certification purposes. We hope you can take a few minutes and help us by noting which of the following categories are handled in your laboratory by the same individual.

Your answers will help the CCSC decide how evidence categories are best grouped, the degree of specialization of criminalists and how best to plan certification examinations should this step be indicated.

Please start with the first evidence category examined in your laboratory and place an "A" representing one individual or group of individuals. (Please see the attached Evidence Categories Listing for additional detail on the major evidence categories.) Put "A" opposite each category performed by that same individual or group of individuals. "A" may be placed under either professional (an examiner whose work may lead to court testimony) or technicians (who do work on cases but do not testify in court). Next, place a "B" opposite those categories performed by a second individual or group. Continue with "C", "D" . . . until all criminalists (examiners) in your laboratory have been assigned. A blank opposite any category indicates you do not handle that evidence category. All unlisted evidence categories examined in your laboratory can be added at the bottom under "Other _____". We have included only the 16 evidence categories where we anticipate certification will be carried out initially.

The example shown is for a representative 8-person laboratory and may assist you in understanding how we would like your data recorded.

QUESTIONNAIRE NUMBER 2

ANALYTICAL TOOLS

The CCSC needs additional information on the analytical tools used by crime laboratory personnel in characterizing, identifying or comparing the various types of evidence. We would appreciate your assistance in filling in the second questionnaire by placing an "x" in each box where a particular analytical technique is used to examine an evidence category.

Please return both questionnaires to the Foundation in the enclosed postage-paid envelope.

Both questionnaires are ANONYMOUS so do not place your name or other identifiers on them.

QUESTIONNAIRE NUMBER 1

EVIDENCE CATEGORY

INDIVIDUALS (OR GROUPS)

	Your Lab		Example	
	Professional	Technician	Prof.	Tech.
Firearms Examination			---	---
Serial Number Restoration			A	
Toolmarks			A	
Blood			---	---
Other Body-Fluids			---	---
Toxicology			B	
Controlled Substances			B,C,D	
Marihuana			B,C,D	
Hair Comparison, Human			D,E,F	
Hair Species, Human of Fur			D,E,F	
Fibers			D,E,F	
Paint			D,E,F	
Glass			D,E,F	
Soils			D,E,F	
Arson			G	
Explosives			D	
Gunshot Residue (on hands)			H	
Other: inks			D	
pencil			D	
explosions			G	
_____				
_____				
_____				
_____				
_____				
_____				
_____				

How many professional examiners are employed in your laboratory in these evidence categories? _____

* Please return this questionnaire to:

The Forensic Sciences Foundation, Inc.
11400 Rockville Pike, Suite 515
Rockville, Maryland 20852

QUESTIONNAIRE NUMBER 2

ANALYTICAL TOOLS

Evidence Category \ Analytical Tool	Stereo microscopes	Comparison 'scopes	Phase 'scopes	Polarizing 'scopes	Dispersion staining	Microcrystal tests	Hot stage	Monochromator	TLC	HPLC	GC	GC/MS	Emission spectroscopy	IR absorption	UV & Vis absorption	Atomic absorption	Spectrofluorimetry	Scintillation counter	Neutron activation	SEM	SEM/EDXRA	X-ray diffraction	X-ray fluorescence	Electrophoresis	Other				
Firearms																													
Serial numbers																													
Tool-marks																													
Blood: basic presumptive, confirmatory																													
Blood: ABO, RH etc., grouping																													
Blood: serum protein, isoenzymes																													
Other body fluids																													
Toxicology																													
Controlled substances																													
Marihuana																													
Hair																													
Fibers																													
Paint																													
Glass																													
Soils																													
Arson																													
Explosives																													
Gunshot residue, hands																													
Other:																													

Please return to The Forensic Sciences Foundation, Inc.

CRIMINALISTICS CERTIFICATION EVIDENCE CATEGORIES

I. Firearms Examination

- A. Operability of firearms
- B. Bullet and cartridge case comparison
- C. Powder and shot pattern (distance determination)
- D. Weapon determination from discharged case and/or bullet

II. Serial Number Restoration

III. Toolmarks

IV. Blood

- A. Preliminary examination, confirmation of species origin and antigen-antibody identification
- B. Polymorphic protein characterization

V. Other Physiological Fluids - Serological Techniques (e.g., Semen Saliva, Feces, etc.)

- A. Identification as the basic biological substance by chemical tests and other examinations
- B. Genetic marker characterization

VI. Toxicology - Qualitative and Quantitative Analysis and Interpretation NOT to Include Cause of Death in Humans

- A. Blood/Alcohol (Blood, Urine, Breath)
- B. Poisons
- C. Drug screening from blood and urine

VII. Controlled Drugs Other Than Marihuana

VIII. Marihuana

IX. Arson Materials

X. Explosives and Their Residues

XI. Hair Characterization - Animal and Human

XII. Natural and Synthetic Fibers - Fabrics Included

XIII. Paints

XIV. Glass

XV. Soils

XVI. Gunshot Residue - Founds on Hands

top figure is %, for firearms 87/118 = 73.7%

N=118

ANALYTICAL TOOL / EVIDENCE CATEGORY	STEREOSCOPE	COMPARISON SCOPE	PHASE SCOPE	POLARIZING SCOPE	DISPERSION STAINING	MICROCRYSTAL TESTS	HOT STAGE	MONOCHROMATOR	T L C	H P L C	G C	G C/M S	EMISSION SPEC.	I R ABSORPTION	U V & VIS. ABSORPTION	ATOMIC ABSORPTION	SPECTRO-FLUORIMETRY	SCINTILLATION COUNTER	NEUTRON ACTIVATION	S E M	S E M/ E D X R A	X-RAY DIFFRACTION	X-RAY FLUORESCENCE	ELECTROPHORESIS	TOTAL
FIREARMS	73.7 87	78.0 92	0.8 1	1.7 2	0.8 1	0.8 1	0.8 1	0.8 1	1.7 2	0.8 1	0.8 1	2.5 3	0 0	0.8 1	0.8 1	0.8 1	1.7 2	0 0	3.4 4	4.2 5	5.1 6	2.5 3	2.5 3	0 0	222
SERIAL #	69.5 82	7.6 9	0 0	0 0	0 0	0 0	0 0	0.8 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	1.7 2	0 0	0 0	0 0	0 0	94
TOOLMARKS	69.5 82	74.6 88	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	2.5 3	0.8 1	0 0	0.8 1	0 0	175
BLOOD BASIC	38.1 45	2.5 3	8.5 10	4.2 5	0.8 1	38.1 45	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0.8 1	0.8 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	9.3 11	122
BLOOD ABO	31.4 37	1.7 2	20.3 24	5.1 6	0 0	1.7 2	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	9.3 11	82
BLOOD SERUM	12.7 15	0.8 1	1.7 2	1.7 2	0 0	0 0	0 0	0 0	0.8 1	0 0	0 0	0 0	0 0	0 0	1.7 2	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	64.4 76	99
OTHER BODY FLUIDS	24.6 29	1.7 2	34.7 41	5.9 7	5.9 7	18.6 22	0 0	0 0	6.8 8	0 0	0.8 1	0.8 1	0 0	0 0	5.1 6	0.8 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	33.9 40	165
TOXICOLOGY	5.1 6	0 0	1.7 2	0.8 1	0 0	8.5 10	0 0	0 0	35.6 42	8.5 10	46.6 55	18.6 22	5.1 6	22.3 26	36.4 43	5.1 6	18.6 22	3.4 4	0 0	0 0	0 0	0 0	4.2 5	0 0	260
CONTROLLED SUBSTANCES	47.4 56	1.7 2	6.8 8	47.4 56	4.2 5	72.0 85	22.0 26	5.1 6	83.0 98	17.8 21	83.9 99	45.8 54	5.9 7	88.1 104	85.6 101	1.7 2	36.4 43	0 0	0 0	0 0	1.7 2	10.2 12	0.8 1	1.7 2	790
MARIHUANA	85.6 101	1.7 2	0.8 1	4.2 5	0 0	4.2 5	0 0	0.8 1	69.5 82	1.7 2	14.4 17	5.9 7	0 0	1.7 2	0.8 1	0 0	2.5 3	0 0	0 0	0 0	0 0	0 0	0 0	0 0	229
AIR	67.8 80	71.2 84	23.7 28	45.8 54	4.2 5	0 0	1.7 2	2.5 3	0 0	0 0	0.8 1	0 0	0 0	0.8 1	0 0	0 0	0.8 1	0 0	3.4 4	6.8 8	1.7 2	0 0	3.4 4	0.8 1	278
FIBERS	68.6 81	64.4 76	22.0 26	72.9 86	11.0 13	3.4 4	34.7 41	13.6 16	10.2 12	0 0	21.2 25	0.8 1	4.2 5	39.8 47	4.2 5	1.7 2	1.7 2	0 0	0 0	6.8 8	2.5 3	0.8 1	1.7 2	0 0	456
PAINT	75.4 89	35.6 42	6.8 8	16.9 20	2.5 3	5.1 6	5.9 7	3.4 4	10.2 12	0.8 1	50.8 60	5.1 6	26.3 31	44.9 53	9.3 11	5.1 6	1.7 2	0 0	2.5 3	9.3 11	11.0 13	15.3 18	11.9 14	0.8 1	421
GLASS	64.4 76	10.2 12	25.4 30	45.8 54	19.5 23	0.8 1	60.2 71	53.4 63	0 0	0 0	1.7 2	1.7 2	23.7 28	0 0	0 0	1.7 2	1.7 2	0 0	1.7 2	2.5 3	5.9 7	5.1 6	11.9 14	0 0	399
SOILS	56.8 67	16.9 20	8.5 10	39.0 46	4.2 5	1.7 2	5.1 6	5.1 6	0.8 1	5.1 6	2.5 3	0 0	16.9 20	0 0	0 0	4.2 5	0 0	0 0	0.8 1	0 0	2.5 3	12.7 15	11.0 13	0 0	229
ARSON	17.8 21	0.8 1	0 0	3.4 4	0 0	2.5 3	0.8 1	0.8 1	19.5 23	7.6 9	79.7 94	14.4 17	2.5 3	32.2 38	5.9 7	4.2 5	0.8 1	0 0	0 0	0 0	2.5 3	2.5 3	5.9 7	0 0	241
EXPLOSIVES	49.2 58	5.9 7	0.8 1	22.0 26	3.4 4	16.1 19	10.2 12	3.4 4	36.4 43	7.6 9	20.3 24	8.5 10	10.2 12	29.7 35	5.9 7	1.7 2	0.8 1	0 0	0 0	1.7 2	7.6 9	11.0 13	5.9 7	0 0	305
GUNSHOT RESIDUE	13.6 16	1.7 2	0. 0	0.8 1	0.8 1	1.7 2	0 0	0 0	2.5 3	0.8 1	0 0	0 0	2.5 3	1.7 2	1.7 2	26.3 31	0 0	0 0	9.3 11	8.5 10	8.5 10	5.9 7	3.4 4	0 0	106
TOTAL	1028	445	192	375	68	207	167	106	327	60	382	120	118	310	187	66	79	4	25	52	59	78	75	143	4673

% is raw score divided by total for this column
firearms 87/1028 = 8.5%

A ↓ / % / N → ANALYTICAL TOOL	STEREOSCOPE	COMPARISON SCOPE	PHASE SCOPE	POLARIZING SCOPE	DISPERSION STAINING	MICROCRYSTAL TESTS	HOT STAGE	MONOCHROMATOR	T L C	H P L C	G C	G C/M S	EMISSION SPEC.	I R ABSORPTION	U V & VIS. ABSORPTION	ATOMIC ABSORPTION	SPECTRO-FLUORIMETRY	SCINTILLATION COUNTER	NEUTRON ACTIVATION	S E M	S E M/ E D X R A	X-RAY DIFFRACTION	X-RAY FLUORESCENCE	ELECTROPHORESIS	TOTAL
EVIDENCE CATEGORY																									
FIREARMS	8.5	20.7	.5	.5	1.5	.5	.6	.9	.6	1.7	.3	0	2.5	.3	.5	6.1	2.5	0	16.0	9.6	10.2	3.8	4.0	0	222
	87	92	1	2	1	1	1	1	2	1	1	0	3	1	1	4	2	0	4	5	6	3	3	0	
SERIAL #	8.0	2.0	0	0	0	0	0	.9	0	0	0	0	0	0	0	0	0	0	0	3.8	0	0	0	0	94
	82	9	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	
TOOLMARKS	8.0	19.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.8	1.7	0	1.3	0	175
	82	88	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	1	0	
BLOOD	4.4	.7	5.2	1.3	1.5	21.7	0	0	0	0	0	0	0	.3	.5	0	0	0	0	0	0	0	0	7.7	122
BASIC	45	3	10	5	1	45	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	11	
BLOOD	3.6	.4	12.5	1.6	0	1.0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	7.7	82
ABO	37	2	24	6	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	
BLOOD	1.5	.2	1.0	.5	0	0	0	0	.3	0	0	0	0	0	1.1	0	0	0	0	0	0	0	0	53.2	99
SERUM	15	1	2	2	0	0	0	0	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	76	
OTHER BODY	2.8	.4	21.4	1.9	10.3	10.6	0	0	2.4	0	.3	.8	0	0	3.2	1.5	0	0	0	0	0	0	0	28.0	165
FLUIDS	29	2	41	7	7	22	0	0	8	0	1	1	0	0	6	1	0	0	0	0	0	0	0	40	
TOXICOLOGY	.6	0	1.0	.3	0	4.8	0	0	12.8	16.7	14.4	18.3	5.1	8.4	23.0	9.1	27.8	100.0	0	0	0	0	6.7	0	260
	6	0	2	1	0	10	0	0	42	10	55	22	6	26	43	6	22	4	0	0	0	0	5	0	
CONTROLLED	5.4	.4	4.2	14.9	7.4	41.1	15.6	5.7	30.0	35.0	25.9	45.0	5.9	33.6	54.0	3.0	54.4	0	0	0	3.4	15.4	1.3	1.4	790
SUBSTANCES	56	2	8	56	5	85	26	6	98	21	99	54	7	104	101	2	43	0	0	0	2	12	1	2	
MARIHUANA	9.8	.4	.5	1.3	0	2.4	0	.9	25.1	3.3	4.4	5.8	0	.6	.5	0	3.8	0	0	0	0	0	0	0	229
	101	2	1	5	0	5	0	1	82	2	17	7	0	2	1	0	3	0	0	0	0	0	0	0	
HAIR	7.8	18.9	14.6	14.4	7.4	0	1.2	2.8	0	0	.3	0	0	.3	0	0	1.3	0	16.0	15.4	3.4	0	5.3	.7	278
	80	84	28	54	5	0	2	3	0	0	1	0	0	1	0	0	1	0	4	8	2	0	4	1	
FIBERS	7.9	17.1	13.5	22.9	19.1	1.9	24.6	15.1	3.7	0	6.5	.8	4.2	15.2	2.7	3.0	2.5	0	0	15.4	5.1	1.3	2.7	0	456
	81	76	26	86	13	4	41	16	12	0	25	1	5	47	5	2	2	0	0	8	3	1	2	0	
PAINT	8.7	9.4	4.2	5.3	4.4	2.9	4.2	3.8	3.7	1.7	15.7	5.0	26.3	17.1	5.9	9.1	2.5	0	12.0	21.2	22.0	23.1	18.7	.7	421
	89	42	8	20	3	6	7	4	12	1	60	6	31	53	11	6	2	0	3	11	13	18	14	1	
GLASS	7.4	2.7	15.6	14.4	33.8	.5	42.5	59.4	0	0	.5	1.7	23.8	0	0	3.0	2.5	0	8.0	5.8	11.9	7.7	18.7	.7	399
	76	12	30	54	23	1	71	63	0	0	2	2	28	0	0	2	2	0	2	3	7	6	14	1	
SOILS	6.5	4.5	5.2	12.3	7.4	1.0	3.6	5.7	.3	10.0	.8	0	17.0	0	0	7.6	0	0	4.0	0	5.1	19.2	17.3	0	229
	67	20	10	46	5	2	6	6	1	6	3	0	20	0	0	5	0	0	1	0	3	15	13	0	
ARSON	2.0	.2	0	1.1	0	1.4	.6	.9	7.0	15.0	24.6	14.2	2.5	12.3	3.7	7.6	1.3	0	0	0	5.1	3.8	9.3	0	241
	21	1	0	4	0	3	1	1	23	9	94	17	3	38	7	5	1	0	0	0	3	3	7	0	
EXPLOSIVES	5.6	1.6	.5	6.9	5.9	9.2	7.2	3.8	13.2	15.0	6.3	8.3	10.2	11.3	3.7	3.0	1.3	0	0	3.8	15.2	16.7	9.3	0	305
	58	7	1	26	4	19	12	4	43	9	24	10	12	35	7	2	1	0	0	2	9	13	7	0	
GUNSHOT	1.6	.4	0	.3	1.5	1.0	0	0	.9	1.7	0	0	2.5	.6	1.1	47.0	0	0	44.0	19.2	17.0	9.0	5.3	0	106
RESIDUE	16	2	0	1	1	2	0	0	3	1	0	0	3	2	2	31	0	0	11	10	10	7	4	0	
TOTAL	1028	445	192	375	68	207	167	106	327	60	382	120	118	310	187	66	79	4	25	52	59	78	75	143	4673

Top value is %, i.e., the raw values are divided by the total for each row. For firearms, 87/222 = 39.2%

B → %/N

ANALYTICAL TOOL / EVIDENCE CATEGORY	STEREOSCOPE	COMPARISON SCOPE	PHASE SCOPE	POLARIZING SCOPE	DISPERSION STAINING	MICROCRYSTAL TESTS	HOT STAGE	MONOCHROMATOR	T L C	H P L C	G C	G C/M S	EMISSION SPEC.	I R ABSORPTION	U V & VIS. ABSORPTION	ATOMIC ABSORPTION	SPECTRO-FLUORIMETRY	SCINTILLATION COUNTER	NEUTRON ACTIVATION	S E M	S E M/ E D X R A	X-RAY DIFFRACTION	X-RAY FLUORESCENCE	ELECTROPHORESIS	TOTAL
FIREARMS	39.2	41.4	.4	.9	.4	.4	.4	.4	.9	.4	.4	0	1.4	.4	.4	1.8	.9	0	1.8	2.2	2.7	1.4	1.4	0	222
	87	92	1	2	1	1	1	1	2	1	1	0	3	1	1	4	2	0	4	5	6	3	3	0	
SERIAL #	87.2	9.6	0	0	0	0	0	1.1	0	0	0	0	0	0	0	0	0	0	0	2.1	0	0	0	0	94
	82	9	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	
TOOLMARKS	46.9	50.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.7	.6	0	.6	0	175
	82	88	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	1	0	
BLOOD	36.9	2.5	8.2	4.1	.8	36.9	0	0	0	0	0	0	0	.8	.8	0	0	0	0	0	0	0	0	9.0	122
BASIC	45	3	10	5	1	45	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	11	
BLOOD	45.1	2.4	29.3	7.3	0	2.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13.4	82
ABO	37	2	24	6	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	
BLOOD	15.2	1.0	2.0	2.0	0	0	0	0	1.0	0	0	0	0	0	2.0	0	0	0	0	0	0	0	0	76.8	99
SERUM	15	1	2	2	0	0	0	0	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	76	
OTHER BODY	17.6	1.2	24.8	4.2	4.2	13.3	0	0	4.8	0	.6	.6	0	0	3.6	.6	0	0	0	0	0	0	0	24.2	165
FLUIDS	29	2	41	7	7	22	0	0	8	0	1	1	0	0	6	1	0	0	0	0	0	0	0	40	
TOXICOLOGY	2.3	0	.8	.4	0	3.8	0	0	16.2	3.8	21.2	8.5	2.3	10.0	16.5	2.3	8.5	1.5	0	0	0	0	1.9	0	260
	6	0	2	1	0	10	0	0	42	10	55	22	6	26	43	6	22	4	0	0	0	0	5	0	
CONTROLLED	7.1	.2	1.0	7.1	.6	10.8	3.3	.8	12.4	2.7	12.5	6.8	.9	13.2	12.8	.2	5.4	0	0	0	.2	1.5	.1	.2	790
SUBSTANCE	56	2	8	56	5	85	26	6	98	21	99	54	7	104	101	2	43	0	0	0	2	12	1	2	
MARIHUANA	44.1	.9	.4	2.1	0	2.2	0	.4	35.8	.9	7.4	3.1	0	.9	.4	0	1.3	0	0	0	0	0	0	0	229
	101	2	1	5	0	5	0	1	82	2	17	7	0	2	1	0	3	0	0	0	0	0	0	0	
HAIR	28.8	30.2	10.1	19.4	1.8	0	.7	1.1	0	0	.4	0	0	.4	0	0	.4	0	1.4	2.9	.7	0	1.4	.4	278
	80	84	28	54	5	0	2	3	0	0	1	0	0	1	0	0	1	0	4	8	2	0	4	1	
FIBERS	17.8	16.7	5.7	18.9	2.8	.9	9.0	3.5	2.6	0	5.5	.2	1.1	10.3	1.1	.4	.4	0	0	1.8	.7	.2	.4	0	456
	81	76	26	86	13	4	41	16	12	0	25	1	5	47	5	2	2	0	0	8	3	1	2	0	
PAINT	21.1	10.0	1.9	4.8	.7	1.4	1.7	1.0	2.8	.2	14.2	1.4	7.4	12.6	2.6	1.4	.5	0	.7	2.6	3.1	4.3	3.3	.2	421
	89	42	8	20	3	6	7	4	12	1	60	6	31	53	11	6	2	0	3	11	13	18	14	1	
GLASS	19.0	3.0	7.5	13.5	5.8	.2	17.8	15.8	0	0	.5	.5	7.0	0	0	.5	.5	0	.5	.8	1.8	1.5	3.5	0	399
	76	12	30	54	23	1	71	63	0	0	2	2	28	0	0	2	2	0	2	3	7	6	14	0	
SOILS	29.3	8.7	4.4	20.1	2.2	.9	2.6	2.6	.4	2.6	1.3	0	8.7	0	0	2.2	0	0	.4	0	1.3	6.6	5.7	0	229
	67	20	10	46	5	2	6	6	1	6	3	0	20	0	0	5	0	0	1	0	3	15	13	0	
ARSON	8.7	.4	0	1.7	0	.2	.4	.4	9.5	3.7	39.0	7.0	1.2	15.8	2.9	2.1	.4	0	0	0	1.2	1.2	2.9	0	241
	21	1	0	4	0	3	1	1	23	9	94	17	3	38	7	5	1	0	0	0	3	3	7	0	
EXPLOSIVES	19.0	2.3	.3	8.5	1.3	6.2	3.9	1.3	14.1	3.0	7.9	3.3	3.9	11.5	2.3	.7	.3	0	0	.7	3.0	4.3	2.3	0	305
	58	7	1	26	4	19	12	4	43	9	24	10	12	35	7	2	1	0	0	2	9	13	7	0	
GUNSHOT RESIDUE	15.1	1.9	0	.9	.9	.9	0	0	2.8	.9	0	0	2.8	1.9	1.9	29.2	0	0	10.4	9.4	9.4	6.6	3.8	0	106
	16	2	0	1	1	2	0	0	3	1	0	0	3	2	2	31	0	0	11	10	10	7	4	0	
TOTAL	1028	445	192	375	68	207	167	106	327	60	382	120	118	310	187	66	79	4	25	52	59	78	75	143	4,673

Additional "Analytical Tool" Responses

Analytical Tool	Evidence Category	Frequency
Biological Microscope	Blood basic	4
	Blood serum	2
	Other body fluids	6
	Controlled substances	4
	Marihuana	2
	Hair	6
	Blood (ABO)	4
	Toxicology	1
	Unknown Substances	1
	Glass	3
	Fibers	3
	Paint	1
	Soils	1
	Explosives	1
Light Microscope	Blood basic	1
	Blood (ABO)	1
	Other body fluids	1
Bright-Light Microscope	Blood (ABO)	1
	Other body fluids	1
	Controlled substances	1
	Marihuana	1
Clinical Microscope	Blood (ABO)	1
	Other body fluida	1
	Fibers	1
	Paint	1
Compound Microscope	Firearms	1
	Blood basic	4
	Blood (ABO)	6
	Other body fluids	5
	Toxicology	2
	Controlled substances	3
	Marihuana	3
	Hair	3
	Fibers	2
	Paint	2
	Glass	2
	Soils	2
	Arson	2
	Explosives	2
	Gunshot Residue	2
Differential Contrast Microscope	Blood basic	1
	Other body fluids	1
	Paint	1
I.R. Microscope	Questioned Documents	1
Measuring Microscope	Firearms	1
	Fibers	1
	Physical Comparison	1
Standard Microscope	Blood (ABO)	2
	Other body fluids	2
	Controlled substances	2
	Hair	1
	Fibers	1
Chemical Etching	Serial numbers	7
Chemical Spot	Serial numbers	1
	Controlled substances	1
	Marihuana	2
	Fibers	1
	Paint	1
	Soils	1
	Explosives	1
	Blood basic	1
	Other body fluids	1
	Controlled substances	1
	Marihuana	1
Chemical Tests	Controlled substances	1
	Marihuana	1
	Soils	1
	Arson	1
	Explosives	1
Color Tests	Blood basic	4
	Other body fluids	3
	Controlled substances	7
	Marihuana	7
	Toxicology	1
	Gunshot residue	1
Distillation	Arson	1
Microchemical Tests	Fibers	1
	Paint	1
	Polymers	1
Solubility Tests	Paint	2
	Explosives	1

Solvent Tests	Fibers	1
Melting Point Apparatus	Controlled substances	1
Wet Chemistry	Blood basic	1
	Toxicology	1
	Controlled substances	1
	Marihuana	1
	Paint	1
	Explosives	1
Density Gradient	Soils	5
	Glass	4
	Fibers	1
Measuring	Firearms	1
Gradient Tubes	Soils	1
Precipitin (Gel Diffusion)	Blood basic	2
	Other body fluids	1
Absorption-Elution Inhibition	Blood (ABO)	1
Agglutination Tests	Blood (ABO)	1
	Other Body Fluids	1
Benzidine	Blood basic	1
Incubator/water bath	Blood (ABO)	1
	Other body fluids	1
Plasma Emission	Fibers	1
	Paint	1
	Glass	1
	Soils	1
	Arson	1
	Explosives	1
	Gunshot residue	1
R.I.A.	Other body fluids	1
	Toxicology	1
H.L.S.	Other body fluids	1
	Toxicology	1
Auto Analyzer	Blood Alcohol	1
	Pther body fluids	1
Chronograph	Firearms	2
C.O. Oximeter	Toxicology	1

E Mit	Toxicology	1
Electron Microscope	Metals	1
I.R. Luminescence	Questioned Documents	1
Measuring Projector (M-P-6)	Firearms	2
	Serial numbers	1
	Toolmarks	1
N.M.R.	Controlled substances	3
Pyrolysis	Fibers	1
	Paint	2
Pyrolysis G.C.	Other body fluids	1
	Fibers	4
	Paint	9
	Gunshot residue	1
Short Wave U.V.	Blood serum	1
	Other body fluids	1
Spectropolarimeter	Controlled substances	1
U.V. Viewing Light	Soils	1
	Blood serum	2
	Other body fluids	1
	Controlled substances	1
	Glass	1
X-Ray & Physical Methods	Serial numbers	2
	Firearms	1
	Toolmarks	1
	Paints	1
	Soils	1
	Explosives	1
Electrical Power Supply	Serial numbers	1
Camera Systems	Firearms	1
	Serial numbers	1
	Toolmarks	1
	Fibers	1
	Paint	1
	Fracture Components	1
Microphotography	Firearms	1
	Serial numbers	1
	Toolmarks	1
	Hair	1
	Questioned Documents	1
	Handwriting	1
	Typewriting	1

Appendix #8

DATE: June 1, 1978

TO: The Forensic Science Community

FROM: Criminalistics Certification Study Committee

SUBJECT: Forensic Serology Questionnaire

The Criminalistics Certification Study Committee has prepared this questionnaire to assess:

1. The state of the art, that is, what is presently being done nationwide in the discipline of forensic serology.

2. What techniques the forensic serology community feels should be included in a possible certification testing program.

3. The background and qualifications of practicing forensic serologists.

When the results of this questionnaire are evaluated, the committee will have a better insight into what is being done in the discipline of forensic serology and what should be expected of forensic serologists.

So that a more accurate assessment can be made of what is being accomplished at the bench level, this questionnaire should be completed only by individuals analyzing blood and physiological fluids. In addition, you are requested to complete this questionnaire according to your evaluation of what you do and what you think should be included in a nationwide testing and evaluation program. Your responses should reflect your opinions and not necessarily the thoughts and wishes of your laboratory manager(s) and/or administrator(s).

This questionnaire is extensive, but not necessarily complete. If you apply techniques that are not listed or feel that additional techniques should be included in this questionnaire, please feel free to add them. These additions will be appreciated and definitely considered in the final analysis.

Please feel free to recommend a technique for national testing, even though your laboratory may not be presently proficient in this area (for example, isoenzymes). The present thinking of the committee is to divide the complicated and involved subject of forensic serology into sections. These sections will be determined by a careful evaluation of this questionnaire.

The responses to this questionnaire both with respect to the individual and the organization will be kept confidential.

Because many criminalists either belong to a number of professional associations or are on a number of mailing lists, you may receive multiple questionnaires. Please only respond once, in order that the statistical analysis of the data will be accurate.

If you are the recipient of this questionnaire and are not working with blood and physiological fluid cases, please forward it to an individual who is doing these types of analyses.

Please be aware that an individual need not be a member of an association, society or organization in order to respond to this questionnaire. The only requirement is that an individual be actively involved in the analysis of blood and other physiological fluids.

Also note that this questionnaire has two parts...please complete both parts. Part two of the questionnaire should give the Criminalistics Certification Study Committee an insight into the present background and professional qualifications of those individuals responding to the questionnaire and also an idea as to what they feel should be the minimum qualifications for individuals practicing "forensic serology".

The committee appreciates your response to this questionnaire. We are aware of the variety of questionnaires that are constantly being distributed, however, this one will hopefully be an important step in establishing a professional basis for our discipline. We thank you for your participation and solicit your continuing input into this meaningful task.

Association Membership and Geographic Location Information

The CCSC is sending this questionnaire out through a number of different association newsletters, including all the regional forensic science organizations and such specialized publications as Forensic Serology News. The Committee would like to know if you are a member of any of these forensic organizations, the geographic area of the country in which you reside and the source from which you received this questionnaire, i.e., the one which you have filled out and returned.

1. Please check those organizations of which you are a member:

- NEAFS ☐
- MAAFS (Mid-Atlantic) ☐
- SAFS ☐
- MAFS (Midwest) ☐
- CAC ☐
- NWAFS ☐
- AAFS (American Academy) ☐

2. In which geographic area of the country do you reside?

- Northeast ☐
- Mid-Atlantic ☐
- Southern ☐
- Midwest ☐
- California ☐
- Northwest ☐

3. How did you receive this questionnaire; i.e., what was the source?

_____

Criminalistics Certification Study Committee

Forensic Serology Questionnaire

Part I Forensic Serology Questionnaire

Please place a checkmark in the appropriate column:

A. Technique(s) you are presently using.

B. Technique(s) you feel an individual analyzing blood and other physiological fluids should be familiar with and aware of, i.e., could be expected to be questioned on in a written examination in a possible certification program.

C. Technique(s) you feel an individual analyzing blood and other physiological fluids should be competent to actually perform in the laboratory, i.e., could be asked to demonstrate his proficiency with analyses of questioned samples in a possible certification testing program.

D. Technique(s) you feel an individual analyzing blood and other physiological fluids need not be familiar with and which should not be included in a possible certification testing program.

		A	B	C	D
SECTION 1	IDENTIFICATION OF BLOOD				
1.1.	Microscopic (cytological)				
1.2.	Catalytic tests				
1.2.1.	Benzidine				
1.2.2.	Phenolphthalin				
1.2.3.	Leucomalachite green (p,p' Benzylidenebis N N-dimethylaniline)				
1.2.4.	o-Tolidine				
1.2.5.	Tetramethylbenzidine				
1.2.6.	o-Dianisidine				
1.2.7.	Luminol				
1.3.	Crystal Tests				
1.3.1.	Hematin (Teichmann)				
1.3.2.	Pyridine hemochromogen (Takayama)				
1.4.	Spectroscopic				
1.5.	Spectrophotometric				
1.6.	Anti-human hemoglobin sera				
1.7.	Electrophoretic methods				
1.8.	Other(s)...please list				
SECTION 2	DETERMINATION OF SPECIES OF ORIGIN				
2.1.	Immunological methods				
2.1.1.	Precipitin tube test				
2.1.2.	Double diffusion in agar gels (Ouchterlony)				
2.1.3.	Crossed over electrophoresis				
2.1.4.	Counter electrophoresis				

		A	B	C	D
3.1.2.2.1.3.	Coombs detection				
3.1.2.2.1.4.	Thread technique				
3.1.2.2.1.5.	Detectable antigens				
3.1.2.2.1.5.1.	$Rh_0(D)$				
3.1.2.2.1.5.2.	$rh'(C)$				
3.1.2.2.1.5.3.	$rh''(E)$				
3.1.2.2.1.5.4.	$hr'(\bar{c})$				
3.1.2.2.1.5.5.	$hr''^{i}(\bar{e})$				
3.1.2.2.1.5.6.	$rh^{w}(c^{w})$				
3.1.2.2.1.5.7.	Du				
3.1.3.	MN system				
3.1.3.1.	Whole blood				
3.1.3.2.	Dried blood				
3.1.3.2.1.	Absorption elution				
3.1.3.2.2.	Other(s)				
3.1.4.	S $\bar{s}$ system				
3.1.4.1.	Whole blood				
3.1.4.2.	Dried blood				
3.1.5.	Kell				
3.1.5.1.	Whole blood				
3.1.5.2.	Dried blood				
3.1.6.	Duffy				
3.1.6.1.	Whole blood				
3.1.6.2.	Dried blood				
3.1.7.	Lewis				
3.1.7.1.	Whole blood				
3.1.7.2.	Dried blood				
3.1.8.	Kidd				
3.1.8.1.	Whole blood				
3.1.8.2.	Dried blood				
3.1.9.	Lutheran				
3.1.9.1.	Whole blood				
3.1.9.2.	Dried blood				
3.1.10.	Other(s)				
3.2.	Isozymes				
3.2.1.	Phosphoglucomutase (PGM)				
3.2.1.1.	Locus I				
3.2.1.2.	Locus II				
3.2.1.3.	Locus III				
3.2.2.	Acid Phosphatase (ac P /EAP) Erythrocyte				
3.2.3.	Esterase D (EsD)				
3.2.4.	Adenylate kinase (AK)				
3.2.5.	Adenosine deaminase (ADA)				
3.2.6.	Glucose-6-phosphate dehydrogenase (G6PD)				
3.2.7.	Glyoxalase I (GLO)				
3.2.8.	6-Phosphogluconate dehydrogenase (6 PGD)				
3.2.9.	Peptidase A (Pep A)				
3.2.10.	Carbonic Anhydrase II (CAII)				

	A	B	C	D
2.1.5. Latex particles coated with anti-human sera (sensitized particles)				
2.1.6. Anti-human hemoglobin				
2.2. Isozyme patterns				
2.3. Other(s)				
SECTION 3 INDIVIDUALIZATION OF BLOOD				
3.1. Red cell antigens				
3.1.1. ABO system				
3.1.1.1. Whole blood				
3.1.1.1.1. Forward				
3.1.1.1.2. Reverse				
3.1.1.1.3. Slide technique				
3.1.1.1.4. Tube technique				
3.1.1.1.5. Subtyping of A and B				
3.1.1.1.6. Irregular antibody identification				
1.1.1.7. Other(s)				
3.1.1.2. Dried blood				
3.1.1.2.1. Absorption elution				
3.1.1.2.2. Absorption inhibition				
3.1.1.2.3. Mixed agglutination				
3.1.1.2.4. Ammonia extraction				
3.1.1.2.5. Agglutinin detection (Lattes)				
3.1.1.2.6. Fluorescent antibody				
3.1.1.2.7. Sensitized particles (Latex)				
3.1.1.3. Hair				
3.1.1.4. Perspiration				
3.1.1.5. Teeth				
3.1.1.6. Cerumen				
3.1.1.7. Fingernail/toenail				
3.1.1.8. Other tissues				
3.1.2. Rhesus (Rh-Hr)				
3.1.2.1. Whole blood				
3.1.2.1.1. Rh_0(D)				
3.1.2.1.2. rh′ (C)				
3.1.2.1.3. rh″ (E)				
3.1.2.1.4. hr′ ($\bar{c}$)				
3.1.2.1.5. hr″ ($\bar{e}$)				
3.1.2.1.6. hr ($\bar{c}\bar{e}$) (f)				
3.1.2.1.7. rh^w (c^w)				
3.1.2.1.8. D^u testing				
3.1.2.2. Dried blood				
3.1.2.2.1. Absorption elution				
3.1.2.2.1.1. Enzyme treated indicator cells				
3.1.2.2.1.2. Albumin overlay method				

	A	B	C	D
3.1.2.2.1.3. Coombs detection				
3.1.2.2.1.4. Thread technique				
3.1.2.2.1.5. Detectable antigens				
3.1.2.2.1.5.1. Rh_0(D)				
3.1.2.2.1.5.2. rh′ (C)				
3.1.2.2.1.5.3. rh″ (E)				
3.1.2.2.1.5.4. hr′ ($\bar{c}$)				
3.1.2.2.1.5.5. hr″ ($\bar{e}$)				
3.1.2.2.1.5.6. rh^w (c^w)				
3.1.2.2.1.5.7. Du				
3.1.3. MN system				
3.1.3.1. Whole blood				
3.1.3.2. Dried blood				
3.1.3.2.1. Absorption elution				
3.1.3.2.2. Other(s)				
3.1.4. S $\bar{s}$ system				
3.1.4.1. Whole blood				
3.1.4.2. Dried blood				
3.1.5. Kell				
3.1.5.1. Whole blood				
3.1.5.2. Dried blood				
3.1.6. Duffy				
3.1.6.1. Whole blood				
3.1.6.2. Dried blood				
3.1.7. Lewis				
3.1.7.1. Whole blood				
3.1.7.2. Dried blood				
3.1.8. Kidd				
3.1.8.1. Whole blood				
3.1.8.2. Dried blood				
3.1.9. Lutheran				
3.1.9.1. Whole blood				
3.1.9.2. Dried blood				
3.1.10. Other(s)				
3.2. Isozymes				
3.2.1. Phosphoglucomutase (PGM)				
3.2.1.1. Locus I				
3.2.1.2. Locus II				
3.2.1.3. Locus III				
3.2.2. Acid Phosphatase (ac P /EAP) Erythrocyte				
3.2.3. Esterase D (EsD)				
3.2.4. Adenylate kinase (AK)				
3.2.5. Adenosine deaminase (ADA)				
3.2.6. Glucose-6-phosphate dehydrogenase (G6PD)				
3.2.7. Glyoxalase I (GLO)				
3.2.8. 6-Phosphogluconate dehydrogenase (6 PGD)				
3.2.9. Peptidase A (Pep A)				
3.2.10. Carbonic Anhydrase II (CAII)				

		A	B	C	D
	3.2.11. Glutamic-Pyruvic transaminase (GPT)				
	3.2.12. Superoxide dimutase (SOD)				
	3.2.13. Glutathione reductase (GSR)				
	3.2.14. Pseudocholinesterase E_2 Locus				
	3.2.15. Amylase II				
	3.2.16. Phosphoglucose isomerase (PGI)				
	3.2.17. Other(s)				
3.3.	Serum Proteins				
	3.3.1. Haptoglobin (Hp)				
	3.3.2. Group specific component (Gc)				
	3.3.3. Gm and Inv				
	3.3.4. Transferrin				
	3.3.5. Ceruloplasmin				
	3.3.6. C3 Component of complement				
	3.3.7. Albumin				
	3.3.8. Other(s)				
3.4.	Miscellaneous				
	3.4.1. Histocompatibility				
	3.4.2. Hemoglobins Hb				
	3.4.2.1. A				
	3.4.2.2. S				
	3.4.2.3. C				
	3.4.2.4. D				
	3.4.2.5. F				
	3.4.2.6. Other(s)				
	3.4.3. Syphilis antibody				
	3.4.4. Rheumatoid factor				
	3.4.5. Biochemical profiling				
	3.4.6. Other(s)				
SECTION 4	SEMEN IDENTIFICATION				
4.1.	Microscopical				
	4.1.1. Phase microscopy				
	4.1.2. Chemical staining				
	4.1.3. Differential interference contrast				
4.2.	Chemical				
	4.2.1. Seminal acid phosphatase				
	4.2.1.1. Qualitative				
	4.2.1.2. Quantitative				
	4.2.2. Florence test (choline)				
	4.2.3. Barberio test (spermine)				
	4.2.4. Thin layer chromatography				
4.3.	Immunological				
	4.3.1. Precipitin				
	4.3.1.1. Anti-human sperm serum				
	4.3.1.2. Anti-human semen serum				

		A	B	C	D
4.4.	Electrophoretic				
	4.4.1. Seminal, vaginal and fecal acid phosphatase differentiation				
	4.4.1.1. Polyacrylamide				
	4.4.1.2. Electroimmunodiffusion				
	4.4.1.3. Isoelectric focusing				
	4.4.2. Creatine phosphokinase isoenzyme				
	4.4.3. Lactic dehydrogenase - X isoenzyme				
	4.4.4. σ - Seminoprotein				
4.5.	Other(s)				
SECTION 5	SEMEN OR SEMEN/VAGINAL FLUID MIXTURES				
5.1.	Individualization				
	5.1.1. ABH				
	5.1.1.1. Absorption inhibition (A.I.)				
	5.1.1.2. Absorption elution (A.E.)				
	5.1.1.3. Both A.I. and A.E.				
	5.1.1.4. Other(s)				
	5.1.2. PGM				
	5.1.3. Pep A				
	5.1.4. Sperm diaphorase				
	5.1.5. Phosphoglucose isomerase				
	5.1.6. Lewis				
	5.1.7. HL-A				
	5.1.8. Other(s)				
SECTION 6	SALIVA IDENTIFICATION				
6.1.	Microscopical examination				
6.2.	Amylase				
	6.2.1. Starch-iodine				
	6.2.2. Phadebas amylase				
6.3.	Nitrite test				
6.4.	Triphenyltetrazolium chloride				
6.5.	Thiocyanate				
6.6.	Alkaline phosphatase				
6.7.	Individualization				
	6.7.1. ABH				
	6.7.1.1. A.I.				
	6.7.1.2. A.E.				
	6.7.1.3. A.I. and A.E.				
	6.7.2. Parotid protein electrophoresis				
	6.7.3. Other(s)				

SECTION 7 URINE IDENTIFICATION	A	B	C	D
7.1. Microscopical Examination				
7.2. Urea				
7.3. Creatine				
7.4. Odor				
7.5. Other(s)				
SECTION 8 FECAL MATTER IDENTIFICATION				
8.1. Microscopical				
8.2. Urobilin and urobilinogen				
8.3. Bacteriological constituents				
8.4. Pathological constituents				
8.5. Other(s)				
SECTION 9 MISCELLANEOUS PROCEDURES				
9.1. Sexing bloodstains				
9.1.1. Barr body				
9.1.2. Y - Chromosome fluorescence				
9.1.3. Radioimmunoassay (RIA)				
9.2. Pregnancy determinations				
9.2.1. Aminopeptidase isoenzyme				
9.3. Menstrual blood				
9.3.1. Fibrinolysin				
9.3.2. LDH isoenzymes				
9.4. Age determinations				
9.4.1. Spectrophotometric (ammonical bloodstain extracts)				
9.4.2. Fly larvae				
9.5. Allergy profiling				
9.5.1. Radioallergosorbent test (RAST)				
9.6. Interpretation of bloodstain patterns*				
9.7. PGM on body tissue other than blood and semen				
9.8. Titration of antisera				
9.9. Other(s)				

* blood splatter patterns

Criminalistics Certification Study Committee

Forensic Serology Questionnaire

Part II Background and Minimal Qualifications

Please place a check mark in the appropriate column (more than one check may be made in each area):

A. Your background and professional qualifications.

B. What you feel are the minimum qualifications a practicing forensic serologist should have.

AREA 1 FORMAL BACKGROUND	A	B
1.1. High school diploma		
1.2. Associate degree		
1.3. Bachelor of Science		
1.4. Bachelor of Arts		
1.5. Master's degree		
1.6. Ph.D.		
1.7. M.D.		
1.8. Other(s)...please list on reverse side		
AREA 2 MAJOR FIELD(S) OF STUDY		
2.1. Biology, or		
2.2. Biochemistry, or		
2.3. Chemistry, or		
2.4. Medical technology, or		
2.5. Criminalistics (forensic science program), or		
2.6. Other(s)...please list on reverse side		
AREA 3 SPECIALIZED TRAINING COURSES RELEVANT TO FORENSIC SEROLOGY		
3.1. F.B.I. basic blood course		
3.2. F.B.I. advanced blood course		
3.3. Regional associations workshops and seminars		
3.4. Internships		
3.5. Other(s)...please list on reverse side		
AREA 4 ON-THE-JOB TRAINING		
4.1. Formal training (formally organized, written and scheduled programs)		
4.1.1. None		
4.1.2. 1 day - 2 weeks		

	A	B
4.1.3. 2 weeks+ - 1 month		
4.1.4. 1 month+ - 3 months		
4.1.5. 3 months+ - 6 months		
4.1.6. 6 months+ - 1 year		
4.1.7. More than 1 year		
4.2. Informal training		
4.2.1. None		
4.2.2. 1 day - 2 weeks		
4.2.3. 2 weeks+ - 1 month		
4.2.4. 1 month+ - 3 months		
4.2.5. 3 months+ - 6 months		
4.2.6. 6 months+ - 1 year		
4.2.7. More than 1 year		
AREA 5 COURT TESTIMONY ON FORENSIC SEROLOGY (INCLUDING DEPOSITIONS)		
5.1. None		
5.2. 1 - 5 times		
5.3. 6 - 10 times		
5.4. 11 - 20 times		
5.5. 21 - 50 times		
5.6. 51 - 100 times		
5.7. More than 100 times		
AREA 6 WORK EXPERIENCE		
6.1. Number of years performing forensic analyses		
6.1.1. Up to 1 year		
6.1.2. 1 - 3 years		
6.1.3. 3 - 5 years		
6.1.4. 5 years or more		
6.2. Number of years conducting blood and physiological fluid analyses		
6.2.1. Up to 1 year		
6.2.2. 1 - 3 years		
6.2.3. 3 - 5 years		
6.2.4. 5 years or more		
6.3. On the average, percentage of time working with blood and physiological fluid cases		
6.3.1. 1 - 10%		
6.3.2. 11 - 30%		
6.3.3. 31 - 60%		
6.3.4. 61 - 80%		
6.3.5. 81 - 100%		
6.4. Number of serology cases (not specimens) worked per month		
6.4.1. 1 - 5		

	A	B
6.4.2. 6 - 10		
6.4.3. 11 - 15		
6.4.4. 16 - 20		
6.4.5. 21 or more		
6.5. Number of years worked without immediate supervision (that is you do the work and/or interpret the results - your supervisor does not interpret the results)		
6.5.1. Less than one		
6.5.2. 1 - 3 years		
6.5.3. 3+- 5 years		
6.5.4. 5+- 8 years		
6.5.5. 8+years or more		
AREA 7 PROFESSIONAL PAPERS AND/OR PUBLICATIONS		
7.1. Number of articles published or papers presented		
7.1.1. None		
7.1.2. 1 - 3		
7.1.3. 4 - 5		
7.1.4. 6 - 10		
7.1.5. 11 or more		
AREA 8 MEMBERSHIPS IN THE FOLLOWING TYPES OF FORENSIC ORGANIZATIONS:		
8.1. Specialized serology societies		
8.2. National or international forensic science societies		
8.3. Regional forensic associations		
8.4. Other technical societies - please list		

Date: 11/3/78
SEROLOGY/NATIONAL

ASSOCIATION MEMBERSHIP AND GEOGRAPHIC LOCATION INFORMATION

THE CCSC IS SENDING THIS QUESTIONNAIRE OUT THROUGH A NUMBER OF DIFFERENCE ASSOCIATION NEWSLETTERS, INCLUDING ALL THE REGIONAL FORENSIC SCIENCE ORGANIZATIONS AND SUCH SPECIALIZED PUBLICATIONS AS FORENSIC SEROLOGY NEWS. THE COMMITTEE WOULD LIKE TO KNOW IF YOU ARE A MEMBER OF ANY OF THESE FORENSIC ORGANIZATIONS, THE GEOGRAPHIC AREA OF THE COUNTRY IN WHICH YOU RESIDE AND THE SOURCE FROM WHICH YOU RECEIVED THIS QUESTIONNAIRE, I.E., THE ONE WHICH YOU HAVE FILLED OUT AND RETURNED

1. PLEASE CHECK THOSE ORGANIZATIONS OF WHICH YOU ARE A MEMBER:

NEAFS	024	08%
MAAFS (MID-ATLANTIC)	010	07%
SAFS	030	12%
MAFS (MIDWEST)	051	20%
CAC	063	24%
NWAFS	013	05%
AAFS (AMERICAN ACADEMY)	028	38%

CRIMINALISTICS CERTIFICATION STUDY COMMITTEE
FORENSIC SEROLOGY QUESTIONNAIRE

PART I FORENSIC SEROLOGY QUESTIONNAIRE

PLEASE PLACE A CHECKMARK IN THE APPROPRIATE COLUMN:

A. TECHNIQUE(S) YOU ARE PRESENTLY USING
B. TECHNIQUE(S) YOU FEEL AN INDIVIDUAL ANALYZING BLOOD AND OTHER PHYSIOLOGICAL FLUIDS SHOULD BE FAMILIAR WITH AND AWARE OF, I.E., COULD BE EXPECTED TO BE QUESTIONED ON IN A WRITTEN EXAMINATION IN A POSSIBLE CERTIFICATION PROGRAM.

C. TECHNIQUE(S) YOU FEEL AN INDIVIDUAL ANALYZING BLOOD AND OTHER PHYSIOLOGICAL FLUIDS SHOULD BE COMPETENT TO ACTUALLY PERFORM IN THE LABORATORY, I.E., COULD BE ASKED TO DEMONSTRATE HIS PROFICIENCY WITH ANALYSES OF QUESTIONED SAMPLES IN A POSSIBLE CERTIFICATION TESTING PROGRAM.

D. TECHNIQUE(S) YOU FEEL AN INDIVIDUAL ANALYZING BLOOD AND OTHER PHYSIOLOGICAL FLUIDS NEED NOT BE FAMILIAR WITH AND WHICH SHOULD NOT BE INCLUDED IN A POSSIBLE CERTIFICATION TESTING PROGRAM

N = 209

		A TOT	%	B TOT	%	C TOT	%	D TOT	%
SECTION 1 IDENTIFICATION OF BLOOD									
1.1	MICROSCOPIC (CYTOLOGICAL)	064	25%	128	49%	051	20%	009	07%
1.2	CATALYTIC TESTS								
1.2.1.	BENZIDINE	104	40%	171	66%	120	46%	015	06%
1.2.2.	PHENOLPHTHALIN	137	53%	172	66%	134	52%	007	03%
1.2.3.	LEUCOMALACHITE GREEN (P,P' BENZYLIDENEBIS N,N-DIMETHYLANILINE)	020	10%	175	67%	069	27%	026	10%
1.2.4.	O-TOLIDINE	101	39%	175	67%	087	33%	027	10%
1.2.5	TETRAMETHYLBENZIDINE	033	13%	146	56%	049	19%	051	20%
1.2.6.	O-DIANISIDINE	005	02%	118	45%	030	12%	072	28%
1.2.7.	LUMINOL	070	29%	164	63%	078	30%	036	14%
1.3.	CRYSTAL TESTS								
1.3.1.	HEMATIN (TEICHMANN)	023	09%	212	82%	065	25%	016	06%
1.3.2.	PYRIDINE HEMOCHROMOGEN (TAKAYAMA)	132	51%	189	73%	130	50%	011	04%
1.4.	SPECTROSCOPIC	008	03%	058	22%	000	03%	159	61%
1.5	SPECTROPHOTOMETRIC	004	02%	078	30%	012	05%	142	55%
1.6	ANTI-HUMAN HEMOGLOBIN SERA	051	20%	135	52%	048	18%	072	28%
1.7	ELECTROPHORETIC METHODS	061	23%	132	51%	048	18%	082	32%
1.8	OTHER(S)..PLACE LIST	006	02%	005	02%	004	02%	024	09%
SECTION 2 DETERMINATION OF SPECIES OF ORIGIN									
2.1.	IMMUNOLOGICAL METHODS								
2.1.1.	PRECIPITIN TUBE TEST	170	65%	175	67%	153	59%	005	02%
2.1.2.	DOUBLE DIFFUSION IN AGAR GELS (OUCHTERLONY)	144	55%	175	67%	131	50%	000	03%
2.1.3.	CROSSED OVER ELECTROPHORESIS	005	33%	194	75%	070	29%	018	07%
2.1.4	COUNTER ELECTROPHORESIS	010	04%	104	40%	025	10%	101	39%
2.1.5	LATEX PARTICLES COATED WITH ANTI-HUMAN SERA (SENSITIZED PARTICLES)	003	01%	112	43%	012	05%	115	44%
2.1.6	ANTI-HUMAN HEMOGLOBIN	025	10%	138	53%	029	11%	072	28%
2.2	ISOZYME PATTERNS	022	08%	093	36%	028	08%	110	42%
2.3.	OTHER(S)	004	02%	003	01%	002	01%	023	09%
SECTION 3 INDIVIDUALIZATION OF BLOOD									
3.1.	RED CELL ANTIGENS								
3.1.1.	ABO SYSTEM	160	65%	102	32%	112	43%	000	00%
3.1.1.1.	WHOLE BLOOD	210	81%	134	52%	152	58%	001	00%
3.1.1.1.1.	FORWARD	224	86%	144	55%	167	64%	003	01%
3.1.1.1.2.	REVERSE	201	77%	144	55%	151	58%	007	03%
3.1.1.1.3.	SLIDE TECHNIQUE	202	78%	141	54%	034	13%	008	03%
3.1.1.1.4.	TUBE TECHNIQUE	130	50%	153	59%	100	42%	013	05%
3.1.1.1.5.	SUBTYPING OF A AND B	099	38%	176	68%	000	33%	020	00%

3.1.1.1.6.	IRREGULAR ANTIBODY IDENTIFICATION	013	05%	107	41%	020	08%	105	40%
3.1.1.1.7.	OTHER(S)	000	00%	002	01%	001	00%	021	08%
3.1.1.2	DRIED BLOOD	123	47%	005	33%	007	33%	000	00%
3.1.1.2.1.	ABSORPTION-ELUTION	244	94%	150	61%	150	61%	001	00%
3.1.1.2.2.	ABSORPTION INHIBITION	142	55%	181	70%	130	50%	014	05%
3.1.1.2.3.	MIXED AGGLUTINATION	034	13%	172	66%	051	20%	037	14%
3.1.1.2.4.	AMMONIA EXTRACTION	085	33%	153	59%	054	21%	037	14%
3.1.1.2.5.	AGGLUTININ DETECTION (LATTES)	220	85%	147	57%	159	61%	006	02%
3.1.1.2.6.	FLUORESCENT ANTIBODY	002	01%	095	37%	010	04%	125	48%
3.1.1.2.7.	SENSITIZED PARTICLES (LATEX)	001	00%	004	32%	005	02%	131	50%
3.1.1.3.	HAIR	040	15%	165	63%	120	46%	169	65%
3.1.1.4.	PERSPIRATION	066	25%	173	67%	044	17%	053	20%
3.1.1.5.	TEETH	005	02%	080	30%	009	03%	133	51%
3.1.1.6.	CERUMEN	006	02%	072	30%	010	04%	140	54%
3.1.1.7.	FINGERNAIL/TOENAIL	015	06%	069	27%	015	06%	127	49%
3.1.1.8.	OTHER TISSUES	040	15%	118	45%	030	12%	161	62%
3.1.2.	RHESUS (RH HR)	062	24%	067	26%	041	16%	014	05%
3.1.2.1.	WHOLE BLOOD	136	52%	112	43%	099	38%	017	07%
3.1.2.1.1.	RH0 (D)	171	66%	152	58%	121	47%	010	07%
3.1.2.1.2.	RH" (C)	145	56%	154	59%	116	45%	025	10%
3.1.2.1.3.	RH" (E)	144	55%	154	59%	116	45%	025	10%
3.1.2.1.4.	HR' (C)	144	55%	154	59%	116	45%	025	10%
3.1.2.1.5.	HR" (E)	140	54%	155	60%	115	44%	025	10%
3.1.2.1.6	HR (CE) (E)	022	08%	027	10%	033	13%	066	25%
3.1.2.1.7.	RHN (CN)	021	08%	135	52%	040	15%	062	24%
3.1.2.1.8.	DU TESTING	075	29%	148	57%	068	26%	037	14%
3.1.2.2.	DRIED BLOOD	064	25%	077	30%	050	19%	021	08%
3.1.2.2.1.	ABSORPTION ELUTION	120	46%	142	55%	087	33%	024	09%
3.1.2.2.1.1.	ENZYME TREATED INDICATOR CELLS	068	26%	137	53%	062	24%	049	19%
3.1.2.2.1.2.	ALBUMIN OVERLAY METHOD	033	13%	120	46%	019	07%	076	29%
3.1.2.2.1.3.	COOMBS DETECTION	032	12%	126	48%	027	10%	071	27%
3.1.2.2.1.4.	THREAD TECHNIQUE	088	34%	135	52%	167	64%	040	10%
3.1.2.2.1.5.	DETECTABLE ANTIGENS	045	17%	093	36%	037	14%	034	13%
3.1.2.2.1.5.1.	RH0 (D)	103	40%	142	55%	082	32%	029	11%
3.1.2.2.1.5.2.	RH' (C)	093	36%	037	14%	078	30%	035	13%
3.1.2.2.1.5.3.	RH" (E)	092	35%	137	53%	077	30%	035	13%
3.1.2.2.1.5.4.	HR' (C)	093	36%	136	52%	078	30%	035	13%
3.1.2.2.1.5.5.	HR" 1 (E)	091	35%	133	51%	077	30%	037	14%
3.1.2.2.1.5.6.	RHN (CN)	012	05%	087	37%	022	08%	078	30%
3.1.2.2.1.5.7.	DU	017	07%	100	41%	024	09%	067	26%
3.1.3.	MN SYSTEM								
3.1.3.1.	WHOLE BLOOD	125	48%	180	68%	126	75%	023	09%
3.1.3.2.	DRIED BLOOD	060	23%	161	62%	055	21%	044	17%
3.1.3.2.1.	ABSORPTION ELUTION	060	23%	149	57%	050	19%	044	17%
3.1.3.2.2.	OTHER(S)	002	01%	014	05%	001	00%	036	14%
3.1.4.	S S SYSTEM								
3.1.4.1.	WHOLE BLOOD	028	11%	125	48%	030	12%	088	34%
3.1.4.2.	DRIED BLOOD	000	03%	008	34%	019	07%	111	43%
3.1.5.	KELL								
3.1.5.1.	WHOLE BLOOD	020	08%	108	42%	021	08%	109	42%

3.1.1.1.6.	IRREGULAR ANTIBODY IDENTIFICATION	013	05%	107	41%	020	08%	105	40%
3.1.1.1.7.	OTHER(S)	000	00%	002	01%	001	00%	021	08%
3.1.1.2	DRIED BLOOD	123	47%	005	33%	007	33%	000	00%
3.1.1.2.1.	ABSORPTION-ELUTION	244	94%	158	61%	158	61%	001	00%
3.1.1.2.2.	ABSORPTION INHIBITION	142	55%	181	70%	130	50%	014	05%
3.1.1.2.3.	MIXED AGGLUTINATION	034	13%	172	06%	051	20%	037	14%
3.1.1.2.4.	AMMONIA EXTRACTION	085	33%	153	59%	054	21%	037	14%
3.1.1.2.5.	AGGLUTININ DETECTION (LATTES)	220	85%	147	57%	159	61%	006	02%
3.1.1.2.6.	FLUORESCENT ANTIBODY	002	01%	095	37%	010	04%	125	48%
3.1.1.2.7.	SENSITIZED PARTICLES (LATEX)	001	00%	004	32%	005	02%	139	50%
3.1.1.3.	HAIR	040	15%	165	63%	120	46%	168	65%
3.1.1.4.	PERSPIRATION	066	25%	173	67%	044	17%	053	20%
3.1.1.5.	TEETH	005	02%	080	30%	009	03%	133	51%
3.1.1.6.	CERUMEN	006	02%	072	30%	010	04%	140	54%
3.1.1.7.	FINGERNAIL/TOENAIL	015	06%	069	27%	015	06%	127	49%
3.1.1.8.	OTHER TISSUES	040	15%	118	45%	030	12%	161	62%
3.1.2.	RHESUS (RH HR)	062	24%	067	26%	041	16%	014	05%
3.1.2.1.	WHOLE BLOOD	130	52%	112	43%	099	38%	017	07%
3.1.2.1.1.	RH0 (D)	171	66%	152	58%	121	47%	010	07%
3.1.2.1.2.	RH" (C)	145	56%	154	59%	116	45%	025	10%
3.1.2.1.3.	RH" (E)	144	55%	154	59%	116	45%	025	10%
3.1.2.1.4.	HR' (G)	144	55%	154	59%	116	45%	025	10%
3.1.2.1.5.	HR" (F)	140	54%	155	60%	115	44%	025	10%
3.1.2.1.6	HR (GF) (F)	022	08%	027	10%	033	13%	066	25%
3.1.2.1.7.	RHN (CN)	021	08%	135	52%	040	15%	062	24%
3.1.2.1.8.	DU TESTING	075	29%	148	57%	068	26%	037	14%
3.1.2.2.	DRIED BLOOD	064	25%	077	30%	050	19%	021	08%
3.1.2.2.1.	ABSORPTION ELUTION	120	46%	142	55%	087	33%	024	09%
3.1.2.2.1.1.	ENZYME TREATED INDICATOR CELLS	068	26%	137	53%	062	24%	040	15%
3.1.2.2.1.2.	ALBUMIN OVERLAY METHOD	033	13%	120	46%	019	07%	076	29%
3.1.2.2.1.3.	COOMBS DETECTION	032	12%	126	48%	027	10%	071	27%
3.1.2.2.1.4.	TIRERD TECHNIQUE	089	34%	135	52%	167	64%	040	15%
3.1.2.2.1.5.	DETECTABLE ANTIGENS	045	17%	093	36%	037	14%	034	13%
3.1.2.2.1.5.1.	RH0 (D)	103	40%	142	55%	082	32%	029	11%
3.1.2.2.1.5.2.	RH'(C)	093	36%	037	14%	078	30%	035	13%
3.1.2.2.1.5.3.	RH" (E)	092	35%	137	53%	077	30%	035	13%
3.1.2.2.1.5.4.	HR' (G)	093	36%	136	52%	070	30%	035	13%
3.1.2.2.1.5.5.	HR" 1 (F)	091	35%	133	51%	077	30%	037	14%
3.1.2.2.1.5.6.	RHN (GN)	012	05%	097	37%	028	08%	078	30%
3.1.2.2.1.5.7.	DU	017	07%	106	41%	024	09%	067	26%
3.1.3.	MN SYSTEM								
3.1.3.1.	WHOLE BLOOD	125	48%	109	08%	136	75%	023	09%
3.1.3.2.	DRIED BLOOD	060	23%	161	62%	055	21%	044	17%
3.1.3.2.1.	ABSORPTION ELUTION	060	23%	149	57%	050	19%	044	17%
3.1.3.2.2.	OTHER(S)	002	01%	014	05%	001	00%	036	14%
3.1.4.	S S SYSTEM								
3.1.4.1.	WHOLE BLOOD	028	11%	125	48%	030	12%	088	34%
3.1.4.2.	DRIED BLOOD	000	03%	008	34%	019	07%	111	43%
3.1.5.	KELL								
3.1.5.1.	WHOLE BLOOD	020	08%	108	42%	021	08%	109	42%

3.1.5.2	DRIED BLOOD	004 02%	075 29%	011 04%	128 49%	
3.1.6.	DUFFY					
3.1.6.1.	WHOLE BLOOD	017 07%	106 41%	010 07%	110 42%	
3.1.6.2.	DRIED BLOOD	003 01%	072 28%	011 04%	130 50%	
3.1.7.	KEL1S					
3.1.7.1.	WHOLE BLOOD	063 24%	142 55%	051 20%	063 24%	
3.1.7.2.	DRIED BLOOD	009 03%	100 38%	010 07%	100 38%	
3.1.8.	KIDD					
3.1.8.1.	WHOLE BLOOD	014 05%	102 39%	020 08%	113 43%	
3.1.8.2.	DRIED BLOOD	003 01%	071 27%	011 04%	030 12%	
3.1.9.	LUTHERAN					
3.1.9.1.	WHOLE BLOOD	012 05%	104 40%	019 07%	111 43%	
3.1.9.2.	DRIED BLOOD	003 01%	072 28%	011 04%	130 50%	
3.1.10.	OTHER(S)	000 00%	005 02%	002 01%	020 11%	
3.2.	ISOZYMES					
3.2.1.	PHOSPHOGLUCONATE (PGM)	143 55%	138 53%	110 46%	010 04%	
3.2.1.1.	LOCUS I	157 60%	145 50%	123 47%	013 05%	
3.2.1.2.	LOCUS II	052 20%	142 55%	045 17%	042 16%	
3.2.1.3.	LOCUS III	027 00%	136 52%	024 00%	055 21%	
3.2.2.	ACID PHOSPHATASE (AC P'ZEAP) ERYTHROCYTE	180 69%	172 66%	145 56%	007 03%	
3.2.3.	ESTERASE D (ESD)	155 60%	103 63%	112 43%	013 05%	
3.2.4.	ADENYLATE KINASE (AK)	116 45%	171 66%	003 36%	012 07%	
3.2.5.	ADENOSINE DEAMINASE (ADA)	049 19%	166 64%	069 27%	035 13%	
3.2.6.	GLUCOSE-6-PHOSPHATE DEHYDROGENASE (G6PD)	039 15%	179 69%	062 24%	034 13%	
3.2.7.	GLYOXOLASE I (GLO)	045 17%	142 55%	061 23%	040 15%	
3.2.8.	6-PHOSPHOGLUCONATE DEHYDROGENASE (6-PGD)	017 07%	153 59%	045 17%	054 21%	
3.2.9.	PEPTIDASE A (PEP A)	026 10%	155 60%	040 15%	052 20%	
3.2.10.	CARBONIC ANHYDRASE II (CAII)	015 06%	113 43%	130 50%	085 33%	
3.2.11.	GLUTAMIC-PYRUVIC TRANSAMINASE (GPT)	000 00%	101 39%	014 05%	111 43%	
3.2.12.	SUPEROXIDE DISMUTASE (SOD)	003 01%	067 26%	009 03%	135 52%	
3.2.13.	GLUTATHIONE REDUCTASE (GSR)	004 02%	071 27%	009 03%	132 51%	
3.2.14.	PSEUDOCHOLINESTERASE E2 LOCUS	002 01%	081 31%	012 05%	122 47%	
3.2.15.	AMYLASE II	008 03%	089 34%	014 05%	116 45%	
3.2.16.	PHOSPHOGLUCOSE ISOMERASE (PGI)	006 02%	077 30%	011 04%	123 47%	
3.2.17.	OTHER(S)	001 00%	012 05%	002 01%	040 15%	
3.3.	SERUM PROTEINS					
3.3.1.	HAPTOGLOBIN (HP)	109 42%	171 66%	102 39%	017 07%	
3.3.2.	GROUP SPECIFIC COMPONENT (GC)	050 19%	135 52%	054 21%	050 22%	
3.3.3.	GM AND INV	000 03%	116 45%	125 48%	091 35%	
3.3.4.	TRANSFERRIN	008 03%	081 31%	011 04%	120 46%	
3.3.5.	CERULOPLASMIN	003 01%	063 24%	005 02%	136 52%	
3.3.6.	C3 COMPONENT OF COMPLEMENT	002 01%	065 25%	007 03%	123 47%	
3.3.7.	ALBUMIN	006 02%	074 28%	000 03%	120 46%	
3.3.8.	OTHER(S)	001 00%	011 04%	001 00%	010 15%	
3.4.	MISCELLANEOUS					
3.4.1.	HISTOCOMPATIBILITY	003 01%	061 23%	004 02%	129 50%	
3.4.2.	HEMOGLOBINS HB	024 36%	143 55%	070 29%	030 12%	
3.4.2.1.	A	024 36%	129 50%	072 28%	030 15%	
3.4.2.2.	S	023 36%	129 50%	172 06%	030 15%	
3.4.2.3.	C	005 33%	125 48%	061 23%	041 16%	
3.4.2.4.	D	047 18%	115 44%	040 15%	051 20%	

3.4.2.5.	F-	079	30%	124	48%	062	24%	040 15%
3.4.2.6.	OTHER(S)	005	02%	013	05%	006	02%	046 18%
3.4.3.	SYPHILIS ANTIBODY	001	00%	055	21%	004	02%	150 58%
3.4.4.	RHEUMATOID FACTOR	006	02%	065	25%	006	02%	151 58%
3.4.5.	BIOCHEMICAL PROFILING	002	01%	062	24%	003	01%	140 54%
3.4.6.	OTHER(S)	000	00%	004	02%	000	00%	044 17%
SECTION 4 SEMEN IDENTIFICATION								
4.1.	MICROSCOPICAL	153	59%	101	39%	100	39%	001 00%
4.1.1.	PHASE MICROSCOPY	141	54%	159	61%	039	30%	017 07%
4.1.2.	CHEMICAL STAINING	197	76%	162	62%	133	51%	005 02%
4.1.3.	DIFFERENTIAL INTERFERENCE CONTRAST	016	06%	033	30%	010	07%	001 30%
4.2	CHEMICAL							
4.2.1.	SEMINAL ACID PHOSPHATASE	190	73%	125	48%	132	51%	001 00%
4.2.1.1.	QUALITATIVE	238	92%	157	60%	162	62%	004 02%
4.2.1.2.	QUANTITATIVE	035	13%	150	61%	039	15%	058 22%
4.2.2.	FLORENCE TEST (CHOLINE)	117	45%	185	71%	093	36%	014 05%
4.2.3.	BARBERIO TEST (SPERMINE)	029	11%	195	75%	048	15%	030 12%
4.2.4.	THIN LAYER CHROMATOGRAPHY	010	07%	130	50%	016	06%	009 34%
4.3.	IMMUNOLOGICAL							
4.3.1.	PRECIPITIN	059	23%	097	37%	041	10%	019 07%
4.3.1.1.	ANTI-HUMAN SPERM SERUM	025	10%	147	57%	031	12%	060 23%
4.3.1.2.	ANTI-HUMAN SEMEN SERUM	060	26%	170	65%	055	21%	036 14%
4.4.	ELECTROPHORETIC							
4.4.1.	SEMINAL, VAGINAL AND FECAL ACID PHOSPHATASE DIFFERENTIATION	064	25%	176	68%	061	23%	026 10%
4.4.1.1.	POLYACRYLAMIDE	044	17%	140	54%	044	17%	053 20%
4.4.1.2.	ELECTROIMMUNODIFFUSION	016	06%	114	44%	010	07%	082 32%
4.4.1.3.	ISOELECTRIC FOCUSING	007	03%	116	45%	015	06%	088 34%
4.4.2.	CREATINE PHOSPHOKINASE ISOENZYME	002	01%	068	26%	009	03%	135 52%
4.4.3.	LACTIC DEHYDROGENASE X ISOENZYME	017	07%	103	42%	017	07%	098 38%
4.4.4.	-SEMINOPROTEIN	001	00%	006	25%	006	02%	135 52%
4.5.	OTHER(S)	002	01%	011	04%	002	01%	028 11%
SECTION 5 SEMEN OR SEMEN/VAGINAL FLUID MIXTURES								
5.1.	INDIVIDUALIZATION							
5.1.1.	ABH	134	52%	101	39%	006	33%	005 07%
5.1.1.1.	ABSORPTION INHIBITION (A.I.)	195	75%	151	58%	133	51%	007 03%
5.1.1.2.	ABSORPTION ELUTION (A.E.)	087	33%	167	64%	068	26%	016 06%
5.1.1.3.	BOTH A.I. AND A.E.	087	33%	135	52%	070	27%	022 03%
5.1.1.4.	OTHER(S)	001	00%	008	03%	003	01%	029 11%
5.1.2.	PGM	130	50%	166	64%	097	37%	018 07%
5.1.3.	PEP A	018	07%	122	47%	029	11%	077 30%
5.1.4.	SPERM DIAPHORASE	003	01%	063	27%	012	05%	107 41%
5.1.5.	PHOSPHOGLUCOSE ISOMERASE	002	01%	077	30%	012	05%	123 47%
5.1.6.	LEWIS	011	04%	102	39%	016	06%	104 40%
5.1.7.	HL-A	001	00%	069	27%	004	02%	132 51%
5.1.8.	OTHER(S)	000	00%	015	06%	001	00%	044 17%

SECTION 6 SALIVA IDENTIFICATION

6.1.	MICROSCOPICAL EXAMINATION	070	27%	115	44%	040	15%	055	21%
6.2.	AMYLASE	148	57%	130	50%	093	36%	012	05%
6.2.1	STARCH-IODINE	150	58%	160	64%	098	38%	014	05%
6.2.2	PHADEBAS AMYLASE	060	23%	129	50%	040	18%	054	21%
6.3.	NITRITE TEST	007	03%	000	34%	009	03%	112	43%
6.4.	TRIPHENYLTETRAZOLIUM CHLORIDE	001	00%	059	23%	005	02%	133	51%
6.5.	THIOCYANATE	011	04%	088	34%	017	07%	107	41%
6.6.	ALKALINE PHOSPHATASE	005	02%	076	29%	009	03%	119	46%
6.7.	INDIVIDUALIZATION	069	27%	064	25%	039	15%	014	05%
6.7.1.	ABH	158	61%	119	46%	095	37%	010	04%
6.7.1.1.	A I	172	66%	136	52%	112	43%	011	04%
6.7.1.2.	A E	070	30%	135	52%	053	20%	027	10%
6.7.1.3.	A I, AND A E	083	32%	126	48%	066	25%	029	11%
6.7.2.	PAROTID PROTEIN ELECTROPHORESIS	002	01%	056	22%	005	02%	139	53%
6.7.3.	OTHER(S)	005	02%	011	04%	005	02%	041	16%

SECTION 7 URINE IDENTIFICATION

7.1.	MICROSCOPICAL EXAMINATION	046	18%	100	38%	027	10%	002	32%
7.2.	UREA	106	41%	137	53%	067	26%	134	52%
7.3.	CREATINE	067	26%	126	48%	045	17%	056	22%
7.4.	ODOR	140	54%	134	52%	067	26%	033	13%
7.5.	OTHER(S)	009	03%	015	06%	006	02%	036	14%

SECTION 8 FECAL MATTER IDENTIFICATION

8.1.	MICROSCOPICAL	090	38%	003	01%	049	19%	062	24%
8.2	UROBILIN AND UROBILINOGEN	027	10%	027	37%	020	08%	088	34%
8.3.	BACTERIOLOGICAL CONSTITUENTS	015	06%	076	29%	008	03%	122	47%
8.4.	PATHOLOGICAL CONSTITUENTS	002	01%	061	23%	001	02%	132	51%
8.5.	OTHER(S)	011	04%	012	05%	000	03%	045	17%

SECTION 9 MISCELLANEOUS PROCEDURES

9.1.	SEXING BLOODSTAINS							
9.1.1.	BARR BODY	012	05%	137	53%	018	07%	076	29%
9.1.2.	Y - CHROMOSOME FLUORESCENCE	004	02%	135	52%	013	05%	082	32%
9.1.3.	RADIOIMMUNOASSAY (RIA)	002	01%	122	47%	006	02%	092	35%
9.2	PREGNANCY DETERMINATIONS								
9.2.1.	AMINOPEPTIDASE ISOENZYME	001	00%	040	15%	003	02%	163	63%
9.3.	MENSTRUAL BLOOD								
9.3.1.	FIBRINOLYSIN	009	03%	103	40%	013	05%	097	37%
9.3.2.	LDH ISOENZYMES	034	13%	141	54%	018	07%	060	26%
9.4.	AGE DETERMINATIONS								
9.4.1.	SPECTROPHOTOMETRIC (AMMONIACAL BLOODSTAIN EXTRACTS)	009	03%	091	35%	010	04%	009	03%
9.4.2	FLY LARVAE	006	02%	068	26%	006	02%	134	52%
9.5.	ALLERGY PROFILING								
9.5.1.	RADIOALLERGOSORBENT TEST (RAST)	000	00%	057	22%	003	01%	147	57%
9.6.	INTERPRETATION OF BLOODSTAIN PATTERNS	096	37%	137	53%	060	23%	063	24%

9.7.	PCN ON BODY TISSUE OTHER THAN BLOOD AND SEMEN	055	21%	132	51%	034	13%	067	26%
9.8.	TITRATION OF ANTISERA	115	44%	145	56%	078	30%	040	15%
9.9.	OTHER(S)	002	01%	005	02%	001	00%	031	12%

* BLOOD SPLATTER PATTERNS

CRIMINALISTICS CERTIFICATION STUDY COMMITTEE
FORENSIC SEROLOGY QUESTIONNAIRE

PART II BACKGROUND AND MINIMAL QUALIFICATIONS .

PLEASE PLACE A CHECK MARK IN THE APPROPRIATE COLUMN (MORE THAN ONE CHECK MAY BE MADE IN EACH AREA):

A. YOUR BACKGROUND AND PROFESSIONAL QUALIFICATIONS.

B. WHAT YOU FEEL ARE THE MINIMUM QUALIFICATIONS A PRACTICING FORENSIC SEROLOGIST SHOULD HAVE.

AREA 1 FORMAL BACKGROUND.							
1.1.	HIGH SCHOOL DIPLOMA	013	05%	014	05%		
1.2.	ASSOCIATE DEGREE	004	02%	009	03%		
1.3.	BACHELOR OF SCIENCE	115	44%	134	52%		
1.4.	BACHELOR OF ARTS	044	17%	098	38%		
1.5.	MASTER'S DEGREE	084	32%	012	05%		
1.6.	PH.D.	015	06%	000	00%		
1.7.	M.D.	000	00%	002	01%		
1.8.	OTHER(S)...PLEASE LIST ON REVERSE SIDE	008	03%	001	00%		
AREA 2 MAJOR FIELD(S) OF STUDY							
2.1.	BIOLOGY, OR	105	40%	187	72%		
2.2.	BIOCHEMISTRY, OR	053	20%	189	73%		
2.3.	CHEMISTRY, OR	123	47%	168	65%		
2.4.	MEDICAL TECHNOLOGY, OR	023	09%	136	52%		
2.5.	CRIMINALISTICS (FORENSIC SCIENCE PROGRAM), OR	084	32%	154	59%		
2.6.	OTHERS(S)...PLEASE LIST ON REVERSE SIDE	011	04%	014	05%		
AREA 3 SPECIALIZED TRAINING COURSES RELEVANT TO FORENSIC SEROLOGY							
3.1.	F.B.I. BASIC BLOOD COURSE	038	15%	086	33%		
3.2.	F.B.I. ADVANCED BLOOD COURSE	064	25%	056	22%		
3.3.	REGIONAL ASSOCIATIONS WORKSHOPS AND SEMINARS	144	55%	099	38%		

3.4.	INTERNSHIPS	067	26%	079 30%
3.5.	OTHER(S) ..PLEASE LIST ON REVERSE SIDE	025	10%	007 03%

AREA 4 ON-THE-JOB TRAINING

4.1.	FORMAL TRAINING (FORMALLY ORGANIZED, WRITTEN AND SCHEDULED PROGRAMS)	037	14%	046 18%
4.1.1.	NONE	009	03%	011 04%
4.1.2.	1 DAY - 2 WEEKS	034	13%	025 10%
4.1.3.	2 WEEKS+ - 1 MONTH	012	07%	020 11%
4.1.4.	1 MONTH+ - 3 MONTHS	016	06%	034 13%
4.1.5.	3 MONTHS+ - 6 MONTHS	024	09%	050 19%
4.1.6.	6 MONTHS+ - 1 YEAR	040	15%	063 24%
4.1.7.	MORE THAN 1 YEAR	018	07%	021 08%
4.2.	INFORMAL TRAINING			
4.2.1.	NONE	002	03%	007 03%
4.2.2.	1 DAY - 2 WEEKS	012	05%	004 02%
4.2.3.	2 WEEKS + - 1 MONTH	012	05%	009 03%
4.2.4.	1 MONTH + - 3 MONTHS	032	12%	023 09%
4.2.5.	3 MONTHS + - 6 MONTHS	027	10%	043 17%
4.2.6.	6 MONTHS+ - 1 YEAR	040	18%	062 24%
4.2.7.	MORE THAN 1 YEAR	071	27%	049 19%

AREA 5 COURT TESTIMONY ON FORENSIC SEROLOGY (INCLUDING DEPOSITIONS)

5.1.	NONE	021	08%	074 28%
5.2.	1 - 5 TIMES	037	14%	045 17%
5.3.	6 - 10 TIMES	024	09%	026 10%
5.4.	11 - 20 TIMES	035	13%	018 07%
5.5.	21 - 50 TIMES	067	26%	007 03%
5.6.	51 - 100 TIMES	041	16%	002 01%
5.7.	MORE THAN 100 TIMES	030	12%	001 00%

AREA 6 WORK EXPERIENCE

6.1.	NUMBER OF YEARS PERFORMING FORENSIC ANALYSES	004	02%	001 00%
6.1.1.	UP TO 1 YEAR	008	03%	008 34%
6.1.2.	1 - 3 YEARS	041	16%	081 31%
6.1.3.	3 - 5 YEARS	058	22%	000 03%
6.1.4.	5 YEARS OR MORE	140	57%	000 00%
6.2.	NUMBER OF YEARS CONDUCTING BLOOD AND PHYSIOLOGICAL FLUID ANALYSES	002	01%	005 02%
6.2.1.	UP TO 1 YEAR	012	05%	082 32%
6.2.2.	1 - 3 YEARS	057	22%	068 26%
6.2.3.	3 - 5 YEARS	062	24%	004 02%
6.2.4.	5 YEARS OR MORE	118	45%	001 00%
6.3.	ON THE AVERAGE, PERCENTAGE OF TIME WORKING WITH BLOOD AND PHYSIOLOGICAL FLUID CASES	000	00%	000 00%
6.3.1.	1 - 10%	041	16%	032 12%

6.3.2.	11 - 30%	041	16%	030	15%
6.3.3.	31 - 60%	056	22%	052	28%
6.3.4.	61 - 80%	035	13%	026	10%
6.3.5.	81 - 100%	079	30%	026	10%
6.4.	NUMBER OF SEROLOGY CASES (NOT SPECIMENS) WORKED PER MONTH				
6.4.1.	1 - 5	068	26%	064	25%
6.4.2.	6 - 10	056	22%	045	17%
6.4.3.	11 - 15	048	18%	031	12%
6.4.4.	16 - 20	026	10%	005	02%
6.4.5.	21 OR MORE	044	17%	003	01%
6.5.	NUMBER OF YEARS WORKED WITHOUT IMMEDIATE SUPERVISION (THAT IS YOU DO THE WORK AND/OR INTERPRET THE RESULTS - YOUR SUPERVISOR DOES NOT INTERPRET THE RESULTS)				
6.5.1.	LESS THAN ONE	027	10%	057	22%
6.5.2.	1 - 3 YEARS	058	22%	092	35%
6.5.3.	3+ - 5 YEARS	064	25%	006	02%
6.5.4.	5+ - 8 YEARS	057	22%	001	00%
6.5.5.	8+YEARS OR MORE	051	20%	000	00%

AREA 7 PROFESSIONAL PAPERS AND/OR PUBLICATIONS

7.1	NUMBER OF ARTICLES PUBLISHED OR PAPERS PRESENTED				
7.1.1.	NONE	136	52%	137	53%
7.1.2.	1 - 3	070	30%	025	10%
7.1.3.	4 - 5	014	05%	000	00%
7.1.4.	6 - 10	012	05%	000	00%
7.1.5.	11 OR MORE	015	06%	000	00%

AREA 8 MEMBERSHIPS IN THE FOLLOWING TYPES OF FORENSIC ORGANIZATIONS:

8.1.	SPECIALIZED SEROLOGY SOCIETIES	029	11%	029	11%
8.2.	NATIONAL OR INTERNATIONAL FORENSIC SCIENCE SOCIETIES	116	45%	033	13%
8.3.	REGIONAL FORENSIC ASSOCIATIONS	101	70%	082	32%
8.4.	OTHER TECHNICAL SOCIETIES - PLEASE LIST	042	16%	002	01%

25 August 1978

TO: The Forensic Science Community
FROM: Criminalistics Certification Study Committee
SUBJECT: Hairs and Fibers Questionnaire

The Criminalistics Certification Study Committee has prepared this questionnaire to assess:

1. The state of the art, nationwide, in the forensic examination of hairs and fibers.

2. What techniques hairs and fibers examiners feel should be included in a possible certification testing program.

3. The background and qualifications of practicing hairs and fibers examiners.

When the results of this questionnaire are evaluated, the committee will have a better insight into the need for certification for hair and fiber examiners and, if so indicated, how to propose the best way to accomplish certification for this evidence category. So that a more accurate assessment can be made of what is being accomplished at a bench level, this questionnaire should be completed only by individuals examining hairs and fibers. In addition, you are requested to complete this questionnaire according to your evaluation of what you do and what you think should be included in a possible nationwide testing and evaluation program. Your responses should reflect your experience and not necessarily the thoughts and wishes of your laboratory manager(s) and/or administrator(s).

This questionnaire is extensive, but not necessarily complete. If you apply techniques that are not listed or feel that additional techniques should be included in this questionnaire, please feel free to add them. These additions will be appreciated and definitely considered in the final analysis.

Please feel free to recommend a technique for national testing (Column B), even though your laboratory may not be presently proficient in this area (for example, dispersion staining). The present thinking of the committee is to divide the complicated and involved subject of hairs and fibers into sections. These sections will be determined by a careful evaluation of this questionnaire.

Because many criminalists either belong to a number of professional associations or are on a number of mailing lists, you may receive multiple questionnaires. Please only respond once in order that the statistical analysis of the data will be accurate.

If you are the recipient of this questionnaire and are not working with hairs and fibers, please forward it to an individual who is doing these types of analyses.

Please be aware that an individual need not be a member of an association, society or organization in order to respond to this questionnaire. The only requirement is that an individual be actively involved in the examination of hairs and fibers.

Also note that this questionnaire has several parts...please complete all parts. Part three of the questionnaire should give the Criminalistics Certification Study Committee an insight into the present background and professional qualifications of those individuals responding to the questionnaire and also an idea as to what they feel should be minimum qualifications.

The committee appreciates your response to this questionnaire. We are aware of the variety of questionnaires that are constantly being distributed; however, this one will hopefully be an important step in establishing a professional basis for our discipline. We thank you for your participation and solicit your continuing input into this meaningful task.

Part I: Association Membership and Geographic Location Information

Please place an "X" in the appropriate boxes for those organizations of which you are a member and/or geographic area in which you reside. In addition, please indicate any other general nationwide forensic newsletters that you receive. Please circle the source(s) from which you received this questionnaire.

	Member	Geographic Area
Northeast/NEAFS	☐	☐
Mid-Atlantic/MAAFS	☐	☐
Southern/SAFS	☐	☐
Midwest/MAFS	☐	☐
California/CAC	☐	☐
Northwest/NWAFS	☐	☐
American Academy/AAFS	☐	
American Society of Crime Laboratory Directors/ASCLD	☐	
Forensic Serology Newsletter	☐	
Crime Lab Digest	☐	
Microgram	☐	
Others (please list)	☐	

Part II: Background and Minimal Qualifications

Please place a check mark in the appropriate column (more than one check may be made in each area).

A. Your background and professional qualifications.

B. What you feel are the minimum qualifications a practicing hairs and fibers examiner should have to be certified.

		FIBERS A	FIBERS B	HAIRS A	HAIRS B
AREA 1	FORMAL BACKGROUND				
	1.1 High school diploma				
	1.2 Associate degree				
	1.3 Bachelor of Science				
	1.4 Bachelor of Arts				
	1.5 Master's Degree				
	1.6 PhD				
	1.7 MD				
	1.8 Other(s)...please list				
AREA 2	MAJOR FIELD(s) OF STUDY				
	2.1 Biology				
	2.2 Biochemistry				
	2.3 Chemistry				
	2.4 Medical Technology				
	2.5 Criminalistics (Forensic Science Program)				
	2.6 Other(s)...please list				
AREA 3	SPECIALIZED TRAINING COURSES RELEVANT TO HAIRS AND FIBERS				
	3.1 FBI Academy				
	3.2 Regional associations, workshops and seminars				
	3.3 Internships				
	3.4 Other(s)...please list on reverse side				
AREA 4	ON-THE-JOB TRAINING				
	4.1 Formal training (formally organized, written and scheduled programs)				
	4.1.1 None				
	4.1.2 1 day - 3 months				
	4.1.3 3 months - 6 months				
	4.1.4 6 months - 1 year				
	4.1.5 1 year or more				
	4.2 Informal training				
	4.2.1 None				
	4.2.2 1 day - 3 months				
	4.2.3 3 months - 6 months				
	4.2.4 6 months - 1 year				
	4.2.5 1 year or more				
	4.2.6 Continuous				
AREA 5	COURT TESTIMONY (INCLUDING DEPOSITIONS)				
	5.1 None				
	5.2 1 - 25 times				
	5.3 25 - 50 times				
	5.4 50 - 100 times				
	5.5 100 times or more				
AREA 6	WORK EXPERIENCE				
	6.1 Number of years performing forensic analyses				
	6.1.1 Up to 1 year				
	6.1.2 1 - 3 years				

		FIBERS and/or HAIRS A	B
AREA 6 (continued)			
6.1.3	3 - 5 years		
6.1.4	5 years or more		
6.2	Number of years examining hairs and fibers		
6.2.1	Up to 1 year		
6.2.2	1 - 3 years		
6.2.3	3 - 5 years		
6.2.4	5 years or more		
6.3	Percentage of time working hairs and fibers cases		
6.3.1	1 - 10%		
6.3.2	10 - 30%		
6.3.3	30 - 60%		
6.3.4	60 - 80%		
6.3.5	80 - 100%		

		HAIRS A	B
6.4	Number of hairs and fibers cases (not specimens) worked per month		
6.4.1	1 - 5		
6.4.2	5 - 10		
6.4.3	10 - 15		
6.4.4	15 - 20		
6.4.5	20 or more		

		A	B
6.5	Number of years worked without immediate supervision (that is, you do the work and/or interpret the results - your supervisor does not interpret the results)		
6.5.1	Less than one		
6.5.2	1 - 3 years		
6.5.3	3 - 5 years		
6.5.4	5 - 8 years		
6.5.5	8 years or more		
AREA 7	PROFESSIONAL PAPERS AND/OR PUBLICATIONS		
7.1	Number of articles published or presented		
7.1.1	None		
7.1.2	1 - 3		
7.1.3	3 - 5		
7.1.4	5 - 10		
7.1.5	10 or more		
AREA 8	PROFESSIONAL SOCIETIES		
8.1	Number of memberships in technical societies		
8.1.1	None		
8.1.2	1 - 3		
8.1.3	3 - 5		
8.1.4	5 - 8		
8.1.5	8 - 10		
8.1.6	10 or more		

Part III: Hairs and Fibers Background

Please place a checkmark in the appropriate column:

A. Technique(s) you are presently performing or feel competent to use.
B. Technique(s) you feel a criminalist examining hairs and fibers should be familiar with even though you may not perform them. In other words, technique(s) you feel could be expected to be covered in a written certification examination.
C. Technique(s) you feel a criminalist examining hairs and fibers should be competent to actually perform in the laboratory, i.e., could be asked to demonstrate proficiency with analyses of questioned samples in possible certification testing program.
D. Technique(s) you feel a criminalist examining hairs and fibers need not be familiar with and which should not be included in a possible certification testing program.

We suggest it may be easier to go through this questionnaire four times, once each for A, B, C and D.

Fibers may be submitted to the criminalist as individual fibers or in the form of textiles, paper, wood or rope. The first two pages cover the latter possibilities. Examination of single fibers is covered on the second and succeeding pages.

FIBER SOURCES

		A	B	C	D
1.0	Textiles				
1.1	physical fit				
1.2	woven textiles				
1.2.1	weave				
1.2.2	fiber counts				
1.2.3	isolation of individual fibers				
1.2.3.1	classification of fibers by type (synthetic, plant etc.)				
1.2.3.2	identification of fibers (see 4.0, 6.0 and 7.0 under "Individual Fibers")				
1.3	nonwoven textiles				
1.3.1	structure				
1.3.2	composition				
1.3.2.1	solubility				
1.3.2.2	IR				
1.3.2.3	GC, pyrolytic				
1.4	other				
2.0	Paper				
2.1	physical fit				
2.2	type of paper (bond, tissue, newsprint etc.)				
2.3	isolation of fibers				
2.4	isolation of coating "pigments", if present				
2.5	isolation of binder, if present				
2.6	classification of fibers (wood, rag, glass etc.)				
2.7	identification of fibers (see 4.0-8.0 under individual fibers)				
2.8	identification of inorganic coating components				
2.8.1	shape				
2.8.2	optical properties				
2.8.2.1	refractive indices				
2.8.3	microchemical tests				
2.8.4	x-ray diffraction				
2.9	identification of organic binder				
2.9.1	solubility				
2.9.2	IR				
2.9.3	GC, pyrolytic				
2.10	other				
3.0	Wood				
3.1	physical fit				
3.2	preparation of sections				
3.2.1	classification of wood (soft, hard)				
3.2.2	identification of species				
3.3	preparation of single fiber preps				
3.3.1	identification of species				
3.3.1.1	wood sections				
3.3.1.2	fiber characteristics (pits, cell types etc.)				
3.4	other				
4.0	Rope				
4.1	physical fit				
4.2	construction (twists, number of strands etc.)				
4.3	isolation of individual fibers				
4.4	identification of fibers (see 4.0 and 6.0 under "Individual Fibers")				
4.5	other				

INDIVIDUAL FIBERS

		A	B	C	D
1.0	Classification (i.e., determination of type, e.g., vegetable, wood, synthetic organic, trichomes, glass, mineral; miscellaneous: feather, seed hairs, metal, carbon)				
2.0	Hair, human				
2.1	body area				
2.2	race				
2.3	sex				
2.3.1	Barr body				
2.3.2	sex chromosome				
2.3.3	radioimmunoassay				
2.4	individualization				
2.4.1	color				
2.4.2	length				
2.4.3	diameter				
2.4.4	crossection				
2.4.5	density				
2.4.6	pigment size, color, distribution				
2.4.7	medulla (continuous, discontinuous, medullary index etc.)				
2.4.8	curl				

reminders:
A. you are competent
B. familiarity necessary for certification
C. competence necessary for certification
D. familiarity not necessary for certification

CONTINUED

3 OF 5

	A	B	C	D
2.4.9 scale shape				
2.4.10 scale count				
2.4.11 root characteristics				
2.4.12 fluorescence				
2.4.13 refractive index (average)				
2.4.14 refractive indices (ω and ε)				
2.4.14.1 Becke line at room temperature				
2.4.14.2 Emmon's double variation				
2.4.14.3 dispersion staining				
2.4.15 trace elements				
2.4.16 condition of hair (damage, foreign material, vermin etc.)				
2.4.17 treatments (dyes, bleaches, conditions etc.)				
2.4.17.1 described				
2.4.17.2 identify				
2.4.17.3 method				
2.4.18 rare conditions (Pili anulata, Alopecia seborrhoicum etc.)				
2.4.19 ABO blood groupings				
2.4.20 Rhesus (Rh-Hr)				
2.4.21 MN system				
2.4.22 other				
3.0 Hairs, other animal				
3.1 species				
3.1.1 color				
3.1.2 length				
3.1.3 diameter				
3.1.4 crossection				
3.1.5 pigment size, color, distribution				
3.1.6 medulla				
3.1.7 curl				
3.1.8 scale shape				
3.1.9 scale count				
3.1.10 other				
4.0 Plant fibers other than wood				
4.1 classification (leaf, grass, seed hairs, trichomes, bast etc.)				
4.2 identification of species				
4.2.1 morphology				
4.2.1.1 crossection				
4.2.1.2 length				
4.2.1.3 surface markings				
4.2.1.4 medulla				
4.2.1.5 fiber ends				
4.2.1.6 other				
4.2.2 optical properties (e.g., lack of extinction with crossed polars = cotton)				
4.2.3 staining (Herzberg etc.)				
5.0 Wood fibers				
5.1 morphology				
5.1.1 chemical vs mechanical				
5.1.1.1 fiber condition				
5.1.2 softwood vs hardwood				
5.1.2.1 pitting of cells				
5.1.2.2 other				
5.1.3 species				
5.1.3.1 cell dimensions				
5.1.3.2 pitting of cells				
5.1.3.3 other				

reminders:
A. you are competent
B. familiarity necessary for certification
C. competence necessary for certification
D. familiarity not necessary for certification

	A	B	C	D
6.0 Synthetic fibers				
6.1 morphology				
6.1.1 crossection (by optical sectioning)				
6.1.2 surface markings				
6.1.3 diameter				
6.1.4 delustrant				
6.1.4.1 size				
6.1.4.2 distribution				
6.1.4.3 loading				
6.1.4.4 optical properties				
6.1.4.4.1 refractive index				
6.1.4.4.2 birefringence				
6.1.4.5 elemental analysis				
6.1.4.5.1 microchemical test				
6.1.4.5.2 x-ray fluorescence				
6.1.4.5.3 emission spec				
6.1.5 dyes				
6.1.5.1 color				
6.1.5.2 extraction				
6.1.5.3 identification				
6.1.5.3.1 method used				
6.2 optical properties				
6.2.1 color				
6.2.1.1 visual				
6.2.1.2 microspectrophotometry				
6.2.2 refractive index				
6.2.2.1 average				
6.2.2.2 parallel and perpendicular				
6.2.2.2.1 dispersion staining				
6.2.2.2.2 Becke line method, room temperature				
6.2.2.2.3 Emmon's double variation method				
6.2.3 birefringence				
6.2.3.1 qualitative				
6.2.3.2 quantitative				
6.2.4 sign of elongation				
6.2.4.1 compensator				
6.2.4.2 from 6.2.2.2				
6.2.5 fluorescence				
6.2.6 hot stage methods				
6.2.6.1 melting point alone				
6.2.6.2 eutectic melting point with p-nitrophenol				
6.3 IR				
6.3.1 KBr pellet				
6.3.2 diamond cell				
6.3.3 pyrolysis				
6.4 GC, pyrolysis				
6.5 GC/MS, pyrolysis				
6.6 staining				
6.7 solubility				
6.8 density				
6.9 other				
7.0 Glass fibers				
7.1 morphology				
7.1.1 diameter				
7.1.1.1 average, range, uniformity				
7.2 optical properties				
7.2.1 refractive index				
7.2.1.1 Becke line method				
7.2.1.2 dispersion staining				
7.2.1.3 Emmon's double variation of refractive index				
7.2.2 dispersion				
7.2.2.1 monochromator or filters				
7.2.2.1.1 Emmon's double variation				
7.2.3 fluorescence				
7.3 binder				
7.3.1 fluorencence				
7.3.2 color				
7.3.3 refractive index				

reminders:
A. you are competent
B. familiarity necessary for certification
C. competence necessary for certification
D. familiarity not necessary for certification

	A	B	C	D
7.3.4 imbedded particles				
7.3.5 solubility				
7.4 solubility				
7.5 other				
8.0 Mineral fibers (asbestos)				
8.1 morphology				
8.1.1 length				
8.1.2 diameter				
8.1.3 curl				
8.2 optical properties				
8.2.1 birefringence (qualitative)				
8.2.2 extinction				
8.2.3 refractive indices				
8.2.3.1 average				
8.2.3.2 Becke line methods				
8.2.3.3 dispersion staining				
8.3 x-ray diffraction				
8.4 other				
9.0 Miscellaneous fibers (carbon, metallic, rubber, feather etc.)				
9.1 morphology				
9.1.1 length				
9.1.2 diameter				
9.1.3 surface markings				
9.1.4 medulla				
9.1.5 elasticity				
9.2 optical properties				
9.2.1 color				
9.2.2 reflectance				
9.2.3 refractive indices				
9.2.3.1 Becke line, room temperature				
9.2.3.2 dispersion staining				
9.2.3.3 Emmon's double variation				
9.3 composition				
9.3.1 elemental analysis (inorganic)				
9.3.1.1 method				
9.3.2 functional groups (organic)				
9.3.2.1 IR				
9.3.2.2 GC/MS, pyrolytic				
9.3.2.3 other				

reminders:
A. you are competent
B. Familiarity necessary for certification
C. competence necessary for certification
D. familiarity not necessary for certification

PETERSON FSF
HAIRS AND FIBERS
NATIONAL
REVISED
2/9/79

CRIMINALISTICS CERTIFICATION STUDY COMMITTEE

PART I: ASSOCIATION MEMBERSHIP AND GEOGRAPHIC LOCATION INFORMATION

PLEASE PLACE AN "X" IN THE APPROPRIATE BOXES FOR THOSE ORGANIZATIONS OF WHICH YOU ARE A MEMBER AND/OR GEOGRAPHIC AREA IN WHICH YOU RESIDE. IN ADDITION, PLEASE INDICATE ANY OTHER GENERAL NATIONWIDE FORENSIC NEWSLETTERS THAT YOU RECEIVE. PLEASE CIRCLE THE SOURCE(S) FROM WHICH YOU RECEIVED THIS QUESTIONNAIRE.

	MEMBER	
NORTHEAST/NEAFS	012	08%
MID-ATLANTIC/MAAFS	018	12%
SOUTHERN/SAFS	012	08%
MIDWEST/MAFS	044	29%
CALIFORNIA/CAC	043	28%
NORTHWEST/NWAFS	023	15%
AMERICAN ACADEMY/AAFS	061	40%
AMERICAN SOCIETY OF CRIME LABORATORY DIRECTORS/ASCLD	018	12%
FORENSIC SEROLOGY NEWSLETTER	030	19%
CRIME LAB DIGEST	056	36%
MICROGRAM	052	34%
OTHERS (PLEASE LIST)	030	19%

PART II: BACKGROUND AND MINIMAL QUALIFICATIONS

PLEASE PLACE A CHECK MARK IN THE APPROPRIATE COLUMN (MORE THAN ONE CHECK MAY BE MADE IN EACH AREA).
A. YOUR BACKGROUND AND PROFESSIONAL QUALIFICATIONS.
B. WHAT YOU FEEL ARE THE MINIMUM QUALIFICATIONS A PRACTICING HAIRS AND FIBERS EXAMINER SHOULD HAVE TO BE CERTIFIED.

N = 154

FIBERS

		A TOT	A %	B TOT	B %
AREA 1	FORMAL BACKGROUND				
	1.1 HIGH SCHOOL DIPLOMA	008	05%	006	04%
	1.2 ASSOCIATE DEGREE	002	01%	013	08%
	1.3 BACHELOR OF SCIENCE	071	46%	082	53%
	1.4 BACHELOR OF ARTS	023	15%	054	35%
	1.5 MASTER'S DEGREE	045	29%	005	03%
	1.6 PHD	016	10%	001	01%
	1.7 MD	001	01%	000	00%
	1.8 OTHER(S)...PLEASE LIST	005	03%	002	01%
AREA 2	MAJOR FIELD(S) OF STUDY				
	2.1 BIOLOGY	050	32%	080	52%

	2.2 BIOCHEMISTRY	013	08%	058	38%			
	2.3 CHEMISTRY	080	57%	084	55%			
	2.4 MEDICAL TECHNOLOGY	011	07%	035	23%			
	2.5 CRIMINALISTICS (FORENSIC SCIENCE PROGRAM	056	36%	085	55%			
	2.6 OTHERS(S)...PLEASE LIST	011	07%	015	10%			
AREA 3	SPECIALIZED TRAINING COURSES RELEVANT TO HAIRS AND FIBERS					HAIR A		B
	3.1 FBI ACADEMY	024	16%	020	13%	043	28%	037 24%
	3.2 REGIONAL ASSOCIATIONS/ WORKSHOPS AND SEMINARS	055	36%	041	27%	060	39%	052 34%
	3.3 INTERNSHIPS	040	26%	042	27%	039	25%	048 31%
	3.4 OTHER(S)...PLEASE LIST ON REVERSE SIDE	020	13%	010	06%	020	13%	009 06%
AREA 4	ON-THE-JOB TRAINING							
	4.1 FORMAL TRAINING (FORMALLY ORGANIZED, WRITTEN AND SCHEDULED PROGRAMS)							
	4.1.1 NONE	044	29%	015	10%	040	26%	017 11%
	4.1.2 1 DAY - 3 MONTHS	035	23%	055	36%	037	24%	055 36%
	4.1.3 3 MONTHS - 6 MONTHS	006	04%	021	14%	007	05%	028 18%
	4.1.4 6 MONTHS - 1 YEAR	010	06%	013	08%	014	09%	016 10%
	4.1.5 1 YEAR OR MORE	014	09%	012	08%	013	08%	011 07%
	4.2 IN-ORMAL TRAINING							
	4.2.1 NONE	004	03%	004	03%	003	02%	003 02%
	4.2.2 1 DAY - 3 MONTHS	041	27%	029	19%	044	29%	024 16%
	4.2.3 3 MONTHS - 6 MONTHS	011	07%	015	10%	014	09%	022 14%
	4.2.4 6 MONTHS - 1 YEAR	011	07%	016	10%	013	08%	018 12%
	4.2.5 1 YEAR OR MORE	009	06%	011	07%	010	06%	014 09%
	4.2.6 CONTINUOUS	045	29%	039	25%	044	29%	041 27%
AREA 5	COURT TESTIMONY (INCLUDING DEPOSITIONS)							
	5.1 NONE	009	06%	043	28%	006	04%	045 29%
	5.2 1 - 25 TIMES	085	55%	062	40%	091	59%	065 42%
	5.3 25 - 50 TIMES	020	13%	003	02%	018	12%	003 02%
	5.4 50 - 100 TIMES	009	06%	000	00%	012	08%	000 00%
	5.5 100 TIMES OR MORE	013	08%	000	00%	013	08%	003 02%
AREA 6	WORK EXPERIENCE							
	6.1 NUMBER OF YEARS PERFORMING FORENSIC ANALYSES							
	6.1.1 UP TO 1 YEAR	002	01%	049	32%	002	01%	051 33%
	6.1.2 1 - 3 YEARS	005	03%	054	35%	015	10%	065 42%
	6.1.3 3 - 5 YEARS	020	13%	012	08%			
	6.1.4 5 YEARS OR MORE	116	75%	006	04%			
	6.2 NUMBER OF YEARS EXAMINING HAIRS AND FIBERS							
	6.2.1 UP TO 1 YEAR	009	06%	054	35%			
	6.2.2 1 - 3 YEARS	032	21%	052	34%			
	6.2.3 3 - 5 YEARS	034	22%	008	05%			
	6.2.4 5 YEARS OR MORE	069	45%	001	01%			
	6.3 PERCENTAGE OF TIME WORKING HAIRS AND FIBERS CASES							
	6.3.1 1 - 10%	079	51%	071	46%			
	6.3.2 10 - 30%	048	31%	040	26%			
	6.3.3 30 - 60%	019	12%	017	11%			
	6.3.4 60 - 80%	004	03%	002	01%			
	6.3.5 80 - 100%	004	03%	003	02%			
	6.4 NUMBER OF HAIRS AND FIBERS CASES (NOT SPECIMENS) WORKED PER MONTH					A		B

	6.4.1	1 - 5	095	62%	079	51%	080	52%	079	51%
	6.4.2	5 - 10	025	16%	016	10%	039	25%	021	14%
	6.4.3	10 - 15	006	04%	005	03%	010	06%	008	05%
	6.4.4	15 - 20	002	01%	003	02%	004	03%	003	02%
	6.4.5	20 OR MORE	006	04%	003	02%	008	05%	003	02%
	6.5	NUMBER OF YEARS WORKED WITHOUT IMMEDIATE SUPERVISION (THAT IS, YOU DO THE WORK AND/OR INTERPRET THE RESULTS - YOUR SUPERVISOR DOES NOT INTERPRET THE RESULTS)								
	6.5.1	LESS THAN ONE	008	05%	042	27%				
	6.5.2	1 - 3 YEARS	024	16%	078	51%				
	6.5.3	3 - 5 YEARS	046	30%	005	03%				
	6.5.4	5 - 8 YEARS	036	23%	001	01%				
	6.5.5	8 YEARS OF MORE	036	23%	001	01%				
AREA 7	PROFESSIONAL PAPERS AND/OR PUBLICATIONS									
	7.1	NUMBER OF ARTICLES PUBLISHED OR PRESENTED	010	06%	010	06%				
	7.1.1	NONE	075	49%	106	69%				
	7.1.2	1 - 3	040	26%	011	07%				
	7.1.3	3 - 5	012	08%	001	01%				
	7.1.4	5 - 10	007	05%	000	00%				
	7.1.5	10 OR MORE	003	06%	000	00%				
AREA 8	PROFESSIONAL SOCIETIES									
	8.1	NUMBER OF MEMBERSHIPS IN TECHNICAL SOCIETIES								
	8.1.1	NONE	015	10%	067	44%				
	8.1.2	1 - 3	089	58%	060	39%				
	8.1.3	3 - 5	026	17%	002	01%				
	8.1.4	5 - 8	015	10%	000	00%				
	8.1.5	8 - 10	001	01%	000	00%				
	8.1.6	10 OR MORE	004	03%	000	00%				

PART III: HAIRS AND FIBERS BACKGROUND

PLEASE PLACE A CHECKMARK IN THE APPROPRIATE COLUMN:

A. TECHNIQUE(S) YOU ARE PRESENTLY PERFORMING OR FEEL COMPETENT TO USE.

B. TECHNIQUE(S) YOU FEEL A CRIMINALIST EXAMINING HAIRS AND FIBERS SHOULD BE FAMILIAR WITH EVEN THOUGH YOU MAY NOT PERFORM THEM. IN OTHER WORDS, TECHNIQUE(S) YOU FEEL COULD BE EXPECTED TO BE COVERED IN A WRITTEN CERTIFICATION EXAMINATION.

C. TECHNIQUE(S) YOU FEEL A CRIMINALIST EXAMINING HAIRS AND FIBERS SHOULD BE COMPETENT TO ACTUALLY PERFORM IN THE LABORATORY, I.E., COULD BE ASKED TO DEMONSTRATE PROFICIENCY WITH ANALYSES OF QUESTIONED SAMPLES IN POSSIBLE CERTIFICATION TESTING PROGRAM.

D. TECHNIQUE(S) YOU FEEL A CRIMINALIST EXAMINING HAIRS AND FIBERS NEED NOT BE FAMILIAR WITH AND WHICH SHOULD NOT BE INCLUDED IN A POSSIBLE CERTIFICATION TESTING PROGRAM.

WE SUGGEST IT MAY BE EASIER TO GO THROUGH THIS QUESTIONNAIRE FOUR TIMES, ONCE EACH FOR A, B, C AND D.

FIBERS MAY BE SUBMITTED TO THE CRIMINALIST AS INDIVIDUAL FIBERS OR IN THE FORM OF TEXTILES, PAPER, WOOD OR ROPE. THE FIRST TWO PAGES COVER THE LATTER POSSIBILITIES. EXAMINATION OF SINGLE FIBERS IS COVERED ON THE SECOND AND SUCCEEDING PAGES.

FIBER SOURCES

		A	B	C	D
1.0	TEXTILES				
1.1	PHYSICAL FIT	129 84%	096 62%	113 73%	010 06%
1.2	WOVEN TEXTILES	054 35%	040 26%	041 27%	005 03%
1.2.1	WEAVE	012 08%	092 60%	093 60%	014 09%
1.2.2	FIBER COUNTS	114 74%	088 57%	099 64%	015 10%
1.2.3	ISOLATION OF INDIVIDUAL FIBERS	101 66%	075 49%	089 58%	005 03%
1.2.3.1	CLASSIFICATION OF FIBERS BY TYPE (SYNTHETIC, PLANT ETC.)	127 82%	089 58%	113 73%	007 05%
1.2.3.2	IDENTIFICATION OF FIBERS (SEE 4.0, 6.0 AND 7.0 UNDER "INDIVIDUAL FIBERS"	076 49%	064 42%	071 46%	005 03%
1.3	NONWOVEN TEXTILES	041 27%	035 23%	030 19%	003 02%
1.3.1	STRUCTURE	093 60%	085 55%	072 47%	007 05%
1.3.2	COMPOSITION	081 53%	065 42%	062 40%	008 05%
1.3.2.1	SOLUBILITY	104 68%	083 54%	077 50%	012 08%
1.3.2.2	IR	082 53%	077 50%	050 32%	024 16%
1.3.2.3	GC, PYROLYTIC	066 43%	070 45%	033 21%	032 21%
1.4	OTHER	014 09%	014 09%	011 07%	008 03%
2.0	PAPER	118 77%	081 53%	093 60%	021 14%
2.1	PHYSICAL FIT	058 38%	064 42%	051 33%	041 27%
2.2	TYPE OF PAPER (BOND, TISSUE, NEWSPRINT ETC.)	044 29%	058 38%	057 37%	049 32%
2.3	ISOLATION OF FIBERS	018 12%	045 29%	019 12%	068 44%
2.4	ISOLATION OF COATING (PIGMENTS), IF PRESENT	013 08%	044 29%	018 12%	017 11%
2.5	ISOLATION OF BINDER, IF PRESENT	054 35%	060 39%	049 32%	045 29%
2.6	CLASSIFICATION OF FIBERS (WOOD, RAG, GLASS ETC.)	041 27%	053 34%	039 25%	045 29%
2.7	IDENTIFICATION OF FIBERS (SEE 4.0-8.0 UNDER INDIVIDUAL FIBERS)	010 06%	032 21%	016 10%	067 44%
2.8	IDENTIFICATION OF INORGANIC COATING COMPONENTS	023 15%	036 23%	025 16%	056 36%
2.8.1	SHAPE	018 12%	035 23%	019 12%	055 36%
2.8.2	OPTICAL PROPERTIES	025 16%	039 25%	022 14%	057 37%
2.8.2.1	REFRACTIVE INDICES	026 17%	043 28%	025 16%	053 34%
2.8.3	MICROCHEMICAL TESTS	013 08%	037 24%	010 06%	066 43%
2.8.4	X-RAY DIFFRACTION	010 06%	032 21%	015 10%	063 41%
2.9	IDENTIFICATION OF ORGANIC BINDER	019 12%	040 26%	022 14%	055 36%
2.9.1	SOLUBILITY	018 12%	037 24%	017 11%	062 40%
2.9.2	IR	016 10%	036 23%	016 10%	063 41%
2.9.3	GC, PYROLYTIC	003 02%	004 03%	001 01%	033 21%
2.10	OTHER	002 01%	003 02%	000 00%	020 13%
3.0	WOOD	002 01%	002 01%	000 00%	017 11%
3.1	PHYSICAL FIT	122 79%	080 52%	095 62%	021 14%
3.2	PREPARATION OF SECTIONS	040 26%	050 32%	038 25%	039 25%
3.2.1	CLASSIFICATION OF WOOD (SOFT, HARD)	061 40%	068 44%	053 34%	043 28%
3.2.2	IDENTIFICATION OF SPECIES	030 19%	054 35%	026 17%	064 42%
3.3	PREPARATION OF SINGLE FIBER PREPS	025 16%	041 27%	024 16%	060 39%
3.3.1	IDENTIFICATION OF SPECIES	015 10%	037 24%	018 12%	068 44%
3.3.1.1	WOOD SECTIONS	027 18%	047 31%	024 16%	064 40%
3.3.1.2	FIBER CHARACTERISTICS (PITS,				

		CELL TYPES ETC.)	029	18%	049	32%	025	16%	061 40%
	3.4	OTHER	003	02%	003	02%	003	02%	019 12%
			001	01%	001	01%	001	01%	015 10%
4.0	ROPE								
	4.1	PHYSICAL FIT	116	75%	087	56%	099	64%	015 10%
	4.2	CONSTRUCTION (TWISTS, NUMBER OF STRANDS ETC.	118	77%	023	15%	100	65%	014 09%
	4.3	ISOLATION OF INDIVIDUAL FIBERS	110	71%	089	58%	094	61%	012 08%
	4.4	IDENTIFICATION OF FIBERS (SEE 4.0 AND 6.0 UNDER 'INDIVIDUAL FIBERS'	093	60%	080	52%	079	51%	012 08%
	4.5	OTHER	008	05%	006	04%	004	03%	005 03%
			001	01%	001	01%	001	01%	007 05%
		INDIVIDUAL FIBERS							
1.0	CLASSIFICATION (I.E., DETERMINATION OF TYPE, E.G., VEGETABLE, WOOD, SYNTHETIC ORGANIC, TRICHOMES, GLASS, MINERAL; MISCELLANEOUS: FEATHER, SEED HAIRS, METAL CARBON)		082	53%	073	47%	074	48%	009 06%
2.0	HAIR HUMAN								
	2.1	BODY AREA	124	81%	101	66%	107	69%	010 06%
	2.2	RACE	109	71%	094	61%	086	56%	017 11%
	2.3	SEX	015	10%	051	33%	013	08%	065 42%
	2.3.1	BARR BODY	008	05%	052	34%	010	06%	073 47%
	2.3.2	SEX CHROMOSOME	004	03%	048	31%	009	06%	076 49%
	2.3.3	RADIOIMMUNOASSAY	001	01%	029	19%	006	04%	085 55%
	2.4	INDIVIDUALIZATION	064	42%	046	30%	058	38%	004 03%
	2.4.1	COLOR	142	92%	099	64%	123	80%	002 01%
	2.4.2	LENGTH	140	91%	098	64%	121	79%	002 01%
	2.4.3	DIAMETER	130	84%	100	65%	112	73%	008 05%
	2.4.4	CROSSECTION	086	56%	098	64%	073	47%	019 12%
	2.4.5	DENSITY	045	29%	067	44%	048	31%	048 31%
	2.4.6	PIGMENT SIZE, COLOR, DISTRIBUTION	137	89%	103	67%	123	80%	006 02%
	2.4.7	MEDULLA (CONTINUOUS, DISCONTINUOUS, MEDULLARY INDEX ETC.)	141	92%	099	64%	121	79%	003 02%
	2.4.8	CURL	123	80%	097	63%	104	68%	011 07%
	2.4.9	SCALE SHAPE	118	77%	093	60%	093	60%	009 06%
	2.4.10	SCALE COUNT	068	44%	090	58%	053	34%	033 21%
	2.4.11	ROOT CHARACTERISTICS	120	78%	094	61%	090	62%	008 05%
	2.4.12	FLUORESCENCE	019	12%	046	30%	011	07%	076 49%
	2.4.13	REFRACTIVE INDEX (AVERAGE)	035	23%	062	40%	020	13%	064 42%
	2.4.14	REFRACTIVE INDICES (AND)	019	12%	047	31%	013	08%	060 39%
	2.4.14.1	BECKE LINE AT ROOM TEMPERATURE	031	20%	050	32%	018	12%	063 41%
	2.4.14.2	EMMON'S DOUBLE VARIATION	013	08%	039	25%	007	05%	073 47%
	2.4.14.3	DISPERSION STAINING	017	11%	041	27%	011	07%	071 46%
	2.4.15	TRACE ELEMENTS	024	16%	069	45%	010	07%	062 40%
	2.4.16	CONDITION OF HAIR (DAMAGE, FOREIGN METERIAL, VERMIN ETC.)	129	84%	106	69%	088	57%	003 02%
	2.4.17	TREATMENTS (WES, BLEACHES, CONDITIONS ETC.)	076	49%	073	47%	050	32%	010 06%
	2.4.17.1	DESCRIBED	092	60%	087	56%	063	41%	021 14%

		2.4.17.2 IDENTIFY	021	14%	051	33%	021	14%	052	34%
		2.4.17.3 METHOD	013	08%	032	21%	015	10%	053	34%
	2.4.18	RAKE CONDITIONS (PILI ANULATA, ALOPECIA SEBORRHOICUM ETC.)	032	21%	062	40%	012	08%	058	38%
	2.4.19	ABO BLOOD GROUPINGS	022	14%	072	47%	013	08%	064	42%
	2.4.20	RH-SUS (RH-HR)	002	01%	037	24%	007	05%	031	59%
	2.4.21	MN SYSTEM	001	01%	034	22%	007	05%	094	61%
	2.4.22	OTHER	014	09%	015	10%	001	01%	033	21%
			000	00%	001	01%	000	00%	006	04%
			001	01%	002	01%	001	01%	004	03%
			000	00%	001	01%	000	00%	004	03%
3.0	HAIRS, OTHER ANIMAL									
	3.1	SPECIES	098	64%	079	51%	079	51%	070	45%
	3.1.1	COLOR	132	86%	100	65%	103	67%	005	03%
	3.1.2	LENGTH	133	86%	099	64%	103	67%	006	04%
	3.1.3	DIAMETER	124	81%	095	62%	093	60%	010	06%
	3.1.4	CROSSECTION	084	55%	093	60%	068	44%	023	15%
	3.1.5	PIGMENT SIZE, COLOR, DISTRIBUTION	126	82%	096	62%	097	63%	009	06%
	3.1.6	MEDULLA	131	85%	097	63%	103	67%	009	06%
	3.1.7	CURL	112	73%	092	60%	089	58%	016	10%
	3.1.8	SCALE SHAPE	124	81%	099	64%	092	60%	010	06%
	3.1.9	SCALE COUNT	074	48%	087	56%	053	34%	030	19%
	3.1.10	OTHER	019	12%	017	11%	012	08%	007	05%
			004	03%	005	03%	004	03%	005	03%
			002	01%	003	02%	002	01%	005	03%
			001	01%	002	01%	001	01%	004	03%
4.0	PLANT FIBERS OTHER THAN WOOD									
	4.1	CLASSIFICATION (LEAF, GRASS, SEED HAIRS, TRICHOMES, BAST ETC.)	056	36%	068	44%	046	30%	039	25%
	4.2	IDENTIFICATION OF SPECIES	027	18%	048	31%	021	14%	052	34%
	4.2.1	MORPHOLOGY	030	19%	044	29%	024	16%	037	24%
		4.2.1.1 CROSSECTION	045	29%	055	36%	035	23%	045	29%
		4.2.1.2 LENGTH	051	33%	062	40%	037	24%	039	25%
		4.2.1.3 SURFACE MARKINGS	052	34%	063	41%	039	25%	039	25%
		4.2.1.4 MEDULLA	047	31%	062	40%	032	21%	039	25%
		4.2.1.5 FIBER ENDS	047	31%	058	38%	032	21%	038	25%
		4.2.1.6 OTHER	008	05%	010	06%	007	05%	022	14%
			002	01%	002	01%	000	00%	008	05%
			000	00%	001	01%	000	00%	006	04%
			000	00%	002	01%	001	01%	009	06%
	4.2.2	OPTICAL PROPERTIES (E.G., LACK OF EXTINCTION WITH CROSSED POLARS = COTION)	055	36%	064	42%	037	24%	036	23%
	4.2.3	STAINING (HERZBERG ETC.)	021	14%	048	31%	015	10%	050	32%
5.0	WOOD FIBERS									
	5.1	MORPHOLOGY	030	19%	043	28%	027	18%	042	27%
	5.1.1	CHEMICAL VS MECHANICAL	036	23%	048	31%	030	19%	042	27%
		5.1.1.1 FIBER CONDITION	023	15%	034	22%	024	16%	049	32%
	5.1.2	SOFTWOOD VS HARDWOOD	037	24%	061	40%	036	23%	038	25%
		5.1.2.1 PITTING OF CELLS	033	21%	047	31%	024	16%	047	31%
		5.1.2.2 OTHER	003	02%	005	03%	000	00%	029	19%
			001	01%	004	03%	001	01%	014	09%
			000	00%	003	02%	000	00%	012	08%
			000	00%	003	02%	000	00%	014	09%
	5.1.3	SPECIES	017	11%	035	23%	020	13%	053	36%

		5.1.3.1	CELL DIMENSIONS	019	12%	040	26%	019	12%	053	34%	
		5.1.3.2	PITTING OF CELLS	019	12%	038	25%	016	10%	053	34%	
		5.1.3.3	OTHER	002	01%	005	03%	000	00%	033	21%	
				001	01%	002	01%	001	01%	011	07%	
				001	01%	000	00%	001	01%	007	05%	
				001	01%	001	01%	001	01%	007	05%	
6.0	SYNTHETIC FIBERS											
	6.1	MORPHOLOGY		080	52%	061	40%	067	44%	005	03%	
		6.1.1	CROSSECTION (BY OPTICAL SECTIONING)	084	55%	079	51%	074	48%	015	10%	
		6.1.2	SURFACE MARKINGS	116	75%	086	56%	088	57%	008	05%	
		6.1.3	DIAMETER	119	77%	087	56%	093	60%	006	04%	
		6.1.4	DELUSTRANT	069	45%	063	41%	056	36%	024	16%	
		6.1.4.1	SIZE	072	47%	064	42%	056	36%	025	16%	
		6.1.4.2	DISTRIBUTION	068	44%	063	41%	054	35%	027	18%	
		6.1.4.3	LOADING	040	26%	051	33%	030	19%	038	25%	
		6.1.4.4	OPTICAL PROPERTIES	048	31%	042	27%	031	20%	028	18%	
			6.1.4.4.1 REFRACTIVE INDEX	062	40%	063	41%	050	32%	027	18%	
			6.1.4.4.2 FIREFRINGENCE	064	42%	062	40%	047	31%	025	16%	
		6.1.4.5	ELEMENTAL ANALYSIS	018	12%	035	23%	012	08%	043	28%	
			6.1.4.5.1 MICROCHEMICAL TEST	032	21%	049	32%	020	13%	046	30%	
			6.1.4.5.2 X-RAY FLUORESCENCE	012	08%	045	29%	008	05%	062	40%	
			6.1.4.5.3 EMISSION SPEC	014	09%	038	25%	005	03%	058	38%	
		6.1.5	DYES	036	23%	040	26%	025	16%	013	08%	
		6.1.5.1	COLOR	093	60%	081	53%	070	45%	010	06%	
		6.1.5.2	EXTRACTION	048	31%	067	44%	033	21%	035	23%	
		6.1.5.3	IDENTIFICATION	019	12%	048	31%	016	10%	052	34%	
			6.1.5.3.1 METHOD USED	013	08%	021	14%	011	07%	020	13%	
	6.2	OPTICAL PROPERTIES		051	33%	041	27%	042	27%	005	03%	
		6.2.1	COLOR	101	66%	064	42%	073	47%	007	05%	
		6.2.1.1	VISUAL	123	80%	081	53%	091	59%	006	04%	
		6.2.1.2	MICROSPECTROPHOTOMETRY	015	10%	039	25%	011	07%	060	39%	
		6.2.2	REFRACTIVE INDEX	061	40%	057	37%	054	35%	016	10%	
		6.2.2.1	AVERAGE	058	38%	061	40%	046	30%	018	12%	
		6.2.2.2	PARALLEL AND PERPENDICULAR	065	42%	067	44%	043	28%	024	16%	
			6.2.2.2.1 DISPERSION STAINING	026	17%	058	38%	017	11%	045	29%	
			6.2.2.2.2 BECKE LINE METHOD, ROOM TEMPERATURE	072	47%	070	45%	046	30%	025	16%	
			6.2.2.2.3 EMMON'S DOUBLE VARIATION METHOD	025	16%	043	28%	010	06%	035	23%	
		6.2.3	BIRFRINGENCE	054	35%	054	35%	040	26%	014	09%	
		6.2.3.1	QUALITATIVE	083	54%	072	47%	062	40%	017	11%	
		6.2.3.2	QUANTITATIVE	039	25%	061	40%	029	19%	037	24%	
		6.2.4	SIGN OF ELONGATION	053	34%	054	35%	041	27%	026	17%	
		6.2.4.1	COMPENSATOR	053	34%	050	32%	034	22%	029	19%	
		6.2.4.2	FROM 6.2.2.2	031	20%	041	27%	019	12%	032	21%	
		6.2.5	FLUORESCENCE	021	14%	049	32%	018	12%	054	35%	
		6.2.6	HOT STAGE METHODS	036	23%	039	25%	022	14%	024	16%	
		6.2.6.1	MELTING POINT ALONE	069	45%	073	47%	042	27%	027	18%	
		6.2.6.2	EUTECTIC MELTING POINT WITH P-NITROPHENOL	018	12%	042	27%	003	08%	060	39%	
	6.3	IR										
		6.3.1	KBR PELLET	088	57%	079	51%	065	42%	019	12%	
		6.3.2	DIAMOND CELL	017	11%	057	37%	012	08%	046	30%	

	6.3.3 PYROLYSIS	028	18%	056	36%	017	11%	048	31%
6.4	GC, PYROLYSIS	060	39%	070	45%	034	22%	033	21%
6.5	GC/MS, PYROLYSIS	006	04%	043	28%	003	02%	063	41%
6.6	STAINING	027	18%	058	38%	024	16%	047	31%
6.7	SOLUBILITY	097	63%	085	55%	073	47%	014	09%
6.8	DENSITY	035	23%	067	44%	023	15%	044	29%
6.9	OTHER	005	03%	009	06%	004	03%	012	08%
		000	00%	001	01%	000	00%	006	04%
		000	00%	001	01%	000	00%	005	03%
		000	00%	001	01%	000	00%	005	03%
7.0	GLASS FIBERS								
	7.1 MORPHOLOGY	076	49%	061	40%	060	39%	016	10%
	7.1.1 DIAMETER	085	55%	066	43%	064	42%	015	10%
	7.1.1.1 AVERAGE, RANGE, UNIFORMITY	068	44%	053	34%	046	30%	017	11%
	7.2 OPTICAL PROPERTIES	039	25%	032	21%	029	19%	014	09%
	7.2.1 REFRACTIVE INDEX	079	51%	063	41%	058	38%	015	10%
	7.2.1.1 BECKE LINE METHOD	084	55%	065	42%	060	39%	019	12%
	7.2.1.2 DISPERSION STAINING	031	20%	053	34%	018	12%	042	27%
	7.2.1.3 EMMON'S DOUBLE VARIATION OF REFRACTIVE INDEX	039	25%	049	32%	019	12%	036	23%
	7.2.2 DISPERSION	029	19%	031	20%	020	13%	027	18%
	7.2.2.1 MONOCHROMATOR OR FILTERS	047	31%	049	32%	022	14%	035	23%
	7.2.2.1.1 EMMON'S DOUBLE VARIATION	031	20%	044	29%	015	10%	034	22%
	7.2.3 FLUORESCENCE	036	23%	045	29%	024	16%	046	30%
	7.3 BINDER	011	07%	022	14%	007	05%	052	34%
	7.3.1 FLUORESCENCE	021	14%	033	21%	014	09%	059	38%
	7.3.2 COLOR	038	25%	043	28%	024	16%	048	31%
	7.3.3 REFRACTIVE INDEX	029	19%	043	28%	014	09%	050	32%
	7.3.4 IMBEDDED PARTICLES	045	29%	052	34%	022	14%	044	29%
	7.3.5 SOLUBILITY	039	25%	050	32%	021	14%	042	27%
	7.4 SOLUBILITY	031	20%	043	28%	021	14%	038	25%
	7.5 OTHER	001	01%	004	03%	000	00%	018	12%
		000	00%	001	01%	000	00%	008	05%
		000	00%	001	01%	000	00%	008	05%
		000	00%	001	01%	000	00%	007	05%
8.0	MINERAL FIBERS (ASBESTOS)								
	8.1 MORPHOLOGY	072	47%	064	42%	054	35%	018	12%
	8.1.1 LENGTH	080	52%	062	40%	058	38%	023	15%
	8.1.2 DIAMETER	079	51%	062	40%	053	34%	026	17%
	8.1.3 CURL	064	42%	056	36%	027	18%	030	19%
	8.2 OPTICAL PROPERTIES	028	18%	035	23%	024	16%	025	16%
	8.2.1 BIREFRINGENCE (QUALITATIVE)	071	46%	062	40%	049	32%	027	18%
	8.2.2 EXTINCTION	056	36%	055	36%	034	22%	032	21%
	8.2.3 REFRACTIVE INDICES	042	27%	041	27%	033	21%	029	19%
	8.2.3.1 AVERAGE	045	29%	045	29%	030	19%	027	18%
	8.2.3.2 BECKE LINE METHODS	057	37%	052	34%	035	23%	029	19%
	8.2.3.3 DISPERSION STAINING	019	12%	041	27%	009	06%	049	32%
	8.3 X-RAY DIFFRACTION	016	10%	034	22%	006	04%	065	42%
	8.4 OTHER	003	02%	002	01%	001	01%	012	08%
		000	00%	001	01%	000	00%	006	04%
		000	00%	001	01%	000	00%	006	04%
		000	00%	001	01%	000	00%	006	04%

9.0	MISCELLANEOUS FIBERS (CARBON, METALLIC, RUBBER, FEATHER ETC.)	017	11%	017	11%	012	08%	000	13%
9.1	MORPHOLOGY	056	36%	056	36%	040	26%	019	12%
9.1.1	LENGTH	077	50%	067	44%	053	34%	027	14%
9.1.2	DIAMETER	073	47%	068	44%	049	32%	029	14%
9.1.3	SURFACE MARKINGS	074	48%	066	43%	047	31%	023	15%
9.1.4	MEDULLA	060	39%	062	40%	040	26%	028	18%
9.1.5	ELASTICITY	025	16%	041	27%	019	12%	043	28%
9.2	OPTICAL PROPERTIES	034	22%	031	20%	025	16%	022	14%
9.2.1	COLOR	076	49%	066	43%	054	35%	021	14%
9.2.2	REFLECTANCE	035	23%	047	31%	027	18%	037	24%
9.2.3	REFRACTIVE INDICES	036	23%	043	28%	030	19%	029	19%
9.2.3.1	BECKE LINE, ROOM TEMPERATURE	048	31%	055	36%	037	24%	031	20%
9.2.3.2	DISPERSION STAINING	019	12%	042	27%	010	06%	049	32%
9.2.3.3	EMMON'S DOUBLE VARIATION	020	13%	041	27%	007	05%	048	31%
9.3	COMPOSITION	010	06%	022	14%	007	05%	026	17%
9.3.1	ELEMENTAL ANALYSIS (INORGANIC)	030	19%	043	28%	012	08%	048	31%
9.3.1.1	METHOD	017	11%	023	15%	006	04%	038	25%
9.3.2	FUNCTIONAL GROUPS (ORGANIC)	018	12%	030	19%	013	08%	038	25%
9.3.2.1	IR	049	32%	050	32%	026	17%	045	29%
9.3.2.2	GC/MS, PYROLYTIC	016	10%	034	22%	010	06%	053	34%
9.3.2.3	OTHER	004	03%	007	05%	001	01%	028	18%
		001	01%	002	01%	000	00%	011	07%
		000	00%	002	01%	000	00%	007	05%
		000	00%	002	01%	000	00%	006	04%

REMINDERS:
A. YOU ARE COMPETENT
B. FAMILIARITY NECESSARY FOR CERTIFICATION
C. COMPETENCE NECESSARY FOR CERTIFICATION
D. FAMILIARITY NOT NECESSARY FOR CERTIFICATION

DATE: November 20, 1978
TO: The Forensic Science Community
FROM: Criminalistics Certification Study Committee
SUBJECT: Forensic Drug Chemistry Questionnaire

The Criminalistics Certification Study Committee has prepared this questionnaire to assess:

1. The state of the art, that is, what is presently being done nationwide in the discipline of forensic drug chemistry.

2. What techniques the forensic drug chemistry community feels should be included in a possible certification testing program.

3. The background and qualifications of practicing forensic drug chemists.

When the results of this questionnaire are evaluated, the committee will have a better insight into what is being done in the discipline of forensic drug chemistry and what should be expected of forensic drug chemists.

So that a more accurate assessment can be made of what is being accomplished at the bench level, this questionnaire should be completed only by individuals analyzing drugs. In addition, you are requested to complete this questionnaire according to your evaluation of what you do and what you think should be included in a nationwide testing and evaluation program. Your responses should reflect your opinions and not necessarily the thoughts and wishes of your laboratory manager(s) and/or administrator(s).

This questionnaire is extensive, but not necessarily complete. If you apply techniques that are not listed or feel that additional techniques should be included in this questionnaire, please feel free to add them. These additions will be appreciated and definitely considered in the final analysis.

Please feel free to recommend a technique for national testing, even though your laboratory may not be presently proficient in this area (for example, GC/MS). The present thinking of the committee is to divide the complicated and involved subject of forensic drug chemistry into sections. These sections will be determined by a careful evaluation of this questionnaire.

The responses to this questionnaire both with respect to the individual and the organization will be kept confidential.

Because many criminalists either belong to a number of professional associations or are on a number of mailing lists, you may receive multiple questionnaires. Please only respond once, in order that the statistical analysis of the data will be accurate.

If you are the recipient of this questionnaire and are not working with drug cases, please forward it to an individual who is doing these types of analyses.

Please be aware than an individual need not be a member of an association, society or organization in order to respond to this questionnaire. The only requirement is that an individual be actively involved in the analysis of drugs.

Also note that this questionnaire has three parts...all individuals currently actively engaged in the analysis of drugs, in "street" form or in physiological fluids, should complete Parts I and II and that/those section(s) of Part III which correspond(s) to his/her area of expertise. For example, an active drug chemist who analyses Cannabis and other controlled substances in "street" form alone should only complete Sections I and II of Part III.

Part II of the questionnaire should give the Criminalistics Certification Study Committee an insight into the present background and professional qualifications of those individuals responding to the questionnaire and also an idea as to what they feel should be the minimum qualifications for individuals practicing "forensic drug chemistry".

The committee appreciates your response to this questionnaire. We are aware of the variety of questionnaires that are constantly being distributed, however, this one will hopefully be an important step in establishing a professional basis for our discipline. We thank you for your participation and solicit your continuing input into this meaningful task.

Appendix #10

Part I: Association Membership and Geographic Location Information

Please place an "X" in the appropriate boxes for those organizations of which you are a member and/or geographic area in which you reside. In addition, please indicate any other general nationwide forensic newsletters that you receive. Please circle the source(s) from which you received this questionnaire.

	Member	Geographic Area
Northeast/NEAFS		
Mid-Atlantic/MAAFS		
Southern/SAFS		
Midwest/MAFS		
California/CAC		
Northwest/NWAFS		
Southwest		
American Academy/AAFS		
American Society of Crime Laboratory Directors/ASCLD		
Crime Lab Digest		
Microgram		
Others (please list)		

PART II: Background and Minimal Qualifications

Please place a check mark in the appropriate columns (more than one check may be made in each area). If you are performing analyses of solid dosage drugs, please mark your responses in the DRUG CHEMISTRY columns; if you are performing toxicological analyses, use the TOXICOLOGY columns. If you are performing both types of analyses then use both sets of columns for your responses.

A. Your background and professional qualifications.
B. What you feel are the minimum qualifications a practicing forensic drug chemist should have to be certified.

		DRUG CHEMISTRY A	DRUG CHEMISTRY B		TOXICOLOGY A	TOXICOLOGY B
AREA 1	FORMAL BACKGROUND (Check only highest degree)					
	1.1 High school diploma					
	1.2 Associate degree					
	1.3 Bachelor of Science					
	1.4 Bachelor of Arts					
	1.5 Master's degree					
	1.6 Ph.D.					
	1.7 M.D.					
	1.8 Other(s)...please list on reverse side					
AREA 2	MAJOR FIELD(S) OF STUDY					
	2.1 Biology					
	2.2 Biochemistry					
	2.3 Chemistry					
	2.4 Medical Technology					
	2.5 Criminalistics (Forensic Science Program)					
	2.6 Other(s)...please list					
AREA 3	SPECIALIZED TRAINING COURSES RELEVANT TO FORENSIC DRUG CHEMISTRY					
	3.1 D.E.A. basic drug course					
	3.2 Regional associations workshops and seminars					
	3.3 Internships					
	3.4 Other(s)...please list on reverse side					
AREA 4	ON-THE-JOB TRAINING					
	4.1 Formal training (formally organized, written and scheduled programs					
	4.1.1 None					
	4.1.2 1 day - 2 weeks					
	4.1.3 2 weeks+ - 1 month					
	4.1.4 1 month+ - 3 months					
	4.1.5 3 months+ - 6 months					
	4.1.6 6 months+ - 1 year					
	4.1.7 More than 1 year					
	4.2 Informal training					
	4.2.1 None					
	4.2.2 1 day - 2 weeks					
	4.2.3 2 weeks+ - 1 month					
	4.2.4 1 month+ - 3 months					
	4.2.5 3 months+ - 6 months					
	4.2.6 6 months+ - 1 year					
	4.2.7 More than 1 year					

		DRUG CHEMISTRY			TOXICOLOGY		
		A	B		A	B	
AREA 5	COURT TESTIMONY ON FORENSIC DRUG CHEMISTRY (INCLUDING DEPOSITIONS)						
	5.1 None						
	5.2 1 - 5 times						
	5.3 6 - 10 times						
	5.4 11 - 20 times						
	5.5 21 - 50 times						
	5.6 51 - 100 times						
	5.7 More than 100 times						
AREA 6	WORK EXPERIENCE						
	6.1 Number of years performing forensic analyses						
	6.1.1 Up to 1 year						
	6.1.2 1+ - 3 years						
	6.1.3 3+ - 5 years						
	6.1.4 5 years+ or more						
	6.2 Number of years conducting drug analyses						
	6.2.1 Up to 1 year						
	6.2.2 1+ - 3 years						
	6.2.3 3+ - 5 years						
	6.2.4 5 years+ or more						
	6.3 On the average, percentage of time working with drug cases						
	6.3.1 1 - 10%						
	6.3.2 11 - 30%						
	6.3.3 31 - 60%						
	6.3.4 61 - 80%						
	6.3.5 81 - 100%						
	6.4 Number of drug cases (not specimens) worked per month						
	6.4.1 1 - 20						
	6.4.2 21 - 40						
	6.4.3 41 - 60						
	6.4.4 61 - 80						
	6.4.5 81 - 100						
	6.4.6 101 or more						
	6.5 Number of years worked without immediate supervision (that is, you do the work and/or interpret the results - your supervisor does not interpret the results)						
	6.5.1 Less than one						
	6.5.2 1 - 3 years						
	6.5.3 3+ - 5 years						
	6.5.4 5+ - 8 years						
	6.5.5 8+ years or more						
AREA 7	PROFESSIONAL PAPERS AND/OR PUBLICATIONS						
	7.1 Number of articles published or papers presented						
	7.1.1 None						
	7.1.2 1 - 3						
	7.1.3 4 - 5						
	7.1.4 6 - 10						
	7.1.5 11 or more						
AREA 8	MEMBERSHIPS IN THE FOLLOWING TYPES OF ORGANIZATIONS						
	8.1 Specialized chemical societies						
	8.2 National or international forensic science societies						
	8.3 Regional forensic associations						
	8.4 Other technical societies - please list						
	8.5 None						

Part III: Forensic Drug Chemistry Questionnaire

Please place checkmarks in the appropriate column(s):

A. Technique(s) you are presently using.

B. Technique(s) you feel an individual analyzing drugs should be familiar with and aware of, i.e., could be expected to be questioned on in a written examination in a possible certification program.

C. Technique(s) you feel an individual analyzing drugs should be competent to actually perform in the laboratory, i.e., could be asked to demonstrate his proficiency with analyses of questioned samples in a possible certification testing program.

D. Technique(s) you feel an individual analyzing drugs need not be familiar with and which should not be included in a possible certification testing program.

SECTION 1. IDENTIFICATION OF CANNABIS (MARIJUANA, HASHISH, HASHISH OIL, ETC.)

	A	B	C	D
1.1 Microscopical (morphological)				
1.1.1 Low power (< 100X)				
1.1.2 High power (≥ 100X)				
1.1.3 Effervescence				
1.2 Color Tests				
1.2.1 Duquenois (without chloroform)				
1.2.2 Duquenois-Levine (Modified)				
1.2.3 Duquenois-Levine (Rapid)				
1.2.4 Other(s)...please list				
1.3 Chromatographic Techniques				
1.3.1 Thin-layer				
1.3.1.1 Qualitative				
1.3.1.1.1 Single System				
1.3.1.1.2 Multiple systems				
1.3.1.2 Quantitative				
1.3.2 Gas-Vapor Phase				
1.3.2.1 Qualitative				
1.3.2.1.1 Single column				
1.3.2.1.2 Multiple columns				
1.3.2.2 Quantitative				
1.4 Gas Chromatography/Mass Spectrometry				
1.5 Other(s)...please list				

SECTION 2. IDENTIFICATION OF CONTROLLED SUBSTANCES OTHER THAN CANNABIS

	HEROIN				AMPHET-AMINES				BARBI-TURATES				COCAINE				LSD				PCP			
	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
2.1 Visual Techniques																								
2.1.1 Compendia (e.g. PDR)																								
2.1.2 Color Tests																								
2.1.3 Microcrystalline Tests																								
2.1.4 Microscopical																								
2.1.4.1 Polarizing																								
2.1.4.2 Phase																								
2.1.4.3 Hot stage																								
2.1.4.4 Compound (Biological)																								
2.1.2.5 Other(s)...please list																								
2.2 Chromatographic Techniques																								
2.2.1 Thin-Layer																								
2.2.2.1 Single system																								
2.2.2.2 Multiple systems																								
2.2.2 Gas/Vapor Phase																								
2.2.2.1 Single column																								
2.2.2.2 Multiple column																								
2.2.3 Paper																								
2.2.4 Column																								
2.2.5 High Performance LC																								

	HEROIN				AMPHET-AMINES				BARBI-TURATES				COCAINE				LSD				PCP			
	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
2.3 Other Instrumental Methods																								
2.3.1 Ultra-Violet-Visible																								
2.3.2 Infrared Spectroscopy																								
2.3.3 Fluorometry																								
2.3.4 Nuclear Magnetic Resonance																								
2.3.5 Polarimetry/ORD																								
2.3.6 (Gas Chromatography)Mass Spec																								
2.3.7 X-Ray Diffraction																								
2.3.8 Raman Spectroscopy																								
2.3.9 Other(s)...please list																								
2.4 General Procedures																								
2.4.1 Excipient Analysis																								
2.4.2 Melting Point Determination																								
2.4.3 Mixed Melting Point																								
2.4.4 Distillation																								
2.4.5 Titration																								
2.4.6 Solubility																								
2.4.7 Refractive Index																								
2.4.8 Organic Extraction																								
2.4.9 Derivatization																								
2.4.10 Preparative Chromatography																								
2.4.11 Quantitation																								
2.4.12 Other(s)...please list																								

SECTION 3. TOXICOLOGY

	A	B	C	D
3.1 Alcohol				
3.1.1 Sample Form				
3.1.1.1 Blood				
3.1.1.1.1 Qualitative				
3.1.1.1.2 Quantitative				
3.1.1.2 Urine				
3.1.1.2.1 Qualitative				
3.1.1.2.2 Quantitative				
3.1.1.3 Breath				
3.1.1.4 Other(s)...please list				
3.1.2 Method(s)				
3.1.2.1 Gas Chromatographic/Head Space				
3.1.2.1.1 With Internal Standard				
3.1.2.1.2 Without Internal Standard				
3.1.2.2 Gas Chromatographic/Direct Injection				
3.1.2.2.1 With Internal Standard				
3.1.2.2.2 Without Internal Standard				
3.1.2.3 Diffusion				
3.1.2.3.1 Titration				
3.1.2.3.2 Colorimetry				
3.1.2.4 Enzyme (Alcohol dehydrogenase)				
3.1.2.5 Distillation				
3.1.2.6 Other(s)...please list				
3.2 Drugs				
3.2.1 Sample Form				
3.2.1.1 Blood				
3.2.1.1.1 Qualitative				
3.2.1.1.2 Quantitative				
3.2.1.2 Urine				
3.2.1.2.1 Qualitative				
3.2.1.2.2 Quantitative				
3.2.1.3 Other(s)...please list				
3.2.2 Method(s)				
3.2.2.1 Gas Chromatography				
3.2.2.1.1 Single column				

	A	B	C	D
3.2.2.1.2 Multiple columns				
3.2.2.2 Thin-Layer Chromatography				
3.2.2.2.1 Single system				
3.2.2.2.2 Multiple systems				
3.2.2.3 Fluorometry				
3.2.2.4 Radio-Immuno Assay (RIA)				
3.2.2.5 Enzyme Multiplied Immuno-Assay Tech. (EMIT)				
3.2.2.6 (Gas Chromatography)/Mass Spectrometry				
3.2.2.6.1 Electron Impact (EI)				
3.2.2.6.2 Chemical Ionization (CI)				
3.2.2.7 Ultraviolet-Visible Spectroscopy				
3.2.2.8 Infrared				
3.2.2.9 Atomic Absorption				
3.2.2.10 Free Radical Assay Technique (FRAT)				
3.2.2.11 Spot Tests				
3.2.2.12 Other(s)...please list				

Date 2/10/79

FORENSIC DRUG CHEMISTRY QUESTIONNAIRE

PART I: ASSOCIATION MEMBERSHIP AND GEOGRAPHIC LOCATION INFORMATION

PLEASE PLACE AN 'X' IN THE APPROPRIATE BOXES FOR THOSE ORGANIZATIONS OF WHICH YOU ARE A MEMBER AND/OR GEOGRAPHIC AREA IN WHICH YOU RESIDE. IN ADDITION, PLEASE INDICATE ANY OTHER GENERAL NATIONWIDE FORENSIC NEWSLETTERS THAT YOU RECEIVE. PLEASE CIRCLE THE SOURCE(S) FROM WHICH YOU RECEIVED THIS QUESTIONNAIRE.

NORTHEAST/NEAFS	034	09%
MID-ATLANTIC/MAAFS	041	11%
SOUTHERN/SAFS	030	08%
MIDWEST/MAFS	095	25%
CALIFORNIA/CAC	045	12%
NORTHWEST/NWAFS	019	05%
SOUTHWEST	006	02%
AMERICAN ACADEMY/AAFS	117	31%
AMERICAN SOCIETY OF CRIME LABORATORY DIRECTORS/ASCLD	021	06%
CRIME LAB DIGEST	112	30%
NICROGRAM	192	51%
OTHERS (PLEASE LIST)	054	14%

PART II: BACKGROUND AND MININAL QUALIFICATIONS

PLEASE PLACE A CHECK MARK IN THE APPROPRIATE COLUMNS (MORE THAN ONE CHECK MAY BE MADE IN EACH AREA). IF YOU ARE PERFORMING ANALYSES OF SOLID DOSAGE DRUGS, PLEASE MARK YOUR RESPONSES IN THE DRUG CHEMISTRY COLUMN. IF YOU ARE PERFORMING TOXICOLOGICAL ANALYSES, USE THE TOXICOLOGY COLUMNS. IF YOU ARE PERFORMING BOTH TYPES OF ANALYSES THEN USE BOTH SETS OF COLUMNS FOR YOUR RESPONSES.

A. YOUR BACKGROUND AND PROFESSIONAL QUALIFICATIONS.
B. WHAT YOU FEEL ARE THE MINIMUM QUALIFICATIONS A PRACTICING FORENSIC DRUG CHEMIST SHOULD HAVE TO BE CERTIFIED.

N = 379

		DRUG CHEMISTRY A		DRUG CHEMISTRY B		TOXICOLOGY A		TOXICOLOGY B	
AREA 1	FORMAL BACKGROUND (CHECK ONLY HIGHEST DEGREE)								
1.1	HIGH SCHOOL DIPLOMA	004	01%	006	02%	003	01%	004	01%
1.2	ASSOCIATE DEGREE	003	01%	009	02%	001	00%	003	01%
1.3	BACHELOR OF SCIENCE	165	44%	200	53%	044	12%	055	15%
1.4	BACHELOR OF ARTS	072	19%	135	36%	010	03%	027	07%
1.5	MASTER'S DEGREE	099	26%	010	03%	021	06%	005	01%
1.6	PH.D.	026	07%	001	00%	009	02%	003	01%
1.7	M.D.	001	00%	001	00%	000	00%	001	00%
1.8	OTHER(S)...PLEASE LIST ON REVERSE SIDE	004	01%	004	01%	001	00%	001	00%
AREA 2	MAJOR FIELD(S) OF STUDY								

	2.1	BIOLOGY	069	18%	067	18%	012 03%	024 06%
	2.2	BIOCHEMISTRY	040	11%	093	25%	011 03%	047 12%
	2.3	CHEMISTRY	287	76%	237	63%	071 19%	074 20%
	2.4	MEDICAL TECHNOLOGY	017	04%	037	10%	009 02%	025 07%
	2.5	CRIMINALISTICS (FORENSIC SCIENCE PROGRAM)	048	13%	106	28%	008 02%	014 04%
	2.6	OTHER(S). PLEASE LIST	031	08%	032	08%	009 02%	009 02%
AREA 3	SPECIALIZED TRAINING COURSES RELEVANT TO FORENSIC DRUG CHEMISTRY							
	3.1	D.E.A. BASIC DRUG COURSE	195	51%	133	35%	017 04%	015 04%
	3.2	REGIONAL ASSOCIATIONS WORKSHOPS AND SEMINARS	184	49%	116	31%	030 08%	026 07%
	3.3	INTERNSHIPS	091	24%	094	25%	019 05%	019 05%
	3.4	OTHERS(S). PLEASE LIST ON REVERSE SIDE	034	09%	017	04%	011 03%	005 01%
AREA 4	ON-THE-JOB TRAINING							
	4.1	FORMAL TRAINING (FORMALLY ORGANIZED, WRITTEN AND SCHEDULED PROGRAMS)						
	4.1.1	NONE	098	26%	019	05%	028 07%	007 02%
	4.1.2	1 DAY - 2 WEEKS	027	07%	022	06%	005 01%	006 02%
	4.1.3	2 WEEKS+ - 1 MONTH	033	09%	047	12%	003 02%	012 03%
	4.1.4	1 MONTH+ - 3 MONTHS	035	09%	054	14%	009 02%	011 03%
	4.1.5	3 MONTHS+ - 6 MONTHS	057	15%	095	25%	005 01%	012 03%
	4.1.6	6 MONTHS+ - 1 YEAR	050	13%	068	18%	014 04%	029 08%
	4.1.7	MORE THAN 1 YEAR	025	07%	017	04%	011 03%	011 03%
	4.2	INFORMAL TRAINING						
	4.2.1	NONE	027	07%	021	06%	004 01%	003 01%
	4.2.2	1 DAY - 2 WEEKS	021	06%	004	01%	005 01%	003 01%
	4.2.3	2 WEEKS+ - 1 MONTH	040	11%	018	05%	008 02%	004 01%
	4.2.4	1 MONTH+ - 3 MONTHS	042	11%	059	16%	011 03%	009 02%
	4.2.5	3 MONTHS+ - 6 MONTHS	071	19%	083	22%	008 02%	014 04%
	4.2.6	6 MONTHS+ - 1 YEAR	059	16%	053	14%	022 06%	023 06%
	4.2.7	MORE THAN 1 YEAR	055	15%	050	13%	025 07%	024 06%
AREA 5	COURT TESTIMONY ON FORENSIC DRUG CHEMISTRY (INCLUDING DEPOSITIONS)							
	5.1	NONE	014	04%	091	24%	010 03%	028 07%
	5.2	1 - 5 TIMES	023	06%	089	23%	022 06%	026 07%
	5.3	6 - 10 TIMES	014	04%	063	17%	014 04%	008 02%
	5.4	11 - 20 TIMES	028	07%	034	09%	007 02%	010 03%
	5.5	21 - 50 TIMES	054	14%	016	04%	012 03%	002 01%
	5.6	51 - 100 TIMES	064	17%	004	01%	003 02%	001 00%
	5.7	MORE THAN 100 TIMES	162	43%	019	05%	015 04%	005 01%
AREA 6	WORK EXPERIENCE							
	6.1	NUMBER OF YEARS PERFORMING FORENSIC ANALYSES						
	6.1.1	UP TO 1 YEAR	017	04%	138	36%	003 01%	030 08%
	6.1.2	1+ - 3 YEARS	061	16%	138	36%	021 06%	037 10%
	6.1.3	3+ - 5 YEARS	069	18%	012	03%	013 03%	000 02%
	6.1.4	5 YEARS+ OR MORE	209	55%	019	05%	055 15%	007 02%
	6.2	NUMBER OF YEARS CONDUCTING DRUG ANALYSES						
	6.2.1	UP TO 1 YEAR	019	05%	143	38%	006 02%	023 06%
	6.2.2	1+ - 3 YEARS	069	18%	123	32%	017 04%	037 10%
	6.2.3	3+ - 5 YEARS	064	17%	010	03%	013 03%	005 01%
	6.2.4	5 YEARS+ OR MORE	204	54%	007	02%	051 13%	004 01%
	6.3	ON THE AVERAGE, PERCENTAGE OF TIME WORKING WITH DRUG CASES						

		6.3.1	1 - 10%	029	08%	056	15%	019	05%	021 06%
		6.3.2	11 - 30%	058	15%	068	18%	019	05%	016 04%
		6.3.3	31 - 60%	065	17%	092	24%	018	05%	016 04%
		6.3.4	61 - 80%	093	25%	050	13%	009	02%	009 02%
		6.3.5	81 - 100%	123	32%	021	06%	015	04%	005 01%
	6.4	NUMBER OF DRUG CASES (NOT SPECIMENS) WORKED PER MONTH								
		6.4.1	1 - 20	069	18%	135	36%	040	11%	041 11%
		6.4.2	21 - 40	114	30%	069	18%	018	05%	010 03%
		6.4.3	41 - 60	063	17%	041	11%	008	02%	004 01%
		6.4.4	61 - 80	043	11%	011	03%	003	01%	000 00%
		6.4.5	81 - 100	034	09%	006	02%	007	02%	002 01%
		6.4.6	101 OR MORE	026	07%	003	02%	006	02%	003 01%
	6.5	NUMBER OF YEARS WORKED WITHOUT IMMEDIATE SUPERVISION (THAT IS, YOU DO THE WORK AND/OR INTERPRET THE RESULTS - YOUR SUPERVISOR DOES NOT INTERPRET THE RESULTS								
		6.5.1	LESS THAN ONE	031	08%	133	35%	007	02%	023 06%
		6.5.2	1 - 3 YEARS	058	15%	134	35%	016	04%	041 11%
		6.5.3	3+ - 5 YEARS	081	21%	011	03%	021	06%	004 01%
		6.5.4	5+ - 8 YEARS	116	31%	002	01%	023	06%	000 00%
		6.5.5	8+ YEARS OR MORE	086	23%	020	05%	024	06%	004 01%
AREA 7	PROFESSIONAL PAPERS AND/OR PUBLICATIONS									
	7.1	NUMBER OF ARTICLES PUBLISHED OR PAPERS PRESENTED								
		7.1.1	NONE	192	51%	236	62%	051	13%	060 16%
		7.1.2	1 - 3	093	25%	035	09%	018	05%	008 02%
		7.1.3	4 - 5	026	07%	001	00%	005	01%	002 01%
		7.1.4	6 - 10	009	02%	000	00%	005	01%	000 00%
		7.1.5	11 OR MORE	025	07%	002	01%	004	01%	001 00%
AREA 8	MEMBERSHIPS IN THE FOLLOWING TYPES OF ORGANIZATIONS									
	8.1	SPECIALIZED CHEMICAL SOCIETIES		122	32%	023	06%	020	05%	010 03%
	8.2	NATIONAL OR INTERNATIONAL FORENSIC FORENSIC SCIENCE SOCIETIES		133	35%	053	14%	037	10%	015 04%
	8.3	REGIONAL FORENSIC ASSOCIATIONS		226	60%	105	28%	041	11%	020 05%
	8.4	OTHER TECHNICAL SOCIETIES - PLEASE LIST		063	17%	013	03%	014	04%	005 01%
	8.5	NONE		070	18%	136	36%	026	07%	028 07%

PART III: FORENSIC DRUG CHEMISTRY QUESTIONNAIRE

PLEASE PLACE CHECKMARKS IN THE APPROPRIATE COLUMN(S):

A. TECHNIQUE(S) YOU ARE PRESENTLY USING.

B. TECHNIQUE(S) YOU FEEL AN INDIVIDUAL ANALYZING DRUGS SHOULD BE FAMILIAR WITH AND AWARE OF, I.E., COULD BE EXPECTED TO BE QUESTIONED ON IN A WRITTEN EXAMINATION IN A POSSIBLE CERTIFICATION PROGRAM.

C. TECHNIQUE(S) YOU FEEL AN INDIVIDUAL ANALYZING DRUGS SHOULD BE COMPETENT TO ACTUALLY PERFORM IN THE LABORATORY, I.E., COULD BE ASKED TO DEMONSTRATE HIS PROFICIENCY WITH ANALYSES OF QUESTIONED

SAMPLES IN A POSSIBLE CERTIFICATION TESTING PROGRAM.

D. TECHNIQUE(S) YOU FEEL AN INDIVIDUAL ANALYZING DRUGS NEED NOT BE FAMILAR WITH AND WHICH SHOULD NOT BE INCLUDED IN A POSSIBLE CERTIFICATION TESTING PROGRAM.

SECTION 1: IDENTIFICATION OF CANNABIS (MARIJUANA, HASHISH, HASHISH OIL, ECT.)

	A		B		C		D	
1.1 MICROSCOPICAL (MORPHOLOGICAL)								
1.1.1 LOW POWER (<100X)	331	87%	270	71%	293	77%	014	04%
1.1.2 HIGH POWER (>100X)	139	37%	192	51%	138	36%	007	2%
1.1.3 EFFERVESCENCE	096	25%	212	56%	113	30%	002	22%
1.2 COLOR TESTS								
1.2.1 DUQUENOIS (WITHOUT CHLOROFORM)	058	15%	202	53%	094	25%	060	16%
1.2.2 DUQUENOIS-LEVINE (MODIFIED)	295	78%	268	71%	269	71%	012	03%
1.2.3 DUEQUENOIS-LEVINE (RAPID)	096	25%	165	44%	112	30%	048	13%
1.2.4 OTHER(S)...PLEASE LIST	024	06%	049	13%	017	04%	031	08%
1.3 CHROMATOGRAPHIC TECHNIQUES								
1.3.1 THIN-LAYER	184	49%	156	41%	157	41%	005	01%
1.3.1.1 QUALITATIVE	206	54%	170	45%	164	43%	004	01%
1.3.1.1.1 SINGLE SYSTEM	256	68%	220	58%	220	58%	112	30%
1.3.1.1.2 MULTIPLE SYSTEMS	124	33%	166	44%	114	30%	071	19%
1.3.1.2 QUANTITATIVE	017	04%	064	17%	023	06%	167	44%
1.3.2 GAS-VAPOR PHASE	068	18%	119	31%	068	18%	066	17%
1.3.2.1 QUALITATIVE	084	22%	137	36%	079	21%	060	16%
1.3.2.1.1 SINGLE COLUMN	095	25%	153	40%	093	25%	068	18%
1.3.2.1.2 MULTIPLE COLUMNS	050	13%	110	29%	057	15%	101	27%
1.3.2.2 QUANTITATIVE	058	15%	115	30%	055	15%	119	31%
1.4 GAS CHROMATOGRAPHY/MASS SPECTROMETRY	082	22%	173	46%	049	13%	138	36%
1.5 OTHER(S)...PLEASE LIST	020	05%	023	06%	011	03%	042	11%

SECTION 2. IDENTIFICATION OF CONTROLLED SUBSTANCES OTHER THAN CANNABIS

	HEROIN							
	A		B		C		D	
2.1 VISUAL TECHNIQUES								
2.1.1 COMPENDIA (E.G. PDR)	072	19%	063	17%	059	16%	102	27%
2.1.2 COLOR TESTS	324	85%	259	68%	264	70%	013	03%
2.1.3 MICROCRYSTLLINE TESTS	197	52%	207	55%	150	40%	071	19%
2.1.4 MICROSCOPICAL	055	15%	064	17%	035	09%	112	30%
2.1.4.1 POLARIZING	092	24%	108	28%	052	14%	103	27%
2.1.4.2 PHASE	015	04%	032	08%	012	03%	164	43%
2.1.4.3 HOT STAGE	011	03%	045	12%	014	04%	147	39%
2.1.4.4 COMPOUND (BIOLOGICAL)	040	11%	048	13%	033	09%	127	34%
2.1.2.5 OTHERS(S)...PLEASE LIST	013	03%	018	05%	015	04%	053	14%
2.2 CHROMATOGRAPHIC TECHNIQUES								
2.2.1 THIN-LAYER	175	46%	170	45%	153	40%	117	30%
2.2.2.1 SINGLE SYSTEMS	167	44%	176	46%	151	40%	017	04%

2.2.2.2 MULTIPLE SYSTEMS	211 56%	197 52%	162 43%	031 08%	
2.2.2 GAS/VAPOR PHASE	138 36%	130 34%	112 30%	024 06%	
2.2.2.1 SINGLE COLUMN	210 55%	181 48%	163 43%	020 05%	
2.2.2.2 MULTIPLE COLUMN	097 26%	140 37%	095 25%	064 17%	
2.2.3 PAPER	012 03%	075 20%	011 03%	200 53%	
2.2.4 COLUMN	092 24%	149 39%	067 18%	111 29%	
2.2.5 HIGH PERFORMANCE LC	053 14%	152 40%	042 11%	142 37%	

AMPHETAMINES

	A	B	C	D
2.1 VISUAL TECHNIQUES				
2.1.1 COMPENDIA (E.G. PDR)	311 82%	222 59%	211 56%	016 04%
2.1.2 COLOR TESTS	321 85%	244 64%	253 67%	015 04%
2.1.3 MICROCRYSTALLINE TESTS	204 54%	213 56%	151 40%	068 18%
2.1.4 MICROSCOPICAL	053 14%	061 16%	034 09%	115 30%
2.1.4.1 POLARIZING	099 26%	109 29%	055 15%	101 27%
2.1.4.2 PHASE	012 03%	028 07%	012 03%	156 41%
2.1.4.3 HOT STAGE	010 03%	040 11%	011 03%	148 39%
2.1.4.4 COMPOUND (BIOLOGICAL)	041 11%	049 13%	031 08%	125 33%
2.1.2.5 OTHERS(S)...PLEASE LIST	007 02%	013 03%	009 02%	055 15%
2.2 CHROMATOGRAPHIC TECHNIQUES				
2.2.1 THIN-LAYER	154 41%	161 42%	128 34%	017 04%
2.2.2.1 SINGLE SYSTEM	152 40%	157 41%	139 37%	118 31%
2.2.2.2 MULTIPLE SYSTEMS	173 46%	178 47%	131 35%	037 10%
2.2.2 GAS/VAPOR PHASE	126 33%	130 34%	098 26%	030 08%
2.2.2.1 SINGLE COLUMN	163 45%	168 44%	133 35%	025 07%
2.2.2.2 MULTIPLE COLUMN	094 25%	131 35%	090 24%	061 16%
2.2.3 PAPER	009 02%	065 17%	008 02%	196 52%
2.2.4 COLUMN	043 11%	116 31%	032 08%	129 34%
2.2.5 HIGH PERFORMANCE LC	052 14%	144 38%	047 12%	146 39%

BARBITUKATES

	A	B	C	D
2.1 VISUAL TECHNIQUES				
2.1.1 COMPENDIA (E.G. PDR)	314 83%	219 58%	211 56%	016 04%
2.1.2 COLOR TESTS	311 82%	237 63%	246 65%	017 04%
2.1.3 MICROCRYSTALLINE TESTS	167 44%	183 48%	129 34%	080 21%
2.1.4 MICROSCOPICAL	052 14%	056 15%	039 10%	115 30%
2.1.4.1 POLARIZING	078 21%	088 23%	047 12%	109 29%
2.1.4.2 PHASE	010 03%	027 07%	009 02%	156 41%
2.1.4.3 HOT STAGE	012 03%	041 11%	012 03%	145 38%
2.1.4.4 COMPOUND (BIOLOGICAL)	035 09%	044 12%	029 08%	126 33%
2.1.2.5 OTHER(S)...PLEASE LIST	009 02%	014 04%	010 03%	056 15%
2.2 CHROMATOGRAPHIC TECHNIQUES				
2.2.1 THIN-LAYER	127 34%	155 41%	116 31%	025 07%
2.2.2.1 SINGLE SYSTEM	127 34%	147 39%	114 30%	032 08%
2.2.2.2 MULTIPLE SYSTEMS	133 35%	157 41%	110 29%	050 13%
2.2.2 GAS/VAPOR PHASE	129 34%	130 34%	110 29%	025 07%
2.2.2.1 SINGLE COLUMN	174 46%	170 45%	136 36%	020 05%
2.2.2.2 MULTIPLE COLUMN	091 24%	134 35%	092 24%	059 16%
2.2.3 PAPER	011 03%	067 18%	010 03%	192 51%
2.2.4 COLUMN	034 09%	109 29%	030 08%	133 35%
2.2.5 HIGH PERFORMANCE LC	037 10%	128 34%	037 10%	143 38%

COCAINE

	A	B	C	D
2.1 VISUAL TECHNIQUES				
2.1.1 COMPENDIA (E.G. PDR)	082 22%	071 19%	060 16%	092 24%
2.1.2 COLOR TESTS	311 82%	241 64%	239 63%	016 04%
2.3.3 MICROCRYSTALLINE TESTS	209 55%	203 54%	152 40%	067 18%
2.1.4 MICROSCOPICAL	063 17%	063 17%	039 10%	108 28%

	2.1.4.1 POLARIZING	101	27%	108	28%	054	14%	085 25%
	2.1.4.2 PHASE	017	04%	037	10%	013	03%	153 46%
	2.1.4.3 HOT STAGE	117	31%	046	12%	018	05%	139 37%
	2.1.4.4 COMPOUND (BIOLOGICAL)	041	11%	045	12%	033	09%	127 34%
	2.1.2.5 OTHER(S)...PLEASE LIST	015	04%	015	04%	013	03%	056 15%
2.2 CHROMATOGRAPHIC TECHNIQUES								
2.2.1	THIN-LAYER	164	43%	167	44%	132	35%	011 03%
	2.2.2.1 SINGLE SYSTEM	154	41%	162	43%	130	34%	017 04%
	2.2.2.2 MULTIPLE SYSTEMS	181	48%	170	45%	138	36%	035 09%
2.2.2	GAS/VAPOR PHASE	136	36%	126	33%	107	28%	023 06%
	2.2.2.1 SINGLE COLUMN	198	52%	176	46%	152	40%	024 06%
	2.2.2.2 MULTIPLE COLUMN	095	25%	128	34%	090	24%	061 16%
2.2.3	PAPER	010	03%	066	17%	010	03%	190 50%
2.2.4	COLUMN	065	17%	119	31%	052	14%	115 30%
2.2.5	HIGH PERFORMANCE LC	037	10%	126	33%	037	10%	142 37%
		LSD						
2.1 VISUAL TECHNIQUES		A		B		C		D
2.1.1	COMPENDIA (E.G. PDR)	055	15%	049	13%	039	10%	105 28%
2.1.2	COLOR TESTS	273	72%	223	59%	218	58%	026 07%
2.1.3	MICROCRYSTALLINE TESTS	036	09%	060	16%	035	09%	154 41%
2.1.4	MICROSCOPICAL	018	05%	033	09%	014	04%	133 35%
	2.1.4.1 POLARIZING	023	06%	036	09%	014	04%	131 35%
	2.1.4.2 PHASE	006	02%	019	05%	007	02%	159 42%
	2.1.4.3 HOT STAGE	005	01%	021	06%	005	01%	151 40%
	2.1.4.4 COMPOUND (BIOLOGICAL)	011	03%	022	06%	010	03%	136 36%
	2.1.2.5 OTHER(S)...PLEASE LIST	015	04%	014	04%	015	04%	058 15%
2.2 CHROMATOGRAPHIC TECHNIQUES								
2.2.1	THIN-LAYER	201	53%	171	45%	167	44%	001 00%
	2.2.2.1 SINGLE SYSTEM	143	38%	147	39%	125	33%	017 04%
	2.2.2.2 MULTIPLE SYSTEMS	264	70%	213	56%	190	50%	018 05%
2.2.2	GAS/VAPOR PHASE	037	10%	080	21%	044	12%	072 19%
	2.2.2.1 SINGLE COLUMN	060	16%	114	30%	062	16%	067 18%
	2.2.2.2 MULTIPLE COLUMN	028	07%	077	20%	031	08%	089 23%
2.2.3	PAPER	016	04%	067	18%	014	04%	185 49%
2.2.4	COLUMN	076	20%	143	38%	061	16%	109 29%
2.2.5	HIGH PERFORMANCE LC	048	13%	134	35%	041	11%	136 36%
		PCP						
2.1 VISUAL TECHNIQUES		A		B		C		D
2.1.1	COMPENDIA (E.G. PDR)	063	17%	068	18%	050	13%	092 24%
2.1.2	COLOR TESTS	260	69%	209	55%	198	52%	034 09%
2.1.3	MICROCRYSTALLINE TESTS	159	42%	165	44%	120	32%	087 23%
2.1.4	MICROSCOPICAL	045	12%	060	16%	039	10%	111 29%
	2.1.4.1 POLARIZING	070	18%	086	23%	042	11%	100 26%
	2.1.4.2 PHASE	015	04%	027	07%	020	05%	150 40%
	2.1.4.3 HOT STAGE	011	03%	039	10%	021	06%	137 36%
	2.1.4.4 COMPOUND (BIOLOGICAL)	031	08%	041	11%	035	09%	117 31%
	2.1.2.5 OTHER(S)...PLEASE LIST	013	03%	016	04%	016	04%	049 13%
2.2 CHROMATOGRAPHIC TECHNIQUES								
2.2.1	THIN-LAYER	159	42%	166	44%	171	45%	014 04%
	2.2.2.1 SINGLE SYSTEM	146	39%	163	43%	134	35%	016 04%
	2.2.2.2 MULTIPLE SYSTEMS	185	49%	182	48%	137	36%	033 09%
2.2.2	GAS/VAPOR PHASE	125	33%	127	34%	099	26%	026 07%
	2.2.2.1 SINGLE COLUMN	175	46%	176	46%	134	35%	021 06%
	2.2.2.2 MULTIPLE COLUMN	087	23%	122	32%	086	23%	064 17%
2.2.3	PAPER	009	02%	063	17%	016	04%	187 49%

2.2.4	COLUMN	053	14%	113	30%	049	13%	130	34%
2.2.5	HIGH PERFORMANCE LC	041	11%	133	35%	041	11%	133	35%
		HEROINE							
2.3 OTHER INSTRUMENTAL METHODS		A		B		C		D	
2.3.1	ULTRA-VIOLET-VISIBLE	237	63%	248	65%	206	54%	118	31%
2.3.2	INFRARED SPECTROSCOPY	267	70%	243	64%	241	64%	119	31%
2.3.3	FLUORONETRY	016	04%	068	18%	014	04%	187	49%
2.3.4	NUCLEAR MAGNETIC RESONANCE	018	05%	069	18%	014	04%	202	53%
2.3.5	POLARIMETRY/ORD	015	04%	053	14%	008	02%	210	55%
2.3.6	(GAS CHROMATOGRAPHY)MASS SPEC	159	42%	213	56%	088	23%	078	21%
2.3.7	X-RAY DIFFRACTION	013	03%	053	14%	003	01%	221	58%
2.3.8	RAMAN SPECTROSCOPY	003	01%	032	08%	004	01%	225	59%
2.3.9	OTHER(S)...PLEASE LIST	014	04%	013	03%	004	01%	052	14%
2.4 GENERAL PROCEDURES									
2.4.1	EXCIPIENT ANALYSIS	129	34%	158	42%	063	17%	108	28%
2.4.2	MELTING POINT DETERMINATION	035	09%	148	39%	052	14%	121	32%
2.4.3	MIXED MELTING POINT	020	05%	103	27%	032	08%	159	42%
2.4.4	DISTILLATION	008	02%	043	11%	012	03%	214	56%
2.4.5	TITRATION	011	03%	051	13%	015	04%	202	53%
2.4.6	SOLUBILITY	074	20%	127	34%	052	14%	115	30%
2.4.7	REFRACTIVE INDEX	027	07%	067	18%	022	06%	190	50%
2.4.8	ORGANIC EXTRACTION	260	69%	221	58%	201	53%	032	08%
2.4.9	DERIVATIZATION	048	13%	104	27%	033	09%	134	35%
2.4.10	PREPARATIVE CHROMATOGRAPHY	133	35%	169	45%	092	24%	080	21%
2.4.11	QUANTITATION	258	68%	236	62%	172	45%	025	07%
2.4.12	OTHER(S)...PLEASE LIST	017	04%	017	04%	015	04%	036	09%
		AMPHETAMINES							
2.3 OTHER INSTRUMENTAL METHODS		A		B		C		D	
2.3.1	ULTRA-VIOLET-VISIBLE	287	76%	247	65%	225	59%	014	04%
2.3.2	INFRARED SPECTROSCOPY	274	72%	235	62%	235	62%	019	05%
2.3.3	FLUOROMETRY	007	02%	056	15%	012	03%	194	51%
2.3.4	NUCLEAR MAGNETIC RESONANCE	026	07%	079	21%	019	05%	188	50%
2.3.5	POLARIMETRY/ORD	021	06%	081	21%	019	05%	184	49%
2.3.6	(GAS CHROMATOGRAPHY)MASS SPEC	146	39%	204	54%	076	20%	082	22%
2.3.7	X-RAY DIFFRACTION	012	03%	051	13%	004	01%	220	58%
2.3.8	RAMAN SPECTROSCOPY	004	01%	034	09%	005	01%	222	59%
2.3.9	OTHER(S)...PLEASE LIST	010	03%	011	03%	006	02%	050	13%
2.4 GENERAL PROCEDURES									
2.4.1	EXCIPIENT ANALYSIS	089	23%	136	36%	060	16%	111	29%
2.4.2	MELTING POINT DETERMINATION	038	10%	133	35%	052	14%	119	31%
2.4.3	MIXED MELTING POINT	019	05%	100	26%	032	08%	156	41%
2.4.4	DISTILLATION	047	12%	090	24%	038	10%	158	42%
2.4.5	TITRATION	011	03%	046	12%	017	04%	197	52%
2.4.6	SOLUBILITY	069	18%	121	32%	048	13%	118	31%
2.4.7	REFRACTIVE INDEX	025	07%	061	16%	025	07%	185	49%
2.4.8	ORGANIC EXTRACTION	250	66%	216	57%	200	53%	033	09%
2.4.9	DERIVATIZATION	067	18%	125	33%	042	11%	113	30%
2.4.10	PREPARATIVE CHROMATOGRAPHY	101	27%	157	41%	081	21%	086	23%
2.4.11	QUANTITATION	156	41%	192	51%	126	33%	056	15%
2.4.12	OTHER(S)...PLEASE LIST	015	04%	021	06%	015	04%	037	10%
		BARBITURATES							
2.3 OTHER INSTRUMENTAL METHODS		A		B		C		D	
2.3.1	ULTRA-VIOLET-VISIBLE	263	69%	239	63%	213	56%	015	04%
2.3.2	INFRARED SPECTROSCOPY	264	70%	233	61%	220	58%	019	05%
2.3.3	FLUOROMETRY	010	03%	052	14%	012	03%	194	51%

2.3.4	NUCLEAR MAGNETIC RESONANCE	024	06%	075	20%	016	04%	191	50%
2.3.5	POLARIMETRY/ORD	015	04%	054	14%	008	02%	209	55%
2.3.6	(GAS CHROMATOGRAPHY)MASS SPEC	139	37%	195	51%	069	18%	007	23%
2.3.7	X-RAY DIFFRACTION	013	03%	048	13%	007	02%	217	57%
2.3.8	RAMAN SPECTROSCOPY	005	01%	031	08%	005	01%	222	59%
2.3.9	OTHER(S)...PLEASE LIST	010	03%	012	03%	008	02%	050	13%
2.4 GENERAL PROCEDURES										
2.4.1	EXCIPIENT ANALYSIS	075	20%	127	34%	049	13%	112	30%
2.4.2	MELTING POINT DETERMINATION	047	12%	132	35%	056	15%	119	31%
2.4.3	MIXED MELTING POINT	023	06%	089	23%	035	09%	159	42%
2.4.4	DISTILLATION	010	03%	040	11%	016	04%	198	52%
2.4.5	TITRATION	112	30%	042	11%	020	05%	195	51%
2.4.6	SOLUBILITY	069	18%	120	32%	050	13%	115	30%
2.4.7	REFRACTIVE INDEX	029	08%	062	16%	025	07%	182	48%
2.4.8	ORGANIC EXTRACTION	256	68%	213	56%	200	53%	031	08%
2.4.9	DERIVATIZATION	053	14%	111	29%	038	10%	124	33%
2.4.10	PREPARATIVE CHROMATOGRAPHY	008	02%	145	38%	068	18%	094	25%
2.4.11	QUANTITATION	135	36%	179	47%	116	31%	062	16%
2.4.12	OTHER(S)...PLEASE LIST	016	04%	017	04%	014	04%	038	10%

COCAINE

		A		B		C		D	
2.3 OTHER INSTRUMENTAL METHODS									
2.3.1	ULTRA-VIOLET-VISIBLE	249	66%	244	64%	202	53%	017	04%
2.3.2	INFRARED SPECTROSCOPY	272	72%	234	62%	236	62%	019	05%
2.3.3	FLUOROMETRY	012	03%	050	13%	013	03%	200	53%
2.3.4	NUCLEAR MAGNETIC RESONANCE	023	06%	075	20%	014	04%	194	51%
2.3.5	POLARIMETRY/ORD	045	12%	127	34%	033	09%	146	39%
2.3.6	(GAS CHROMATOGRAPHY)MASS SPEC	159	42%	207	55%	084	22%	076	20%
2.3.7	X-RAY DIFFRACTION	014	04%	048	13%	003	01%	220	58%
2.3.8	RAMAN SPECTROSCOPY	006	02%	032	08%	000	01%	222	59%
2.3.9	OTHER(S)...PLEASE LIST	018	05%	013	03%	006	02%	056	15%
2.4 GENERAL PROCEDURES									
2.4.1	EXCIPIENT ANALYSIS	121	32%	151	40%	066	17%	103	27%
2.4.2	MELTING POINT DETERMINATION	063	17%	165	44%	072	19%	102	27%
2.4.3	MIXED MELTING POINT	051	13%	131	35%	054	14%	135	36%
2.4.4	DISTILLATION	008	02%	040	11%	013	03%	206	54%
2.4.5	TRITRATION	013	03%	046	12%	018	05%	199	53%
2.4.6	SOLUBILITY	073	19%	119	31%	051	13%	121	32%
2.4.7	REFRACTIVE INDEX	026	07%	066	17%	022	06%	185	49%
2.4.8	ORGANIC EXTRACTION	248	65%	213	56%	189	50%	036	09%
2.4.9	DERIVATIZATION	044	12%	097	26%	026	07%	134	35%
2.4.10	PREPARATIVE CHROMATOGRAPHY	120	32%	162	43%	086	23%	083	22%
2.4.11	QUANTITATION	230	61%	203	54%	153	40%	041	11%
2.4.12	OTHER(S)...PLEASE LIST	014	04%	016	04%	011	03%	041	11%

LSD

		A		B		C		D	
2.3 OTHER INSTRUMENTAL METHODS									
2.3.1	ULTRA-VIOLET-VISIBLE	177	47%	193	51%	152	40%	046	12%
2.3.2	INFRARED SPECTROSCOPY	163	43%	194	51%	136	36%	058	15%
2.3.3	FLUOROMETRY	123	32%	170	45%	104	27%	094	25%
2.3.4	NUCLEAR MAGNETIC RESONANCE	008	02%	057	15%	010	03%	203	54%
2.3.5	POLARIMETRY/ORD	017	04%	066	17%	017	04%	192	51%
2.3.6	(GAS CHROMATOGRAPHY)MASS SPEC	105	28%	171	45%	063	17%	099	26%
2.3.7	X-RAY DIFFRACTION	006	02%	041	11%	002	01%	225	59%
2.3.8	RAMAN SPECTROSCOPY	005	01%	029	08%	000	01%	225	59%
2.3.9	OTHER(S)...PLEASE LIST	012	03%	013	03%	006	02%	059	16%
2.4 GENERAL PROCEDURES									

2.4.1 EXCIPIENT ANALYSIS	058	15%	112	30%	040	11%	129	34%
2.4.2 MELTING POINT DETERMINATION	011	03%	074	20%	022	06%	171	45%
2.4.3 MIXED MELTING POINT	010	03%	062	16%	020	05%	186	49%
2.4.4 DISTILLATION	007	02%	032	08%	013	03%	209	55%
2.4.5 TITRATION	009	02%	040	11%	018	05%	196	52%
2.4.6 SOLUBILITY	058	15%	110	29%	045	12%	127	34%
2.4.7 REFRACTIVE INDEX	020	05%	054	14%	024	06%	187	49%
2.4.8 ORGANIC EXTRACTION	225	59%	203	54%	173	46%	038	10%
2.4.9 DERIVATIZATION	034	09%	097	26%	032	08%	132	35%
2.4.10 PREPARATIVE CHROMATOGRAPHY	136	36%	171	45%	095	25%	077	20%
2.4.11 QUANTITATION	130	34%	168	44%	106	28%	071	19%
2.4.12 OTHER(S)...PLEASE LIST	017	04%	017	04%	012	03%	038	10%
2.3 OTHER INSTRUMENTAL METHODS	PCP A		B		C		D	
2.3.1 ULTRA-VIOLET-VISIBLE	270	71%	236	62%	210	55%	016	04%
2.3.2 INFRARED SPECTROSCOPY	270	71%	222	59%	231	61%	018	05%
2.3.3 FLUOROMETRY	013	03%	050	13%	013	03%	189	50%
2.3.4 NUCLEAR MAGNETIC RESONANCE	017	04%	074	20%	014	04%	194	51%
2.3.5 POLARIMETRY/ORD	015	04%	050	13%	009	02%	209	55%
2.3.6 (GAS CHROMATOGRAPHY)MASS SPEC	151	40%	194	51%	080	21%	081	21%
2.3.7 X-RAY DIFFRACTION	013	03%	046	12%	005	01%	222	59%
2.3.8 RAMAN SPECTROSCOPY	004	01%	032	08%	004	01%	223	59%
2.3.9 OTHER(S)...PLEASE LIST	009	02%	013	03%	006	02%	061	16%
2.4 GENERAL PROCEDURES								
2.4.1 EXCIPIENT ANALYSIS	087	23%	135	36%	049	13%	121	32%
2.4.2 MELTING POINT DETERMINATION	028	07%	120	32%	042	11%	132	35%
2.4.3 MIXED MELTING POINT	016	04%	086	23%	032	08%	163	43%
2.4.4 DISTILLATION	010	03%	040	11%	015	04%	206	54%
2.4.5 TITRATION	010	03%	042	11%	018	05%	198	52%
2.4.6 SOLUBILITY	065	17%	121	32%	048	13%	121	32%
2.4.7 REFRACTIVE INDEX	025	07%	059	16%	023	06%	186	49%
2.4.8 ORGANIC EXTRACTION	242	64%	212	56%	187	49%	037	10%
2.4.9 DERIVATIZATION	033	09%	082	22%	024	06%	141	37%
2.4.10 PREPARATIVE CHROMATOGRAPHY	105	28%	153	40%	076	20%	088	23%
2.4.11 QUANTITATION	151	40%	184	49%	117	31%	058	15%
2.4.12 OTHER(S)...PLEASE LIST	008	02%	006	02%	003	01%	038	10%

SECTION 3. TOXICOLOGY

3.1 ALCOHOL								
3.1.1 SAMPLE FORM	A		B		C		D	
3.1.1.1 BLOOD	083	22%	049	13%	054	14%	006	02%
3.1.1.1.1 QUALITATIVE	115	30%	082	22%	088	23%	007	02%
3.1.1.1.2 QUANTITATIVE	133	35%	091	24%	109	29%	005	01%
3.1.1.2 URINE	074	20%	046	12%	050	13%	008	02%
3.1.1.2.1 QUALITATIVE	093	25%	077	20%	078	21%	005	01%
3.1.1.2.2 QUANTITATIVE	110	29%	088	23%	087	23%	005	01%
3.1.1.3 BREATH	052	14%	077	20%	039	10%	027	07%
3.1.1.4 OTHER(S)...PLEASE LIST	016	04%	017	04%	007	02%	007	02%
	004	01%	003	01%	001	01%	002	01%
3.1.2 METHOD(S)	010	03%	011	03%	010	03%	002	01%
3.1.2.1 GAS CHROMATOGRAPHIC/HEAD SPACE	046	12%	075	20%	039	10%	012	03%
3.1.2.1.1 WITH INTERNAL STANDARD	052	14%	079	21%	036	09%	017	04%

		3.1.2.1.2 WITHOUT INTERNAL STANDARD	031	08%	062	16%	029 08%	016 04%
	3.1.2.2	GAS CHROMATOGRAPHIC/DIRECT INJECTION	047	12%	067	18%	035 09%	018 05%
		3.1.2.2.1 WITH INTERNAL STANDARD	063	17%	074	20%	037 10%	014 04%
		3.1.2.2.2 WITHOUT INTERNAL STANDARD	022	06%	057	15%	019 05%	020 05%
	3.1.2.3	DIFFUSION	019	05%	043	11%	011 03%	032 08%
		3.1.2.3.1 TITRATION	031	08%	054	14%	018 05%	038 10%
		3.1.2.3.2 COLORIMETRY	007	02%	047	12%	010 03%	035 09%
	3.1.2.4	ENZYME (ALCOHOL DEHYDROGENASE)	013	03%	073	19%	013 03%	035 09%
	3.1.2.5	DISTILLATION	032	08%	078	21%	017 04%	031 08%
	3.1.2.6	OTHER(S)...PLEASE LIST	003	01%	008	02%	003 01%	017 04%
			000	00%	002	01%	001 00%	005 01%
3.2 DRUGS								
3.2.1	SAMPLE FORM		008	02%	003	01%	005 01%	004 01%
	3.2.1.1	BLOOD	056	15%	045	12%	038 10%	004 01%
		3.2.1.1.1 QUALITATIVE	083	22%	067	18%	058 15%	006 02%
		3.2.1.1.2 QUANTITATIVE	066	17%	061	16%	056 15%	009 02%
	3.2.1.2	URINE	053	14%	044	12%	034 09%	003 01%
		3.2.1.2.1 QUALITATIVE	087	23%	067	18%	058 15%	005 01%
		3.2.1.2.2 QUANTITATIVE	053	14%	057	15%	042 11%	008 02%
	3.2.1.3	OTHER(S)...PLEASE LIST	025	07%	019	05%	009 02%	009 02%
			001	00%	002	01%	001 00%	002 01%
3.2.2	METHOD(S)		001	00%	002	01%	000 00%	003 01%
	3.2.2.1	GAS CHROMATOGRAPHY	054	14%	044	12%	036 09%	004 01%
		3.2.2.1.1 SINGLE COLUMN	067	18%	059	16%	046 12%	005 01%
		3.2.2.1.2 MULTIPLE COLUMNS	047	12%	047	12%	031 08%	012 03%
	3.2.2.2	THIN-LAYER CHROMATOGRAPHY	055	15%	048	13%	035 09%	003 01%
		3.2.2.2.1 SINGLE SYSTEM	057	15%	052	14%	041 11%	003 01%
		3.2.2.2.2 MULTIPLE SYSTEMS	070	18%	054	14%	046 12%	013 03%
	3.2.2.3	FLUOROMETRY	041	11%	053	14%	014 04%	022 06%
	3.2.2.4	RADIO-IMMUNO ASSAY (RIA)	013	03%	050	13%	013 03%	033 09%
	3.2.2.5	ENZYME MULTIPLIED IMMUNO-ESSAY TECH. (EMIT)	019	05%	052	14%	012 03%	030 08%
	3.2.2.6	(GAS CHROMATOGRAPHY)/MASS SPECTROMETRY	038	10%	050	13%	018 05%	024 06%
		3.2.2.6.1 ELECTRON IMPACT (EI)	038	10%	041	11%	019 05%	022 06%
		3.2.2.6.2 CHEMICAL IONIZATION (CI)	019	05%	044	12%	009 02%	019 05%
	3.2.2.7	ULTRAVIOLET-VISIBLE SPECTROSCOPY	078	21%	064	17%	045 12%	009 02%
	3.2.2.8	INFRARED	042	11%	063	17%	025 07%	019 05%
	3.2.2.9	ATOMIC ABSORPTION	019	05%	043	11%	012 03%	034 09%
	3.2.2.10	FREE RADICAL ASSAY TECHNIQUE (FRAT)	006	02%	034	09%	006 02%	039 10%
	3.2.2.11	SPOT TESTS	058	15%	049	13%	029 08%	017 04%
	3.2.2.12	OTHER(S)...PLEASE LIST	011	03%	011	03%	004 01%	009 02%
			004	01%	002	01%	003 01%	003 01%

Appendix #11

REPORT OF THE CRIMINALISTICS CERTIFICATION STUDY COMMITTEE

TO THE ACADEMY OF FORENSIC SCIENCES

CRIMINALISTICS SECTION

February 14, 1979

Several important advances were made during the last year by the Criminalistics Certification Study Committee (CCSC). Since the last business meeting of the AAFS Criminalistics Section in St. Louis, the CCSC has met four times. The progress made at each of these meetings, except the most recent, is documented in detail in the minutes of the CCSC. The minutes of the most recent CCSC meeting held here in Atlanta on Sunday and Monday, February 11-12 will be completed and mailed out soon. The last year's activity will not be presented in detail in this report due to strict time limitations. All interested persons should be receiving copies of the minutes through the regional associations. If you have not been receiving these, contact the Forensic Sciences Foundation, your regional CCSC committee representative, or regional association (see Attachment I for CCSC members).

PEER GROUPS FORMED

Following democratic and effective procedures, each regional association polled the members and as many non-members as possible within that region. The actual methods for the selection of nominees was left up to the regional associations, although the CCSC did review the procedures used only to assure that the methods used were fair to all. Nominations were then made by the regional representatives on the CCSC, thus assuring the optimum geographic distribution in the interests of fairness. Structured resumes of each candidate were received by the CCSC and voted upon at our most recent meeting here. All nominees were unanimously elected. Alternates were also selected as backups in the event any of the original peer group members could not serve. In the interests of continuity, it should be stressed that all alternates will be kept informed of all progress. They will work with and assist the peer group members. However, it is not the intention of the CCSC that there be a free substitution of the alternate for the peer group member.

FIREARMS AND TOOLMARKS PEER GROUP

The selection of the Firearms and Toolmarks peer group was conducted in a similar manner, although the nominees were primarily made by the Governing Board of the Association of Firearms and Toolmark Examiners (AFTE). The Firearms and Toolmarks peer group was selected by the CCSC as the first or pilot peer group because of the fact that AFTE had been working on this problem prior to the first meeting of the CCSC, (actually the second meeting of criminalists under the original FSF grant). Nine members and three alternates were unanimously approved by the CCSC. The Firearms and Toolmarks peer group has met twice. They have made excellent progress to date in setting requirements defining the field. A third peer group meeting has been set for

REPORT OF THE CRIMINALISTICS CERTIFICATION STUDY COMMITTEE

TO THE ACADEMY OF FORENSIC SCIENCES

CRIMINALISTICS SECTION

February 14, 1979

Several important advances were made during the last year by the Criminalistics Certification Study Committee (CCSC). Since the last business meeting of the AAFS Criminalistics Section in St. Louis, the CCSC has met four times. The progress made at each of these meetings, except the most recent, is documented in detail in the minutes of the CCSC. The minutes of the most recent CCSC meeting held here in Atlanta on Sunday and Monday, February 11-12 will be completed and mailed out soon. The last year's activity will not be presented in detail in this report due to strict time limitations. All interested persons should be receiving copies of the minutes through the regional associations. If you have not been receiving these, contact the Forensic Sciences Foundation, your regional CCSC committee representative, or regional association (see Attachment I for CCSC members).

PEER GROUPS FORMED

Following democratic and effective procedures, each regional association polled the members and as many non-members as possible within that region. The actual methods for the selection of nominees was left up to the regional associations, although the CCSC did review the procedures used only to assure that the methods used were fair to all. Nominations were then made by the regional representatives on the CCSC, thus assuring the optimum geographic distribution in the interests of fairness. Structured resumes of each candidate were received by the CCSC and voted upon at our most recent meeting here. All nominees were unanimously elected. Alternates were also selected as backups in the event any of the original peer group members could not serve. In the interests of continuity, it should be stressed that all alternates will be kept informed of all progress. They will work with and assist the peer group members. However, it is not the intention of the CCSC that there be a free substitution of the alternate for the peer group member.

FIREARMS AND TOOLMARKS PEER GROUP

The selection of the Firearms and Toolmarks peer group was conducted in a similar manner, although the nominees were primarily made by the Governing Board of the Association of Firearms and Toolmark Examiners (AFTE). The Firearms and Toolmarks peer group was selected by the CCSC as the first or pilot peer group because of the fact that AFTE had been working on this problem prior to the first meeting of the CCSC, (actually the second meeting of criminalists under the original FSF grant). Nine members and three alternates were unanimously approved by the CCSC. The Firearms and Toolmarks peer group has met twice. They have made excellent progress to date in setting requirements defining the field. A third peer group meeting has been set for

March 3-4, 1979, in Atlanta, Georgia. The peer group hopes at that meeting to resolve, in a fair and equitable manner, their remaining obstacles. Acceptance of these requirements by the nationwide criminalistics community will be a function of how well the peer group is able to resolve these problems. Liaison person with the Firearms and Toolmarks peer group is CCSC committee member Richard Janelli, from the Nassau County, New York Crime Laboratory.

SEROLOGY (BLOOD AND OTHER PHYSIOLOGICAL FLUIDS) PEER GROUP

Two meetings of the Serology peer group are planned during the Spring of 1979. The actual dates and locations of these first two meetings are yet to be selected. Peer group members will be charged with the selection of their own chairman. CCSC committee member Willard C. Stuver, Dade County, Florida Crime Laboratory, has been appointed as the liaison representative with this peer group (see Attachment II for peer group members).

DRUGS/TOXICOLOGY PEER GROUP

Two meetings of this important peer group are also planned. Dates and locations of these meetings have not been finalized. The names of the peer group members are listed at Attachment III. The chairman of the CCSC and interested members of the committee met with the American Board of Forensic Toxicology (ABFT) regarding the certification of criminalists doing toxicological analysis. The results of this meeting will be announced soon.

TRACE EVIDENCE PEER GROUP DEVELOPMENT

Because the present LEAA Grant does not provide for travel funds for the peer groups involving the complex subject of trace evidence, the CCSC has postponed the nomination of national peer group members. However, each of the regional representatives was instructed at the recent meeting to proceed in an effective, democratic manner to find nationally acceptable peer group nominees. By the August meeting of the CCSC each regional representative should have three nominees for the following areas (one for each category combination): (1) arson and explosives, (2) hair and fibers, (3) paint, glass, soils and gunshot residues. (Refer to minutes of the seventh meeting, p. 8.) The target date for the selection and first meeting of the trace evidence peer groups is the Spring of 1980. Concerned members of the nationwide criminalistics community should contact the appropriate regional representative, if interested in being considered for any of the trace evidence category combination peer groups.

THE ROLE OF THE PEER GROUP SUBCOMMITTEES

The role of the peer group subcommittees above is to define acceptable levels of professional competence in the various disciplines of criminalistics and to design a national certification program to determine if candidate practitioners meet these accepted minimum requirements. The target date for the submission of the work products of the Serology and Drug/Toxicology peer group work products to the CCSC is July 15, 1979.

The work products of the peer groups will be reviewed by the CCSC for conformity to the guidelines given them. Following the review process, the work product recommendations will be used by the CCSC to assess the feasibility of a national certification program. The CCSC will construct a proposal on national certification incorporating the peer group proposals and submit the concept to the nationwide criminalistics community for approval in the Fall of 1979.

THE ROLE OF CCSC VIS-A-VIS THE PEER GROUPS

A representative from the CCSC will sit on each peer group committee, acting as liaison officer. The representatives will be responsible for informing the peer groups as to the CCSC policies and guidelines and for communication between the various peer groups. The CCSC will oversee the efforts of all peer groups and retains the authority to modify the recommendations of the peer groups if needed to fit them into the overall certification proposal.

In establishing the minimum qualifications for candidates, the peer groups will meet the criteria outlined by the CCSC (5th Meeting Minutes, April 1978):

Is the proposed requirement fair? necessary? relevant? reasonable?
Does it realistically reflect current practice and would it be acceptable to the majority of practitioners?

The peer groups will consider the following types of qualifications in setting baseline requirements and will outline specific requirements in each of the categories which they deem important:

- formal education
- on-the-job training (formal and informal)
- court experience
- current practice
- work experience
- publications
- professional activities
- casework portfolio

In establishing the minimum qualifications, the peer groups may use the following criterion: What are the baseline minimum requirements in a crime laboratory for a person to be given responsibility to conduct this type of examination without immediate supervision and to be prepared to qualify and testify properly in court?

The CCSC questionnaire results will be utilized by the peer groups to assist in the determination of these requirements.

PROPOSED BYLAWS FINALIZED

The bylaws to be used by the American Board of Criminalistics, Inc., (ABC) were revised extensively from those originally proposed. The revisions were made primarily to make the ABC more responsive to the needs of the nationwide criminalistics community. All membership and Board meetings would be open (when reasonable and practical) to

representatives of forensic science organizations, laboratory systems, interested individuals, etc. These non-voting attendees would be encouraged to express the views of their organizations on issues of interest to the Board. The Bylaws and Articles of Incorporation have been reviewed by legal counsel and have been found to meet all relevant IRS and governmental requirements.

The CCSC plans to include full copies of the proposed Bylaws and Articles of Incorporation of the ABC in the voting package this Fall. All persons in the nationwide criminalistics community are urged to read the Bylaws. (The concepts of the changes made are to be found on pages 7 and 8 of the Minutes of the Sixth Meeting of the CCSC.)

PROJECTED TENTATIVE COSTS OF CERTIFICATION

It is the consensus of the CCSC at the present time that the minimum costs to the individuals applying for certification will be as follows:

Basic Cost

Application fee (non-refundable)	$75
Examination fee for one specialty area (for example, firearms)	50
Tentative Total Cost for Application, including certification in one specialty area such as firearms	$125

(If the initial certification is by "grandfathering" the cost to the individual is the same for one specialty area including the privilege of taking the specialty certification examination when it is offered - most likely within three (3) years.) $125

Additional Examinations

The CCSC has tentatively determined that examinations will be offered in : 1) firearms, 2) serology, 3) drugs and 4) trace evidence. Within the trace area, three exams will be offered: a) arson and explosives; b) hairs and fibers; c) paint, glass, soils and gunshot residues. The charge for examinations in the first three general categories will be $50/examination; however, in the trace evidence area, the first exam would cost $50, the second $50, but if the applicant wishes to take all three trace examinations, the cost would be a flat $100 (a savings of $50).

Examples of fees for applicants wishing to be certified in more than one specialty area follows:

Total Cost for Application, including certification in one specialty areas such as firearms	$125
Additional cost for exam in serology, for example	+ 50
Subtotal - includes certification in firearms and serology, for example	$175
Additional cost for exam in drugs, for example	+ 50
Subtotal - includes certification in three specialty areas: firearms, serology & drugs	$225
Additional cost for certification in one trace evidence area, such as arson and explosives	+ 50
Subtotal - includes certification in firearms, serology, drugs and one trace area	$275
Additional cost of one or two additional trace examinations	+ 50
Total Maximum Cost for certification in all areas of criminalistics	$325

CALENDAR

In summary, the CCSC proposes to follow the target dates below:

Group	Date	Agenda
Peer Group Meetings:	To be held About:	Requirements for Certification, requirements for recertification, testing mechanism and form of examination, grandfathering, etc.
1) Firearms	March 3-4, 1979	
2) Drugs	March 15	
3) Serology	April 15	
Peer Group Meetings:	To be held About:	Continuing discussions and preparation of final package for CCSC
1) Firearms	May 12, 1979	
2) Drugs	June 1	
3) Serology	June 15	
Serology, Drugs & Firearms	July 15, 1979	Submission of final packages to the CCSC
CCSC Meeting	August 2-4, 1979	Review the peer group final packages for criminalistics community

Group	Date	Agenda
CCSC	About August 20	CCSC package ready to mail to the criminalistics community
All regional forensic assoc.	September - October 1979	Package presented to all regional associations
National criminalistics community	About November	Balloting takes place
CCSC Meeting	About December	Final meeting and discussion of results
ABC, Inc. ?	January 1980	First organizational meeting of the American Board of Criminalistics, Inc. ?

The CCSC must proceed as though we intend to pursue certification for certain in order to make progress to attain our final goals of determining desirability and feasibility. If the peer groups make it appear that it will not be feasible or too costly to persons who will be applicants for certification, the CCSC will not follow the calendar above until the matter is resolved.

All persons in the criminalistics community are urged to discuss any questions or problems they find in this report or any work product of the CCSC with any member of the committee. This is your committee. We need your input to complete this study.

Copies of the full minutes of the most recent and all other meetings are available to all persons who request them.

Respectfully submitted,

W. J. Cadman, Chairman
Criminalistics Certification
Study Committee

ATTACHMENT I

CRIMINALISTICS CERTIFICATION STUDY COMMITTEE

ROSTER

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ATTACHMENT II

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(Formed 4/25/78, Nashville, Tenn.)

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CRIMINALISTICS CERTIFICATION STUDY COMMITTEE (CCSC)

Guidelines for Peer Group Subcommittees

Adopted in Atlanta, Georgia, February 12, 1979

I BACKGROUND

The role of the Peer Group Subcommittees is to define acceptable levels of professional competence in the various disciplines of criminalistics and to design a national certification program to determine if candidate practitioners meet these accepted minimum requirements. The target date for the submission of the peer group final work products to the CCSC is July 15, 1979.

The work products of the Peer Group Subcommittees will be reviewed by the CCSC for conformity to the guidelines set forth below. Following the review process, the subcommittees' recommendations will be used by the CCSC to assess the feasibility of a national certification program. The CCSC will construct a proposal on national certification incorporating the Peer Group proposals and submit the concept to the nationwide criminalistics community for approval, in the Fall of 1979.

The Peer Group Subcommittees should communicate with each other regularly during their deliberations and attempt to adopt similar approaches to the testing process. The Subcommittees are also asked to actively seek and accept input from the various regional groups represented on the CCSC and from non-represented segments of the forensic community.

In addressing their task, the Peer Group Subcommittees should bear in mind the following definitions adopted by the CCSC for the purposes of this study (Chicago, Sept. 1977):

> Certification is a voluntary process of peer review whereby a practitioner is recognized as having accumulated the qualifications necessary to practice in one or more particular discipline of criminalistics. The objectives of certification are:
>
> 1. To set and measure levels of acceptable professional practice;
>
> 2. To guide professionals in attainment of accepted levels of competence;
>
> 3. To provide a means of evaluating the competence of practitioners;
>
> 4. To provide a formal process for recognition of practitioners who have met an accepted level of competence.

Criminalistics is that profession and scientific discipline directed to the recognition, identification, individualization, and evaluation of physical evidence by the application of natural science to law-science matters.

II PEER GROUP DIVISIONS

The four national Peer Group Subcommittees have been selected by the CCSC from nominations submitted by the regional organizations. The resumes of the nominees were carefully screened by the CCSC and selections were made based on the professional competence of the candidates and the need for a broad base of geographical and philosophical representation.

The Peer Group Subcommittees are charged with considering possible certification testing in a total of sixteen evidence categories, selected by the CCSC as being most commonly addressed by criminalists and most suitable for certification (New Orleans, April 1978).

FIREARMS PEER GROUP (AFTE)

1. Firearms Examination
   a. Operability of firearms
   b. Bullet and cartridge case comparison
   c. Powder and shot patterns
   d. Weapon determination from discharge case or bullet
2. Serial number restoration
3. Toolmarks

SEROLOGY PEER GROUP

4. Blood
   a. Preliminary examination, species origin, antigen/antibody identification
   b. Polymorphic protein characterization
5. Other physiological fluids examined by serological techniques (semen, saliva, feces, etc.)
   a. Identification of substance by chemical tests and other examinations
   b. Genetic marker characterization

DRUG/CHEMISTRY PEER GROUP

6. Controlled substances (solid dosage forms) including marijuana

TRACE EVIDENCE PEER GROUP

7. Arson materials
8. Explosives and their residues
9. Hair- characterization, animal or human, individualization
10. Natural and synthetic fibers, fabrics included
11. Paint
12. Glass
13. Soils
14. Gunshot residue on hands

III ROLE OF THE CCSC VIS-A-VIS THE PEER GROUPS

A representative from the CCSC will sit on each Peer Group committee, acting as liaison officer. The representatives will be responsible for informing the Subcommittees as to CCSC policies and guidelines and for communication between the various subcommittees. The CCSC will oversee the efforts of all the Peer Groups and retains the authority to modify the recommendations of the Peer Groups, if needed, to fit them into the overall certification proposal.

IV PEER GROUP OBJECTIVES

Each Peer Group Subcommittee will have the following objectives:

A. DETERMINE THE TYPE AND SCOPE OF EVIDENCE EXAMINATIONS TO BE INCLUDED IN CERTIFICATION.

Within the several categories outlined by the CCSC as being in the purview of each Peer Group, the subcommittees must determine which should be tested, how many different tests might be needed (or conversely, how many categories should be included in one test), and which areas should not be included in the testing. Data gathered in the national CCSC questionnaires on serology, hairs, and fibers, and drugs should be used as an aid by the Peer Groups in deciding the scope of the examinations.

B. DETERMINE THE MINIMUM QUALIFICATIONS THE APPLICANT MUST POSSESS TO BE ELIGIBLE TO TAKE THE CERTIFICATION EXAMINATION.

The CCSC considers it likely that grandfathering for an interim period (e.g., three years) will be necessary. However, all grandfathered individuals would be required to take a certification examination at the end of the interim period. If grandfathering is adopted, the requirements for grandfathering will be the same as the criteria for eligibility to take the certification examination.

In establishing the minimum qualifications for eligibility, the Peer Groups should keep in mind the following criteria outlined by the CCSC (New Orleans, April 1978):

> Is the proposed requirement fair? necessary? relevant? reasonable?
>
> Does it realistically reflect current practice and would it be acceptable to the majority of practitioners?

The Peer Groups should consider the following types of qualifications in setting baseline requirements and should outline specific requirements in any of the categories which they deem important:

- formal education
- formal and informal on-the-job training
- court experience
- current practice
- work experience
- publications
- professional activities
- casework portfolio

In establishing the minimum qualifications, it may be helpful to use the following criterion: What are the baseline, minimum requirements in a crime laboratory for a person to be given responsibility to conduct this type of examination without immediate supervision and to be prepared to qualify and testify properly in court? The CCSC questionnaires also contain data on these points.

C. DETERMINE THE TYPE OF TEST(S) TO BE GIVEN AND PREPARE A SAMPLE EXAMINATION.

The CCSC has determined that both proficiency and written testing should be included in the certification process (Chicago, Sept. 1977). The applicant must meet the eligibility requirements established by each Peer Group prior to taking the examination(s).

The tests adopted must be economically feasible and capable of being administered and graded objectively and uniformly nationwide. The CCSC has suggested the following sequence of testing for the Peer groups to consider (Miami, Dec. 1977):

1. Written examination (a) containing objective questions on the specific subject matter of the discipline in question as well as (b) some questions fundamental to all categories of criminalistics (see below). Further testing of the candidate would be contingent on passing this written examination.

2. Proficiency test consisting of analysis and report by the applicant on simulated case material (analysis could be performed in applicant's laboratory, certified by lab director).

3. Written or oral presentation of proficiency test results including an in-depth explanation and justification of the methodology used, comparison standards, potential interferences, reasons for using the method selected and the advantages and disadvantages of alternative approaches, evaluation of the significance of the results in the context of a hypothetical case situation. (Test could be given according to fixed national guidelines by trained peer examiners in local area)

In addition to testing specific knowledge in the discipline in question, the written examination must include questions in general areas, framed at a level appropriate to the type of evidence being examined. See the attached "List of Common Skills" adopted by the CCSC in Miami, Dec. 1977, for more detail. The areas which must be included in all examinations are:

1. Basic principles of identification and individualization
2. Scientific methodology
3. Evidence handling
4. Basic microscopy
5. Communication
6. Legal aspects and court testimony
7. Literature of criminalistics
8. General knowledge of criminalistics

In preparing the sample examination, it may be helpful to outline in detail the formal training (possibly including bibliography) necessary to prepare a candidate for the examination process, i.e., outline what he is expected to know and be able to do and what sources he must study to acquire these abilities. This outline would then suggest examination questions and could also serve as a training guide (SAFS publication is excellent guide to this approach).

D. DETERMINE THE LOGISTICS OF CONDUCTING AND ADMINISTERING THE PROPOSED CERTIFICATION PROGRAM.

The Subcommittees should consider (1) the potential cost of the proposed tests, (2) frequency and scope of recertification testing, and (3) ways to utilize the regional organizations and other sources of volunteer support in the testing process (e.g., making up proficiency test samples, conducting oral examinations). The CCSC has discussed the possibility of having one set examination fee, with smaller fees added for each additional examination. The Subcommittees should consider ways of combining several examinations to suit the applicants' needs and make the testing process more efficient and less costly.

ARTICLES OF INCORPORATION

OF

AMERICAN BOARD OF CRIMINALISTICS, INC.

We, the following named persons,

G. E. Borst, Jr.
717 Barr Building
910 17th Street, N. W.
Washington, D. C. 20006

Janice K. Ellingson
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Hyman J. Cohen
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910 17th Street, N. W.
Washington, D. C. 20006

all natural persons of the age of twenty-one or over and citizens of the United States, desiring to act as incorporators of a corporation pursuant to the provisions of Title 29, Chapter 10, District of Columbia Code 1973 edition, as amended, do declare and certify as follows:

FIRST: The name of the corporation is AMERICAN BOARD OF CRIMINALISTICS, INC.; hereafter sometimes referred to as the "Board" or "Corporation."

SECOND: The corporation is organized exclusively for scientific, educational, literary, and charitable purposes, and its objects and purposes, in the public interest, shall be:

To encourage the study of, improve the practice of, establish and enhance standards for, and advance the science of criminalistics.

To encourage and promote adherence to high standards of ethics, conduct, and professional practice of criminalistics.

To grant and issue certificates, or other recognition, in cognizance of special qualifications in criminalistics to voluntary applicants who conform to the standards established by the Board, and, who in accordance with the Bylaws and Rules and Regulations of the Board, have established their fitness and competence therefor.

To establish, maintain, alter, amend, and repeal rules and regulations, standards, qualifications, and requirements for the granting, issuing and renewal of certification or other recognition.

To exercise and enjoy all powers, rights, and privileges granted to or conferred upon corporations of similar character by the laws of the District of Columbia now or hereafter in force.

To do any or all of the things herein set forth as principal, agent or otherwise, alone or in company with others.

The objects and purposes specified herein shall be regarded as independent objects and purposes and, except where otherwise expressed, shall in no way be limited or restricted by reference to or inference from the terms of any other provision of these Articles of Incorporation.

The foregoing shall be construed both as objects and powers and the enumeration thereof shall not be held to limit or restrict in any manner the general powers conferred on the corporation by the laws of the District of Columbia.

THIRD: The corporation is not organized for pecuniary profit and shall not have authority to issue capital stock. No part of the net earnings of the corporation shall inure to the benefit of, or be distributed to its trustees, directors, officers, or other private persons, except that the corporation shall be authorized and empowered to pay reasonable compensation for services rendered and to make payments and distribution in furtherance of the purposes set forth in ARTICLE SECOND hereof. Notwithstanding any other provision of these Articles, the corporation shall not carry on any activities not permitted to be carried on by a corporation exempt from federal income tax under Section 501(c) (6) of the Internal Revenue Code of 1954 or the corresponding provision of any future United States Internal Revenue Law.

FOURTH: The duration of the corporation shall be perpetual.

FIFTH: Membership in the corporation shall be limited to professional organizations that are considered representative of a substantial number of individuals who practice in the field of criminalistics, within a given geographical area (for example, the California Association of Criminalists); or such professional organization that is considered to represent a substantial number of those individuals who practice within a specific field or fields of criminalistics (e.g., the Association of Firearms and Toolmark Examiners).

The initial members of the corporation shall be the Southern Association of Forensic Scientists, Northeast Association of Forensic Scientists, Northwest Association of Forensic Scientists, Midwestern Association of Forensic Scientists, California Association of Criminalists, Mid-Atlantic Association of Forensic Scientists, and the Southwestern Association of Forensic Scientists.

The membership may, from time to time, by two-thirds (2/3) vote accept into full membership any organization that meets the above requirements. The membership may also remove any member from the corporation for cause by unanimous vote of non-charged members. Non-payment of the required yearly fee is to be considered sufficient cause. The yearly fee is to be determined at the annual meeting of the members. Each member organization is required to select from its ranks a person to be its representative of record and who shall exercise the member's voting rights and represent the member at meetings.

A majority of the members eligible to vote shall constitute a quorum for the conduct

of business at a membership meeting.

Each member organization should recognize the advantage of selecting a representative who can and will serve for two (2) successive years. In order to assist continuity, it would be advantageous if such terms began in odd and even years according to the order in which the members are listed in the initial records of the corporation and followed by the order in which members were added to the records.

The annual membership meeting shall be held in January of each year. Time and place are to be determined by the Chairman sixty (60) days in advance. The Chairman or a majority of members can call a special meeting upon reasonable notice.

SIXTH: The Board of Directors shall consist of two (2) classes of directors, each having an equal vote.

The first class shall be called "membership" class and consist of a number of directors equal to the number of members of the corporation. These directors are elected by the members at the annual meeting and whose terms of office will be one year. One (1) vote will be sufficient to elect a Membership Director of the Board.

The second class shall be called "at-large" and total three in number and be elected by the members at the annual meeting. "At-large" Directors' terms of office will be three years (staggered).

The Board shall have the power to establish staff positions, such as executive secretary, legal counsel, etc., and fill such positions with non-diplomates. Such staff positions shall not have the right to vote.

A change in the number of classes or methods of election of directors shall only be made by amendment of the Articles of Incorporation.

All membership and board meetings shall be opened (when reasonable and practicable) to representatives of persons interested in such proceedings. Such persons are forensic science organizations, laboratory systems, laboratories, professional societies, etc. The Chairman shall allow and, in fact, should solicit such attendees to reasonably express the views of their organizations on issues of interest to the Board. Such attendees shall not have the power to vote.

SEVENTH: The territory in which the operations of the corporation are to be conducted is the United States of American and its territories and possessions, and in such other places as the Board of Directors may from time to time authorize and direct. Meetings of the Board of Directors and committees may be held within or without the District of Columbia. Subject to any provision contained in the applicable statutes, the corporation may have an office or offices and keep its books within or without the District of Columbia at such place or places as may, from time to time, be designated by the Directors or in the Bylaws of the corporation.

EIGHTH: The private property of the Directors of the corporation shall not be subject to the payment of corporate debts to any extent whatever.

NINTH: In the event of and upon the dissolution of the corporation, the Board of Directors shall, after paying or making provisions for the payment of all of the liabilities of the corporation, dispose of all of the assets of the corporation exclusively for the purposes of the corporation in such manner, or to such organization or organizations organized and operated exclusively for charitable, educational, religious, or scientific purposes as shall at the time qualify as an exempt organization or organizations under Section 501(c) (6) of the Internal Revenue Code of 1954, as the Board of Directors shall determine. Any such assets not so disposed of shall be disposed of by the Superior Court of the District of Columbia or such other City or County Court where the principal office of the corporation is then located, exclusively for such purposes or to such organization or organizations as said Court shall determine, which are organized and operated exclusively for such purposes.

TENTH: The corporation's initial registered agent shall be G. E. BORST, JR. The registered office of the corporation in the District of Columbia is c/o G. E. Borst, Jr., 910 17th Street, N. W., Suite 717, Washington, D. C. 20006.

ELEVENTH: The corporation shall have, and may exercise all of the corporate powers enumerated in Title 29, Chapter 10 of the District of Columbia Code, 1973 edition, as amended, provided that none of the assets, funds or income of the corporation shall inure to the benefit of any private individual and no substantial part of the activities of the corporation shall consist of carrying on propaganda, or otherwise attempting, to influence legislation, and the corporation shall not participate in or intervene in (including by the publishing or distributing of statements), any political campaign on behalf of any candidate for public office, and further provided that the corporation may do any and all things necessary or advisable for or incident to carrying out the aforesaid purposes of the corporation, but shall not otherwise engage in activities which in themselves are not in furtherance of one or more exempt purposes except as the same do not represent a substantial part of its activities.

TWELFTH: A vacancy in the office of a Director shall be filled by vote of the Members as soon as practicable after the vacancy occurs and for the unexpired term of said office. Such election may be conducted by mail ballot.

THIRTEENTH: Any Director may be removed for cause by a two-thirds (2/3) affirmative vote of the Members.

FOURTEENTH: These Articles of Incorporation and the Bylaws of the American Board of Criminalistics may be amended, altered, or repealed, in whole or in part only in the

following ways:

(a) Upon two-thirds (2/3) affirmative vote of the members present at a meeting of the members at which a quorum is present, provided that a copy of the proposed change(s) has been submitted to all members at least thirty (30) days prior to such meeting;

(b) Upon two-thirds (2/3) affirmative vote by mail ballot of the members within sixty (60) days after a copy of the proposed change(s) has been submitted to all members;

(c) By the unanimous written consent of all members;

(d) Notice to the of record representative of a member is deemed notice to the member.

FIFTEENTH: The corporation reserves the right to amend, alter, change, or repeal any provision contained in the Articles of Incorporation, in the manner now or hereafter prescribed by statute, and rights conferred upon the corporation and the Board of Directors herein are granted subject to this reservation.

IN WITNESS WHEREOF, we have executed these Articles of Incorporation in duplicate original.

_____
HYMAN J. COHEN

Subscribed and sworn to before me this _____ day of _____, 1979.

_____
NOTARY PUBLIC

My Commission expires:

_____

_____
G. E. BORST, JR.

Subscribed and sworn to before me this _____ day of _____, 1979.

_____
NOTARY PUBLIC

My Commission expires:

_____

_____
JANICE K. ELLINGSON

Subscribed and sworn to before me this _____ day of _____, 1979.

_____
NOTARY PUBLIC

My Commission expires:

_____

AMERICAN BOARD OF CRIMINALISTICS, INC.

BYLAWS

ARTICLE I

Definitions

Section 1. All definitions of terms and words herein, unless applicable law otherwise requires, shall be as defined by the Articles of Incorporation, the Bylaws, or the Board of Directors, in that order of precedence.

Section 2. For purposes of this organization, criminalistics is defined as "that profession and scientific discipline directed to the recognition, identification, individualization, and evaluation of physical evidence by application of the physical and natural sciences to law-science matters."

ARTICLE II

Name and Purposes

Section 1. Name. The name of this organization shall be the AMERICAN BOARD OF CRIMINALISTICS, INC., hereinafter referred to as the "Board" or the "Corporation."

Section 2. Purposes. The purposes of the Corporation, in the public interest, shall be:

(a) To encourage the study of, improve the practice of, establish and enhance standards for, and advance the science of criminalistics.

(b) To encourage and promote adherence to high standards of ethics, conduct, and professional practice in criminalistics.

(c) To grant and issue certificates, and/or other recognition, in cognizance of special qualifications in criminalistics to voluntary applicants who conform to the standards established by the Board and who have established their fitness and competence therefor.

(d) To cooperate with the several branches of federal and state governments and appropriate governmental and private agencies and organizations, and to secure general recognition and acceptance of Certification by the American Board of Criminalistics, Inc.

(e) To maintain and furnish lists of individuals who have been granted Certificates by the Board (hereinafter referred to as Diplomates) to interested persons.

(f) To engage in any activities, not prohibited by law or the Board's Articles of Incorporation, which may contribute to the above purposes or which are in furtherance of the objects and purposes enumerated in the Articles of Incorporation.

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ARTICLE III

Sponsors

Section 1. Responsibility of Sponsors. The principal role of a sponsoring organization is endorsement and support of the objects and purposes of the Board and recognition of the Board's activities and programs. A sponsoring organization shall not have any obligations for financial support of the Board and shall not, by virtue of its sponsorship of the Board, have authority over or responsibility for any of the Board's operations or activities.

Section 2. Initial Sponsors. It is proposed that the Board initially be sponsored by:

American Academy of Forensic Sciences
American Society of Crime Laboratory Directors
Association of Firearms and Toolmark Examiners
California Association of Criminalists
Canadian Forensic Science Society
Mid-Atlantic Association of Forensic Scientists
Midwestern Association of Forensic Scientists
Northeastern Association of Forensic Scientists
Northwest Association of Forensic Scientists
Southern Association of Forensic Scientists
Southwestern Association of Forensic Scientists

Section 3. Other Sponsors. The Membership may, by two-thirds (2/3) affirmative vote of the Directors, invite organizations having a legitimate interest in Criminalistics, to become sponsors of the Board.

Section 4. Termination of Sponsorship. A sponsoring organization may, in its discretion, terminate its sponsorship of the Board upon written notice to the Board. Such sponsorship may also be terminated by a two-thirds (2/3) affirmative vote of the Directors.

ARTICLE IV

Offices

Section 1. Office of Record. The office of record of this Board shall be in the City of Washington, District of Columbia at 910 17th Street, N. W., Washington, D. C. 20006.

Section 2. Other Offices. The Board may have such other offices at such locations, within or without the District of Columbia, as the Board of Directors may, from time to time, designate.

ARTICLE V

Officers

Section 1. Officers of the Corporation. The officers of the Corporation shall be a President, a Vice President, a Secretary and a Treasurer.

They shall be elected annually by the Board of Directors from its membership.

Section 2. Officers of the Board of Directors. The officers of the Corporation shall serve, in the same respective capacities, as officers of the Board of Directors of the Corporation. The President of the Corporation shall also serve as Chairman of the Board of Directors.

Section 3. Functions and Duties. The functions and duties of the President, Vice President and Treasurer shall be such as usually and customarily pertain to their respective offices, and also such other functions and duties as may, from time to time, be delegated or designated by the Board of Directors or as are herein prescribed. The Chairman shall be the Chief Executive Officer of the Board, the President of the Corporation shall chair all membership and Board meetings.

ARTICLE VI

Membership

Section 1. Membership in the corporation shall be limited to professional organizations that are considered representative of a substantial number of individuals who practice in the field of criminalistics, within a given geographical area (for example, the California Association of Criminalists) - or such professional organization that is considered to represent a substantial number of those individuals who practice within a specific field or fields of criminalistics (e.g., the Association of Firearms and Toolmark Examiners).

The initial members of the corporation shall be: Southern Association of Forensic Scientists, Mid-Atlantic Association of Forensic Scientists, Northeastern Association of Forensic Scientists, Northwest Association of Forensic Scientists, Midwestern Association of Forensic Scientists, California Association of Criminalists, and the Southwestern Association of Forensic Scientists.

Section 2. Privileges and Duties. The membership may, from time to time, by two-thirds (2/3) vote to accept into full membership any organization that meets the above requirements. The membership may also remove any member from the corporation for cause by unanimous vote of the non-charged members. Non-payment of the required yearly fee is to be considered sufficient cause. The yearly fee is to be determined at the annual meeting of the members. Each member organization is required to select from its ranks a person to be its representative of record and who shall exercise the member's voting rights and represent the member at meetings.

A majority of the members shall constitute a quorum for the conduct of business at a membership meeting.

Each member organization should recognize the advantage of selecting a representative who can and will serve for two (2) successive years. In order to assist in continuity, it would be advantageous if such terms began in odd and even years according to the order in which the members are listed in the initial records of the corporation and followed by the order in which members were added to the records.

The annual membership meeting shall be held in January of each year. Time and place are to be determined by the Chairman 60 days in advance. The Chairman or a majority of members can call a special meeting upon 30 days notice.

ARTICLE VII

Board of Directors

Section 1. Authority. The governing body of the Corporation shall be a Board of Directors, which shall be empowered to have, hold, control, manage and administer all of the property, funds, business, affairs and operations of the Corporation pursuant to its Articles of Incorporation, with authority to do everything necessary and desirable in the conduct of the affairs and business of the Corporation and in accordance with these Bylaws.

Section 2. Composition. The Board of Directors shall consist of two (2) classes of directors, each having an equal vote.

The first class shall be called "membership" and consist of a number of directors equal to the number of members of the corporation. These directors are elected by the members at the annual meeting and whose terms of office will be one year. One (1) vote will be sufficient to elect a Membership Director of the Board.

The second class shall be called "at-large" and total three in number and be elected by the members at the annual meeting. "At-large" Directors' terms of office will be three years (staggered).

Section 3. Qualifications of Directors.

(a) Directors, whether elected "at-large" or "membership" shall be chosen with due regard for their general attainments and their professional qualifications and experience in criminalistics and/or closely related fields.

(b) Except for the initial Board of Directors, every person elected as a Director shall be a Diplomate of this Board.

(c) Any Diplomate of the Board may be elected as a director at-large of the Board of Directors whenever an eligible vacancy exists.

Section 4. Duties and Functions. The duties and functions of the Board of Directors shall be as follows:

(a) The Board of Directors shall exercise control over the affairs and operations of the Board.

(b) The Board of Directors shall be charged with the responsibility of establishing professional standards for criminalistics in accordance with the Articles of Incorporation and these Bylaws. These standards shall not be discriminatory and shall apply on an equal basis to all persons applying for Certification.

(c) The Board of Directors shall hold at least (1) meeting annually and may hold additional meetings on reasonable notice upon the call of the Chairman of the Board or upon the written request of a majority of the Directors.

(d) The Board of Directors may, from time to time, designate qualified persons (who need not be Directors) or organizations to act on behalf of the Board in performing such duties and functions as the Board may direct. Such persons and organizations may be compensated for their services and reimbursed for the actual and necessary expenses incurred in the discharge of such duties and functions, and shall serve at the pleasure of the Board of Directors.

(e) The Board shall have the power to establish staff positions, such as executive secretary, legal counsel, etc., and fill such positions with non-diplomates. Such staff positions shall not have the right to vote. Such staff may be compensated for their services and reimbursed for the actual and necessary expenses incurred in the discharge of such duties and functions, and shall serve at the pleasure of the Board of Directors.

(f) A change in the number of classes or method of election of directors shall only be made by amendment of the Articles of Incorporation.

(g) All membership and board meetings shall be opened (when reasonable and practicable) to representatives of persons interested in such proceedings. Such persons are forensic science organizations, laboratory systems, laboratories, professional societies, other certifying boards, in particular, the American Board of Forensic Firearms and Toolmark Examiners, etc. The Chairman shall allow and, in fact, should solicit such attendees to reasonably express the views of their organizations on issues of interest to the board. Such attendees shall not have the power to vote.

ARTICLE VIII

Committees

Section 1. General. The Board of Directors may, by resolution adopted by a majority of the Directors in office, designate and establish, and determine the scope of authority, functions and duties of, such standing and special committees as, from time to time, it deems necessary. Peer group committees are examples of such committees.

Section 2. Composition. Each standing or special committee shall consist of two (2) or more persons, as designated by the Board of Directors. The Chairman shall be an ex-officio member of all committees.

Section 3. Appointment and Authority. The Chairman and other members of each standing or special committee, unless otherwise provided herein, shall be appointed by the Chairman of the Board. Such appointments may be overturned by two-thirds (2/3) vote of the Board of Directors. Every committee may, unless otherwise provided herein, exercise the authority of the Board of Directors in the manner and to the extent provided for in the resolution establishing the committee. Peer group committees will elect their own chairmen. Such chairmen may be removed by two-thirds (2/3) vote of the Board of Directors.

Section 4. Term of Office. Unless otherwise provided herein or in the resolution of the Board of Directors establishing a standing or special committee, the Chairman and other members of every standing or special committee shall serve one (1) year terms and be eligible for reappointment.

ARTICLE IX

Elections and Terms of Office

Section 1. Election of Officers. The Board of Directors shall annually elect from its membership a President, a Vice President, a Secretary and a Treasurer. The President shall also be Chairman of the Board of Directors. The election shall be by ballot, and a majority of votes cast shall be required to elect an officer.

Section 2. Officers' Terms of Office. The officers shall take office immediately following their election, and each shall hold office for one (1) year, or until his or her successor has been duly elected and qualified.

Section 3. Vacancies among Officers. The Vice Chairman shall fill a vacancy in the office of Chairman occurring during his or her term of office as Vice Chairman. Other vacancies among officers shall be filled by election by the Board of Directors from its membership. Such election may be conducted by mail ballot.

Section 4. Election of Directors. Prior to the annual meeting of the Board of Directors, the Board shall solicit nominations from the designated membership, to fill eligible vacancies on the Board of Directors and supply such nominations to the membership at least 30 days prior to the membership meeting where such election will be held.

Section 5. Term of Office of Directors. The initial at-large Directors shall be designated to hold terms of office of one (1) year, two (2) years, and three (3) years, respectively. Thereafter, the terms of all at-large Directors shall be three (3) years, unless otherwise specified herein. There shall be no limit upon the number of terms, consecutive or otherwise, which a Director at-large may serve; nor shall prior service as a member-Director be a bar to election as a Director at-large. Each Director's term of office shall commence following election and shall end when his or her successor has been duly elected and qualified.

Section 6. Vacancies among Directors. A vacancy in the office of a Director shall be filled by vote of the members as soon as practicable after

the vacancy occurs and for the unexpired term of said office. Such election may be conducted by mail ballot.

Section 7. Removal of a Director. Any Director may be removed for cause by a two-thirds (2/3) affirmative vote of the Members.

ARTICLE X

Indemnification and Surety

Section 1. Indemnification. The Corporation shall indemnify any person made a party to any action, suit or proceeding, by reason of the fact that such person, or such person's testator or intestate, is or was a Director, officer or employee of the Corporation, or of any corporation which such person served as such at the request of the Corporation, against the reasonable expenses, including attorneys' fees actually and necessarily incurred by such person in connection with the defense of such action, suit or proceeding, or in connection with any appeal therein, except in relation to matters as to which it shall be adjudged in such action, suit or proceeding that there was negligence or misconduct in the performance of such person's duties. The Corporation may also reimburse to any such Director, officer or employee the reasonable costs of settlement of any such action, suit or proceeding, if it shall be found by a majority of a committee composed of the Directors not involved in the matter in controversy (whether or not a quorum) that it was in the interests of the Corporation that such settlement be made and that such Director, officer, or employee was not guilty of negligence or misconduct. Such rights of indemnification and reimbursement shall not be deemed exclusive of any other rights to which such Director, officer or employee may be entitled apart from the provisions of this section.

Section 2. Surety. The Board of Directors may, in their discretion, procure or cause to be procured, at the Corporation's expense, appropriate liability insurance coverage for the Board's Officers, Directors, agents and employees.

Section 3. Fidelity Bonds. The Treasurer of the Board and such other Officers, Directors, agents and employees of the Board as the Board of Directors may, from time to time, determine may be required to furnish, at the expense of the Corporation, an appropriate fidelity bond approved by the Board of Directors, in such sum as the Board of Directors shall prescribe.

ARTICLE XI

Meetings and Operations

Section 1. Annual Meeting. The annual meeting of the Board of Directors shall be held at the call of the Chairman, at a location designated by him or her within or without the District of Columbia within 30 days after the membership meeting. Notice of the annual Board of Directors meeting shall be given to each Director at least thirty (30) days before the meeting date, unless waived prior to or at the meeting. An annual meeting may be conducted by mail or by conference call upon the written consent of all of the Directors in office.

Section 2. Special Meetings. Special meetings of the Board of Directors may be called by the chairman, or upon the written request of a majority of the Directors in office, on a date and at a time and location to be designated by the Chairman, within or without the District of Columbia. Notice of a special meeting shall be given to each Director at least fifteen (15) days before the meeting date, with information regarding the subject(s) to be considered.

Section 3. Quorum. A quorum for all purposes herein, unless otherwise provided, shall consist of a majority of the Directors. In the event less than this number are present at a meeting, the Chairman may adjourn the meeting, from time to time, until a quorum is present. No Director shall be entitled to vote through use of a proxy.

Section 4. Voting at Meetings. Unless otherwise stated herein an affirmative vote by the Board will be based on the number of Directors present and voting, provided there is a quorum.

Section 5. Conduct of Board Business.

(a) Business of the Board may be conducted by mail, by conference or by conference call, when authorized by all of the Directors in office.

(b) When such business conducted by mail or conference call requires a vote of the Board of Directors, a two-thirds (2/3) affirmative vote of all Directors shall be required to carry a motion.

(c) Business of the Board carried on by conference or by standing or special committees of the Board shall be conducted in such manner as the Board of Directors may direct, or in the absence of such directions as the committees may elect in accordance with the general spirit of these Bylaws and the requirements of the Articles of Incorporation.

ARTICLE XII

Finances

Section 1. Fiscal Year. The fiscal year of the Board shall be from January 1 through December 31 inclusive.

Section 2. Income. The income of the Corporation shall be derived from application fees and other fees and charges, from gifts, grants and contributions, and from such other sources and activities as may be approved by the Board of Directors. All monies accruing to the Corporation shall be collected by such person(s) as the Board of Directors may designate.

Section 3. Compensation and Reimbursements. No member of the Board of Directors shall be paid any salary or fee for services as a Director or an officer. Subject to the availability of funds, a Director or an officer may be reimbursed for actual and necessary expenses incurred in attending meetings of the Board or in performing other duties or functions on behalf of the Board. The Board of Directors shall determine the compensation and reimbursements to be paid to parties other than officers and Directors of the Board, for services performed or for activities carried out on behalf of the Board.

ARTICLE XIII

Certification

Section 1. Standards. The Board of Directors shall establish, maintain, and revise as necessary, standards and qualifications for the granting, issuing, and renewing of Certifications and/or other forms of recognition in cognizance of special qualifications in the various fields of criminalistics.

Section 2. Evaluation of Applicants. The Board of Directors shall arrange for suitable means to evaluate the fitness, competence, and qualifications of persons seeking Certification by the Board. This function will be carried out by appropriate peer committees in each specific category.

Section 3. Certificates. Upon majority vote, the Board of Directors shall have authority to issue or cause to be issued Certificates of Qualification in the appropriate specific categories of criminalistics to persons who have met the standards of the Board and have fully complied with all applicable requirements. Certificates of Qualification shall be in such forms as prescribed or approved by the Board of Directors and shall be valid for such period of time as the Board of Directors may determine. Each Certificate shall be and remain the property of the Board, but every person to whom a Certificate has been properly issued shall be entitled to its continued possession unless and until such Certificate is revoked. A person holding a valid, unrevoked Certificate of Qualification issued by this Board shall be entitled to use the designation "Diplomate of the American Board of Criminalistics", certified in the specific category(ies).

Section 4. Fees. The Board of Directors shall annually establish the fees and other charges incident to application for and granting, issuing, and renewal of Certificates of Qualification and/or other forms of recognition.

Section 5. Denial and Revocation of Certificates. The right to deny Certification and to suspend or revoke Certificates of Qualification shall reside with the Board of Directors. Certificates issued by the Board are subject to revocation by 2/3 affirmative vote, and only for one or more of the following reasons:

(a) An intentional misstatement or misrepresentation, or concealment or omission, of a material fact or facts in an application or any other communication to the Board or its representative(s).

(b) Conviction of an applicant for Certification or holder of a Certificate of this Board by a court of competent jurisdiction of a felony or of any crime involving moral turpitude.

(c) Issuance of a Certificate contrary to or in violation of any of the laws, standards, rules, or regulations governing the Board and its Certification programs at the time of its issuance; or determination that the person Certified was not in fact eligible to receive such Certificate at the time of its issuance.

(d) Unethical conduct or other conduct by an applicant or holder of a Certificate of this Board which in the judgment of the Board brings that specialty of criminalistics into disrepute.

Action to suspend or revoke Certification may only be taken after at least thirty (30) days advance written notice of the nature of the charges or reasons for such action has been given to the individual concerned and an opportunity for such person to be heard has been provided by the Board.

ARTICLE XIV

Parliamentary Authority

Section 1. Parliamentary Authority. Unless otherwise provided in its Articles of Incorporation or Bylaws the conduct of meetings of the membership and the Board of Directors shall be governed by the rules contained in Robert's Rules of Order, Newly Revised, latest edition available. Any question as to priority of business shall be decided by the chair without debate.

ARTICLE XV

Seal and Insignia

Section 1. The Board shall have a corporate seal, and may have other devices and insignia, of such design as the Board of Directors adopt.

ARTICLE XVI

Amendments

Section 1. These Bylaws may be amended, altered, or repealed, in whole or in part only in the following ways:

(a) Upon two-thirds (2/3) affirmative vote of the members present at a meeting of the members at which a quorum is present, provided that a copy of the proposed change(s) has been submitted to all members at least thirty (30) days prior to such meeting;

(b) Upon two-thirds (2/3) affirmative vote by mail ballot of the members within sixty (60) days after a copy of the proposed change(s) has been submitted to all members;

(c) By the unanimous written consent of all members;

(d) Notice to the of record representative of a member is deemed notice to the member.

ARTICLE XVII

Effective Date of Bylaws

Section 1. These Bylaws shall become effective upon adoption by all of the members.

Appendix #15

TO: Practitioners of Criminalistics

FROM: Criminalistics Certification Study Committee (CCSC)

DATE: September 1, 1979

SUBJECT: Certification Proposal - A Final Report to the Profession

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Over the past two years, you have been informed through your regional forensic science association and/or the American Academy of Forensic Sciences of the activities of the Criminalistics Certification Study Commitee (CCSC). The mission of the CCSC has been to study the feasibility of a national certification program in Criminalistics. The study has been supported by the Forensic Sciences Foundation under a grant from LEAA.

The CCSC is a broadly based group drawn from the ranks of the criminalistics profession and includes representatives selected by each of the regional forensic science associations. Our approach to the study has been based on our belief that a peer review certification program will be most responsive to the needs of the profession if it is developed with maximum input from the members of the profession.

The CCSC has requested and received excellent support from the various forensic science associations who have nominated their members for service on Peer Group Committees in drug analysis, serology, and firearms examination. Through peer group committees in the various regional groups and by means of national questionnaires we have done our best to solicit and consider the views of the profession in the various disciplines of criminalistics.

It has been the intention of the CCSC since the onset of this study to present our findings to the profession for approval. We believe that the criminalistics community can make an informed judgment on the acceptability of certification only if presented with a description of a model program. The attached report contains proposals regarding the type and scope of examinations, education and experience requirements, and estimated costs of a possible national certification program.

We realize that you may have questions about our proposals which are not fully answered by this report. These certification proposals will be discussed at the Fall meetings of all the regional forensic science associations (see attached list for meeting dates and locations). We urge you to attend these meetings or contact the CCSC and national peer group representatives in your area for clarification of any points we may not have adequately explained in this report. After the presentations at the Fall meetings, official ballots will be mailed to you by your regional forensic science associations on November 15, 1979.

Based on the deliberations of the CCSC and the Peer Group Committees, it is our considered opinion that a criminalistics certification program such as we outline in this report is both feasible and desirable on a national scale. We ask that you review carefully the attached proposals and decide whether or not you agree that we should attempt to implement a national program of certification.

Sincerely,

The Criminalistics Certification Study Committee
W. J. Cadman, Chairman

CERTIFICATION IN CRIMINALISTICS

A Final Report to the Criminalistics Profession

by the

Criminalistics Certification Study Committee

September 1, 1979

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BACKGROUND INFORMATION

Definition of Certification

Certification is defined as a voluntary process of peer review whereby a practitioner is recognized as having attained the minimum qualifications necessary to practice in one or more particular disciplines of criminalistics. The objectives of certification are:

to set and measure levels of acceptable professional practice;

to guide professionals in the attainment of accepted levels of competence;

to provide a means of evaluating the competence of practitioners;

to provide a formal process for the recognition of practitioners who have met an accepted level of competence.

Benefits of Certification

The Criminalistics Certification Study Committee (CCSC) believes that the following benefits may be derived from a national certification program. First, in an overall sense, the benefits of the program can be expressed as:

improvement in administration and quality of civil and criminal justice;

progress toward nationwide equality in the examination, analysis, and interpretation of physical evidence.

Further potential benefits for the active practitioner are:

increased availability of training and educational opportunities;

setting goals for professional development;

definition of limits in capabilities of personnel and laboratories;

improved methods for collection, study, characterization, identification and comparison of physical evidence;

increased proficiency in the application of the above methods;

definition of an acceptable level of professional competence;

recognition of individual attainment of professional competence;

insurance that certification is carried out by peer group evaluation;

improved qualification for, and confidence in, court appearances;

enhanced recognition of criminalistics as a profession.

The laboratory administrator will benefit from the greater proficiency of certified personnel. Other tangible benefits to the laboratory include:

pin-pointing areas of need, both in equipment and personnel capability;

providing justification for funds for training, equipment, increased salaries, and filling positions;

assuring the administrator that certification is done by active practitioners in criminalistics.

Finally, there will be benefits to the educational and training system and to the judiciary:

guidance in planning and implementation of educational and training programs adequate in both number and scope;

improved understanding by the legal profession, the judiciary, and the public of the capabilities and limitations of expert witnesses in the field of criminalistics.

Scope of Criminalistics Certification

Criminalistics is defined as that profession and scientific discipline directed to the recognition, identification, individualization, and evaluation of physical evidence by the application of natural science to law-science matters. The CCSC has been studying the feasibility of certification in the following disciplines within criminalistics:

firearms and toolmark examination

serology(blood, semen, and other physiological materials)

drug identification and toxicology(including alcohol testing)

trace evidence examination(arson, explosives, hair, fibers, paint, glass, soils, gunshot residue)

The CCSC proposes that an American Board of Criminalistics (ABC)be created to certify applicants in serology, drug identification, and trace evidence examination. Applicants in toxicology and firearm/toolmark examination will be certified by separate boards, for the reasons outlined below.

Certification in toxicology was being considered by the CCSC as a service to the large number of criminalists performing alcohol analysis, drug screening, and poison analysis who had been excluded from certification by the American Board of Forensic Toxicology (ABFT). Recently, the CCSC obtained a commitment from the ABFT that a certification program will be established in toxicology which will accommodate these criminalists and which will not, in particular, contain a requirement for a PhD degree. For this reason, toxicology has been removed from the list of disciplines to be certified under criminalistics. We recommend, however, that close liaison be established and maintained between the ABFT and the body which certifies practitioners in other areas of criminalistics.

Firearm and toolmark examination, as a discipline within the framework of criminalistics, has been included in the certification planning of the CCSC throughout this study, and the Association of Firearm and Toolmark Examiners(AFTE)is one of the organizations represented on the CCSC. AFTE had been independently considering the certification of firearm and toolmark examiners for some time prior to the formation of the CCSC. The national Peer Group Committee in Firearms(composed of members nominated by AFTE and approved by CCSC)recently proposed that firearm and toolmark examiners be certified by an independent American Board of Forensic Firearms and Toolmark Examiners(ABFFTE), rather than being included with the other disciplines of criminalistics under a single board.

The CCSC recognizes that independent certification of firearm and toolmark examiners is reasonable. We also believe, however, that it is important to recognize and maintain the close ties between firearms examination and the other disciplines within the criminalistics profession. Therefore, close liaison and a high degree of mutual support will exist between the body which certifies firearms exmainers and the one which certifies other practitioners in criminalistics.

Preliminary information provided to the CCSC by the national Peer Group in Firearms regarding the proposed American Board of Forensic Firearm and Toolmark Examiners (ABFFTE)is included in this report. The final proposal and by-laws of the Peer Committee on Firearms will be submitted to the national forensic science community through the regional forensic science associations and AFTE in the near future. The proposed ABFFTE will be an autonomous board, independent of any forensic science association, although the regional associations and AFTE will be invited to become sponsors of the Board and to work closely with it.

National Peer Group Committees

The national Peer Group Committees in Firearms Examination, Serology, and Drugs were selected by the CCSC from nominations by the regional groups on the basis of formal resumes of the nominees. Criteria for selection were the professional competence of the nominees in their respective disciplines and the need for a broad geographical and philosophical representation. Budget limitations prevented the formation of a Peer Group Committee in Trace Evidence. Nominations have been received from the regional associations for this committee, and in the event that certification efforts are pursued next year, the Trace Evidence Committee will be selected then.

These national Peer Group Committees were given guidelines by the CCSC to insure that their work products would parallel each other as much as possible. Each regional association was asked to form Peer Group Committees within its own association to provide input into the national Peer Group Committees.

The tasks of each national Peer Group Committee were to:

Determine the type and scope of subjects to be included in certification;

Determine the minimum qualifications applicants must possess to be eligible to take the examination;

Determine the type of test(s) to be given and prepare a sample examination;

Determine the logistics of constructing and administering the proposed certification program.

The Peer Group Committees were to select requirements which were fair, reasonable and relevant, which realistically reflected current practice, and which would be acceptable to the majority of their peers. They were instructed to select as criteria for certification the minimum qualifications a practitioner should possess in order to be competent to examine evidence in a crime laboratory without immediate supervision and to be prepared to qualify and testify properly in court.

In addition to formulating questions on the basic subject matter of each specific discipline, the Peer Group Committees were asked to include in each examination a series of questions designed to test the applicant's understanding of skills common to all disciplines in criminalistics - e.g., basic principles of individualization and identification, scientific methodology, evidence handling, basic microscopy, communication, legal aspects and court testimony, literature of criminalistics, and general knowledge of criminalistics. The peer groups were also asked to consider preparing training or study guides for the examinations.

The following proposals regarding the certification process were derived by incorporating the reports of the Peer Group Committees on Serology Drug Chemistry and Firearms/ Toolmark into the general framework outlined by the CCSC.

The American Board of Criminalistics

American Board of Criminalistics (ABC)

The CCSC proposes that an American Board of Criminalistics be established and incorporated according to the By-Laws attached to this report. The proposed By-Laws provide for a ten member Board of Directors. There will be two classes of Directors. "Membership" Directors will be elected by the member organizations (initially, SAFS, MAAFS, NEAFS, NEAFS, MAFS, CAC, and SWAFS) and will have one year terms. Member organizations will be encouraged, however, to select representatives who can and will serve for two(2) successive years. There will also be three "at-large" directors who will be elected by the "Membership" Directors for staggered three year terms. Except for the initial Board, all Directors must be Diplomates of the Board. Additional organizations (e.g., AFTE, AAFS, ASCLD) will be invited to sponsor the Board but will not be voting members at this time.

The ABC will issue certificates in the disciplines of serology, drug identification, and areas of trace evidence examination. Tests in each of these disciplines will be prepared, administered and graded by three national Peer Group Committees, assisted by peer group committees in each of the regional groups. The national Peer Group Committees will be responsible to the ABC and will be selected by the ABC from nominations received from the regional groups. Both the ABC and the Peer Group Committees will meet at least once a year to update policies and examinations. Meetings of the ABC will be open to all interested parties.

Fees: Estimated fees for the program depend on how many applications can be expected to be received within the first few years. The examination fees will cover such expenses as ABC staff to process the applications, annual meetings of the ABC and the national Peer Group Committees, writing and testing the examinations, administration of the examinations, preparation, testing, and distribution of the proficiency test samples, and legal and accounting fees. Volunteers from the profession will be used wherever possible in order to minimize the costs of the program.

Present cost estimates call for a basic application fee of $75, plus an additional $50 fee for each examination the applicant wishes to take. Because of the complexity of the trace evidence area, there will probably be at least three examinations (arson and explosives, hairs and fibers, and paint/glass/soil/gunshot residue). The maximum charge for examinations in trace would be $100 ($50 for the first two examinations, the third examination free). There will likely be only one examination in each of the other disciplines.

The minimum fee for certification in one area would be $125. The estimated maximum cost for a person to be certified in all areas is:

Initial application fee	$ 75
Drug chemistry	50
Serology	50
Trace	
arson/explosives	50
paint/glass/soil/GSR	50
hair and fiber	0
	$275

Estimated fee for re-certification after five years is $125 regardless of the number of certificates the applicant holds. It is estimated that fees for ABFFTE examinations will be approximately the same as those of the ABC.

Through close liaison between the ABC, ABFT, and ABFFTE, every attempt will be made to establish a system for applying a portion of the initial application fee to staff expenses common to the three Boards so that persons applying to two Boards for certification will not have to pay more than one initial application fee.

CONTINUED

4 OF 5

American Board of Criminalistics (ABC)

Outline of the Certification Process

Application: The candidate for certification will submit a formal application to the ABC, along with the fee(s) for the examination(s) the candidate wishes to take. The application will include a structured resume of relevant education and experience, transcripts of college records, and letters of reference from two persons who can attest to the candidate's qualifications, including at least one individual actively working in the discipline(s) in which the applicant wishes to become certified.

Upon approval of the application by the appropriate Peer Committee(s), the candidate will be provided with study guide(s) for the area(s) to be certified. The study guides will include a list of areas to be covered in the test, a bibliography, and sample questions. The candidate will be required to complete a written qualifying examination and a proficiency test within two years after the application is approved.

Interim Certificate: During the initial stages of certification, it will be necessary to allow time for the preparation of the study guides and examinations and for collection of sufficient revenue to support writing and validation of the examinations. During this initial period, applicants who have five or more years of experience and who meet the other specific application requirements of the particular discipline(s) will be issued interim certificates after approval of their applications by the appropriate Peer Group Committee(s). Interim certificates will expire after two years, at which time these persons will be required to pass the same written and proficiency tests as all new applicants in order to retain their certification.

General Qualifications: Applicants must be persons of good moral character and scientific integrity with high ethical and professional standing. Certification will be limited to permanent residents of the United States of America, its territories and possessions, and of Canada. Certificates granted and issued by the Board may be denied, suspended, or revoked for any of the following reasons:

a. Mis-statement, mis-representation, concealment or omission of a material fact or facts in an application or other communication to the Board or its representatives.

b. Issuance of a certificate contrary to or in violation of any of the laws, standards, rules or regulations governing the Board and its certification programs at the time of its issuance; or determination that the person certified was not in fact eligible to receive such certification at the time of its issuance.

c. Conviction of an applicant for certification or a holder of a certificate of the Board by a court of competent jurisdiction of a felony.

d. Unethical conduct or other conduct by an applicant or holder of a certificate of the Board which in the judgment of the Board brings the profession of criminalistics into disrepute.

Written Qualifying Examination: Standardized, objective written examinations will be administered nationally twice a year. Where possible, the examinations will be held in conjunction with meetings of the regional forensic science associations, using suitable local proctors. Upon satisfactory completion of the written qualifying examination, the candidate will be eligible for proficiency testing. Questions on the examinations will be selected from those

submitted to the National Peer Group Committees by the Peer Group Committees of the regional organizations. The preparation, administration, and grading of the examinations will be the responsibility of the National Peer Group Committees. Any applicant who fails the written qualifying examination may apply within one year for one re-examination without payment of an additional fee.

Proficiency Examination: After the candidate has satisfactorily completed the written qualifying examination, samples and related questions will be sent to the candidate to be examined in his or her laboratory using available references and equipment. The candidate's laboratory director or suitable local proctor will certify that the work on the proficiency sample(s) was performed by the candidate. The examination will be graded by the National Peer Group Committee. An applicant who fails the proficiency test may apply within one year for one additional set of samples without payment of an additional fee.

Re-Certification: Every five years, diplomates of the Board will be required to demonstrate continued competence by showing involvement in training, seminars, and research, or by passing written and proficiency tests. Application for re-certification must be made within the five year period of certification. Demonstration of continuing professional involvement may be made by the accumulation of points, as illustrated by the following proposal of the Drug Chemistry Peer Group:

Accumulate 50 points by documentation of the following(no more than 25 points may be earned in any one category):

college courses for credit	5 points per credit hour
workshops attended	2 points per day
workshops presented	4 points per day
teaching(college)	5 points per credit hour
publications	
open scientific full length paper	20 points
restricted	5 points
presentations(scientific meetings)	5 points
meetings attended	2 points per meeting

Training, research, and meetings must cover areas directly applicable to the specific discipline being certified, although this provision will be interpreted liberally. If a Diplomate is unable to acquire the required points, re-certification may be accomplished by submitting to a written examination and proficiency test.

SPECIFIC REQUIREMENTS FOR CERTIFICATION IN SEROLOGY

Educational Qualifications

Applicant must possess a minimum of an earned baccaluareate degree in a natural science or an appropriately related field from an accredited institution, or other institution approved at the discretion of the Board.

Professional Experience and Training

Applicant must possess a minimum of one year of experience (including on-the-job training) actively working in the field of forensic serology. Qualifying activities may include casework, teaching, research, and supervision.

Applicant must be engaged in the practice of forensic serology at the time of application in order to be eligible for certification in forensic serology. Applicant must furnish on the application a record of appropriate professional activities in keeping with the concept that "Forensic Serology is the science directed to the recognition, identification, individualization, and evaluation of physiological material related to law-science matters".

Temporary Waiver of Educational Requirements

For a period of one year from the official date of the announcement that applications for certification will be accepted, the requirement of a baccalaureate degree will be waived for those candidates who possess five or more years of professional experience as described above and who otherwise meet the requirements for certification.

Written Qualifying Examination

The written examination will consist of 100 objective questions that can be completed within a two hour period. The following topics derived from the national serology survey will be included in the scope of the examination:

a. Identification of blood

   1. catalyic tests
   2. crystal tests
   3. anti-human hemoglobin serum

b. Determination of species origin (immunological methods)

c. Individualization of blood

   1. red cell antigens
   2. isozymes
   3. serum proteins

d. Semen identification

   1. microscopical
   2. chemical
   3. immunological
   4. electrophoretic

e. Semen or semen/vaginal fluid mixtures

f. Saliva identification

g. Urine identification

h. other - for example sex determination, menstrual blood, blood stain pattern distribution

In addition, candidates will be held responsible for the relevant general concepts in biochemistry, genetics, and immunology and for knowledge regarded as common to all disciplines in criminalistics. A list of reference material pertinent to the subject matter which will appear on the examination will be provided to the applicant, along with sample examination questions.

Proficiency Test

The practical examination will represent simulated case situations and may include the following:

a. Characterization of liquid whole blood
b. Characterization of dried bloodstains
c. Characterization of dried stains from physiological fluids other than blood

Candidates will be evaluated on the basis of their approach to the problem, their analytical methods, and their conclusions. Candidates will be permitted a reasonable period of time to complete the practical examination.

SAMPLE EXAMINATION

FORENSIC SEROLOGY

Correct Answer

d 1. A positive phenolphthalein test was obtained on a stain present on a pair of trousers taken from a suspect in a rape-murder case. Based upon this result, one may conclude that the stain:

a. contains blood
b. contains human blood
c. contains blood and semen
d. may contain blood

c 2. The crystals that result from a Takayama crystal test using pyridine, glucose, and sodium hydroxide are:

a. hematin chloride
b. hemochromogen chloride
c. pyridine hemochromogen
d. pure hemoglobin

a 3. The ring precipitin test has an advantage over the Ouchterlony gel-double diffusion test in that:

a. test results can be obtained more rapidly
b. it indicates the number of antigen antibody systems reacting
c. it does not require an uncontaminated antigen solution
d. one can readily establish the immunological relationship between two antigens

c 4. Which of the following species of animals is most closely related to humans in terms of its serum protein composition as detected by immunological cross reactivity:

a. Rhesus monkey
b. Pig
c. Chimpanzee
d. Alligator

d 5. Studies have shown that the A and B blood group antigens may be present on:

a. Erythrocytes
b. Leukocytes
c. Bacterial cells
d. Red cells, white cells and bacterial cells

Correct Answer

c 6. Which of the following statements best describes the biochemical differences between the A, B and H antigens:

a. A, B and H antigens are all proteins, and they differ from one another in amino acid compositions.

b. A, B and H antigens are chemically identical, but give differing immunological reactions based purely on the way in which they are arranged in the red cell membrane.

c. A, B and H antigens differ from one another by a single monosaccharide residue attached to a polysaccharide chain.

d. All of the above.

e. None of the above.

d 7. Blanks are run in ABO typing of stains because the following materials can cause false positives.

a. Cloth sizing
b. Room dust
c. Sweat stains
d. All of the above

e 8. In the following example, pick the statement that best applies as a valid opinion as to the source of the questioned blood:

INDIVIDUAL	ABO TYPE	PGM	EAP	POPULATION FREQUENCY
1	A	1	BA	10.5%
2	A	2	CB	0.1%
3	A	2	A	.3%
Questioned Blood	A	2	CB	0.1%

a. the questioned blood could only have come from individual #2.
b. the blood could not have come from individual #1 and #3.
c. the blood could have come from individual #2.
d. a and b above
e. b and c above

Correct
Answer

c 9. The source of commercial anti A and anti B is usually:

a. Guinea pigs
b. Rabbits
c. Humans
d. Goats

c 10. Which of the following is true about the relationship between ABH secretor status and the red cell Lewis types of the same individual(do not consider Bombay types):

a. Secretors of ABH always have the Lewis red cell type Le (a - b+).
b. Non-secretors of ABH always have the Lewis red cell type Le (a + b-).
c. People with the red cell Lewis type Le (a - b-) may be secretors of non-secretors of ABH, or
d. People with the red cell Lewis type Le (a +b+) are uniformly non-secretors of ABH.

c 11. In a staining reaction for phosphoglucomutase (PGM), PGM converts:

a. Glucose-1-phosphate to 6-phosphogluconate
b. Glucose-6-phosphate to 6-phosphogluconate
c. Glucose-1-phosphate to glucose-6-phosphate
d. Glucose-6-phosphate to glucose-1-phosphate
e. None of the above.

c 12. Which of the following is considered a variant hemoglobin:

a. HbA_1
b. HbA_2
c. HbC
d. HbF
e. All of the above

Correct
Answer

c 13. In the thread, absorption-elution technique for ABO blood group, the step most critical to accurate interpretation is:

a. The absorption of the blood onto the fibers
b. The absorption of the anti-sera onto the bloodstained fibers
c. The washing of the anti-sera bloodstain complexed fibers
d. 56° C. is required for elution
e. None of the above

14. Matching Definitions

a. Proteins which act as catalysts of biological reactions	a. Enzyme
b. The basic unit of heredity	b. Gene
c. Variation, usually genetically determined, in a characteristic trait	c. Polymorphism
d. Alternative genes occurring at a single genetic locus	d. Alleles
e. Observed expression of genes	e. Phenotype
f. The combination of genes found in an individual	f. Genotype
g. Genotype in which the two alleles at a locus differ	g. Heterozygote
h. Genotype in which the two alleles at a locus are identical	h. Homozygote
i. Multiple molecular forms of enzymes	i. Isozymes

Correct
Answer

d 15. Indicate which of the following statements about haptoglobin are correct:

a. Haptoglobin is a serum protein which can form complexes with hemoglobin.

b. The biological function of haptoglobin is thought to be the prevention of undue iron loss by blocking the urinary excretion of hemoglobin.

c. The commonly occurring haptoglobin phenotypes (5%)in Negro population are Hp 1, Hp 2, Hp 2-1, and Hp 2-1M.

d. Haptoglobin molecules consist of two types of polypeptide chains, Alpha and Beta; the Alpha peptide is polymorphic.

e. The haptoglobin polymorphism is unique in that the allelic polypeptide chains differ markedly in molecular weight.

f. The haptoglobin polymorphism exhibits typical dominant-recessive expression.

a. all of the above
b. A, C, E, and F
c. A, B, D, E, and F
d. A, B, C, D, and E
e. A, B, D and E

F 16. Boiling saliva destroys its soluble ABH substances and renders them undetectable.

(True or False)

F 17. Acid phosphatase cannot be detected in seminal stains from a vasectomised male.

(True or False)

F 18. The acid phosphatase test is specific to semen because there is no acid phosphatase normally found in the vagina.

(True or False)

Correct
Answer

b 19. PGM pattern in semen stains differ from PGM patterns in bloodstains in which of the following ways:

a. Locus 1 isozymes are generally not visible.
b. Locus 2 isozymes are generally not visible.
c. Locus 3 isozymes are generally not visible.
d. Visible PGM phenotypes in semen stains do not necessarily correspond to the donor's inherited PGM genotype.

c 20. Which of the following enzymes has served as the basis for many identification tests for saliva in stains:

a. Acid phosphatase
b. Alkaline phosphatase
c. Amylase
d. Isocitrate dehydrogenase

GENERAL QUESTIONS

F 1. A serology report read into the court record satisfies the best evidence rule.

(True or False)

F 2. The substage condenser's primary function is to control the amount of light focused on the specimen.

(True or False)

F 3. Treatment of bloodstains with ninhydrin or silver nitrate for the visualization of latent fingerprints has no effect on subsequent serological analysis.

(True or False)

b 4. According to the following citation:

J. Forens. Sci. Soc., 16, (1976), 128-134.

the number "16" represents:

a. Issue number
b. Volume number
c. Page number
d. Author's reference number

SPECIFIC REQUIREMENTS FOR CERTIFICATION IN DRUG CHEMISTRY

Educational Qualifications

Applicant must possess an earned baccalaureate degree in a natural science or appropriately related field from an accredited institution, or other institution approved at the discretion of the Board. The degree must include courses in inorganic chemistry, organic chemistry, qualitative analysis, and quantitative analysis.

Professional Experience and Training

Applicant must possess a minimum of two years of forensic laboratory experience during which time duties included the qualitative and quantitative analysis of suspected controlled drugs. Experience should include familiarization with: (1) chromatography, (2) spectrophotometry, (3) microscopy, (4) wet chemical methods, and (5) the origin and chemistry of controlled substances.

Applicant must be engaged in the practice of forensic drug chemistry at the time of application in order to be eligible for certification in forensic drug chemistry. Applicant must furnish on the application a record of appropriate professional activities in keeping with the concept that "Forensic Drug Chemistry is the science directed to the recognition, identification, individualization, and evaluation of controlled substances related to law-science matters".

Temporary Waiver of Requirement for Quantitative Analysis

Those candidates possessing five or more years of work experience as described above and who otherwise meet the formal education requirements described above will be exempted from the specific course requirement of quantitative analysis. Application for this exemption must be made within one year of the official date of the announcement that applications for certification will be accepted.

Written Qualifying Examination

The examination will be primarily objective and will

consist of 100 questions that can be completed within a two hour period. Included in the written examination will be questions involving the theory and application of: (1) spectrophotometry, (2) chromatography, (3) microscopy, (4) wet chemical methods, (5) origin and chemistry of controlled substances, (6) general criminalistics. Sample questions and bibliography will be provided to the applicant upon acceptance of the application.

Proficiency Test

The proficiency test will consist of five unknown samples which will be mailed to the applicant with a specified time period for completion and return of the results. The applicant will be required to identify all five samples correctly. Two of the samples will require quantitation.

SAMPLE EXAMINATION
FORENSIC DRUG CHEMISTRY

Correct Answer

b — 1. The most widely used adsorbent for thin layer chromatography (TLC) in forensic drug analysis is.

A. Alumina
B. Silica
C. Cellulose
D. Florisil
E. Celite 545
F. None of the above

b — 2. Which of the following reagents would be most useful for visualization and differentiation of the cannabinols from a marihuana extract on a TLC plate?

A. Potassium iodoplatinate
B. Fast Blue B
C. Dragendorff
D. Ninhydrin + UV Light
E. Ferric Chloride
F. None of the above

1 - Cocaine
2 - Morphine — 3. The separation of morphine and cocaine by solvent extraction can be achieved according to the following procedure. An aqueous solution of the drugs is made basic with 2 N sodium hydroxide and extracted with two volumes of chloroform (Fraction 1). The alkaline aqueous phase is acidified, then made basic with solid sodium bicarbonate to pH 8.5 and extracted twice with ethyl acetate (Fraction 2). Which drug is in Fraction 1 and which in Fraction 2?

Fraction 1 _____

Fraction 2 _____

b — 4. Term used to describe a type of chromatography which uses a non-polar stationary phase and a polar mobile phase. This type of chromatography is referred to as _____ phase partition liquid chromatography.

A. Normal
B. Reverse
C. Paired-ion
D. Hydrolytic
E. Hydrophylic
F. None of the above

c — 5. This type of detector used in gas chromatography is best suited for the analysis of pesticides and benzodiazepines because many of these compounds contain halogens.

A. Thermal Conductivity
B. Flame Ionization Detector
C. Electron Capture Detector
D. Nitrogen-Phosphorus Detector

Correct Answer

d — 6. When a crystal changes color upon being rotated in plane polarized light, it is exhibiting

A. Diffraction
B. Isotropicity
C. Polymorphism
D. Dichroism

a — 7. Which of the following would be likely to give good crystals with gold chloride in phosphoric acid as a volatility test.

A. Amphetamine
B. Morphine
C. Secobarbital
D. Diazepam

IR — 8. Polymorphism in drugs is frequently encountered when using which spectroscopic technique?

b — 9. Which mass spectrometric technique provides the most information regarding a drug's molecular weight?

A. Electron Impact
B. Chemical Ionization
C. Mass Fragmentography
D. High Resolution Mass Spectrometry

a — 10. In any spectroscopic technique what is usually the limiting factor that determines the lower level of drug detection?

A. Instrument signal-to-noise ratio
B. Drug Structure
C. Impurities in the Drug
D. None of the above

c — 11. Which solvent is best suited to obtain the UV spectrum of amphetamine base?

A. Chloroform
B. Acetone
C. Methanol

Correct Answer

a

12. In fluorescence spectroscopy a drug such as quinine absorbing energy, emits radiation at a wavelength_____the energy absorbed.

A. greater than
B. the same as
C. less than

a

13. A suspected powder which gives a negative Marquis and a blue cobalt thiocyanate test could be which of the following

A. Cocaine
B. Codeine
C. Heroin
D. Morphine

a - amphetamine & amobarbital
b - amobarbital
c - amobarbital
d - amphetamine

14. Given a powder containing a mixture of amphetamine sulfate, amobarbital, lactose, and cornstarch, which component(s), primarily, would be extracted into chloroform.

A. From an aqueous suspension, saturated with $NaHCO_3$ _____
B. From the dry powder_____
C. From an aqueous suspension at pH 1-2 _____
D. From an aqueous suspension at pH 12-13_____

6 ug/ml

15. The concentration of a substance is estimated from peak height evaluation by gas chromatography. The substance is extracted into methanol. Calculate the concentration from the following data.

UNKNOWN: 180 mm peak height with 120 mm for internal standard
STANDARD: 4ug/ml : 150 mm peak height with 150 mm for internal standard

a

16. Which of the chemicals listed below could be used in the synthesis of methamphetamine?

A. Phenylacetone (P-2-P)
B. Piperidine
C. o-Toluidine
D. n-Acetylanthranilic Acid
E. None of the above

Correct Answer

d

17. Supply a chemical name or synonym for Dilaudid.

A. Dimethyltryptamine
B. 3,4-Methylenedioxyamphetamine
C. Methamphetamine
D. Hydromorphone
E. None of the above

T

18. Some types of compounds(barbiturates, etc.)can be derivatized "on-column" by injecting a mixture of the solution to be analyzed plus the derivatizing agent.

T

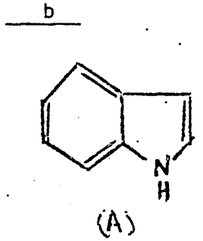
19. Some crystal tests can differentiate optical isomers.

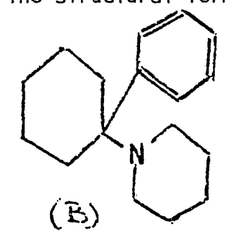
F

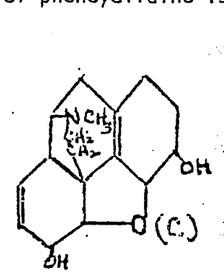
20. In testing a new microcrystalline test reagent, if you observe the formation of crystals after the addition of a known pure drug standard, you can be confident that the crystals which formed resulted from a combination of the reagent and drug molecules.

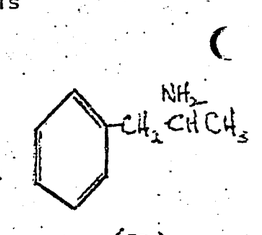
b

21. The structural formula of phencyclidine is


(A)

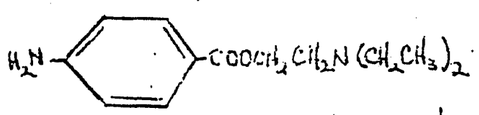

(B)

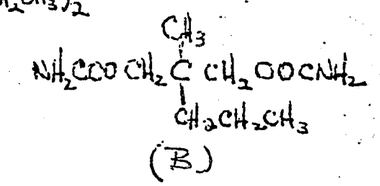

(C)


(D)

A. B
B. C
C. A
D. D

22. Given the following drug structures determine whether these drugs would be classified as: A, Acidic; B, Basic; C, Neutral; D, Amphoteric.


(A)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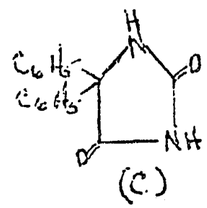
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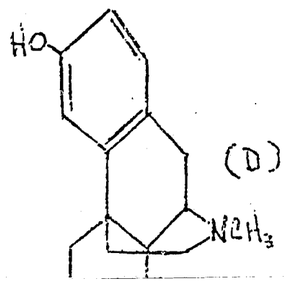
(D)

LIST OF SKILLS COMMON TO PRACTITIONERS IN THE FIELD OF CRIMINALISTICS

The CCSC has identified areas of knowledge and/or skills that are required for all practitioners in the field of criminalistics regardless of their particular expertise. Each peer group examination board will incorporate each of these areas of knowledge and/or skills into their testing procedures, at a level that is appropriate for each type of evidence examined.

Basic Principles of Identification and Individualization

A thorough understanding of the principles of identification to include:

a. The stages of the identification process: analysis, comparision and evaluation.
b. The related concepts of class and individual characteristics.
c. The necessity for background information and reference standards as they pertain to individualization.
d. The degree of specificty of analytical data.
e. Basic Statistical concepts such as rules of probability.

Scientific Methodology

An understanding of scientific methodology of controlled experimentation and basic analytical concepts of measurement theory such as accuracy, precision, reliability, confidence limits, etc. A familiarity with problem solving processes including the basics of research design and methodology.

Evidence Handling

Skill in the proper collection and handling of physical evidence including marking, labelling, packaging of various types of physical evidence, maintenance of custody records and an understanding of the legal requirements for the authentication of evidence for court purposes. An understanding of the proper handling of evidence in the laboratory for examination by other sections.

Basic Microscopy

The microscope is a basic tool for most forensic examinations. Everyone in the field of criminalistics must understand the use of the microscope to the degree required for his or her area of expertise.

Communication

Basic ability or skill in clear and concise communication. These skills involve the ability to express a concept or a result in both writing and speech, as demonstrated in the examination process.

Legal Aspects and Court Testimony

Basic knowledge of courtroom procedures and the role of the expert witness. An understanding of the acceptability of physical evidence in judicial proceedings.

Literature of Criminalistics

Familiarity with the literature of the forensic sciences with special emphasis on the developmental aspects pertinent to his/her own area of evidence category.

General Knowledge of Criminalistics

A general knowledge of the capabilities of each discipline and subdiscipline within the criminalistics area. The practitioner should know the types of examinations that should be performed on the item(s) of evidence to obtain the most useful information in a given investigation. The ability to evaluate the significance of a particular item(s) of evidence in relation to the investigation.

SAMPLE EXAMINATION

The following general questions are examples of those which may be included in the written examinations for any discipline in criminalistics to test the applicant's general knowledge of criminalistics skills.

Answer

Legal Aspects and Court Testimony

e — 1. An expert witness is any person who:

a. has personally examined the evidence or conducted experiments on it.
b. has formally studied the subject in an educational institution or through a training program.
c. has been accepted as an expert in court proceedings.
d. has all the qualifications above.
e. has substantially greater knowledge of a subject than the average person, whether gained through education, training or experience.

d — 2. In testifying as an expert, the expert witness should remember that:

a. Jurors aren't impressed unless he uses an expert's vocabulary.
b. Jurors don't like to be "talked down to" and must be presumed to be intelligent enough to understand.
c. both (a) and (b) above.
d. His job is to communicate, which may mean that much technical jargon should not be used.

Frye — 3. The leading case establishing the standard for determining the judicial admissibility of scientific examination is _____vs the United States.

Scientific Methodology

c — 4. Precision of a measurement can be described as a statistical expression of the:

a. mathematical mean of measurements
b. the probability of the measurement being accurate
c. the deviation of individual measurements from the average of a number of measurements
d. the total range of individual measurements
e. all of the above

Answer

c — 5. The method that gives high precision of results is always best.

a. True
b. False
c. False, if accuracy is poor
d. False, precision is not important

Individualization

True — 6. Evidence that can be associated with a common source with an extremely high degree of probability is said to possess individual characteristics.

True — 7. The density of glass is a class characteristic.

Evidence Handling

b — 8. When packaging evidence, it is better to:

a. remove blood, hair, fibers and soils from objects that bear them.
b. submit the entire object bearing evidence whenever possible.
c. process the object immediately for latent fingerprints before packaging and submitting for further examination.

Microscopy

False — 9. An opaque object requires transmitted illumination for viewing with a microscope.

b — 10. The distance between the objective lens and specimen is referred to as:

a. clearance
b. working distance
c. objective height
d. interobjective distance

ABFFTE

QUALIFICATIONS AND REQUIREMENTS FOR CERTIFICATION IN FIREARMS/TOOLMARK IDENTIFICATION

General Qualifications

An applicant for certification must be of good moral character, high integrity, good repute and must possess high ethical and professional standing.

Educational Qualifications

Applicants for certification must possess a minimum of an associate degree or its equivalent. Five years from the establishment of the program(January 1, 1980)and thereafter, applicants must possess an earned baccalaureate degree with major course work in physical science, criminalistics, criminal justice, industrial technology or related field of study.

Professional Experience

A. Applicants are required to document a minimum of a full-time* one year laboratory training program or its equivalent as recognized by the Board. Such training shall be directly related to firearms and/or toolmark identification as now recognized by the Board.**

*"Full-time" should be construed as meaning that the applicant has continuing responsibility for and spends a major portion of his/her time with Firearms and/or Toolmark Identification, irrespective of other concurrent duties and responsibilities.

**"Recognized by the Board" as used is intended to be selective or restrictive. It means any established laboratory or individual whose reputation can be demonstrated or is known to be favorable. A training syllabus and study materials such as are now being developed by AFTE are examples of training programs which may be acceptable to the Board.

B. In addition and subsequent to "A" above, applicants must document one year full-time* supervised laboratory experience or its equivalent in the practice of firearms and/or toolmark identification as recognized by the Board.**

C. Applicants will be required to submit as references the names and addresses of three firearms/toolmark examiners known by the Board. Current directors shall not be used as references. References from persons other than Firearms and Toolmark Examiners will be evaluated on an individual basis.

D. Applicants must be actively engaged in the practice of firearms/toolmark identification at the time of application or be able to demonstrate they have been actively engaged in such work within five(5) years immediately preceding the date of application.

E. Each applicant shall be required to demonstrate a record of appropriate professional activities in firearms and/or toolmark identification, including but not limited to, participation in seminars, study groups, or related forensic science meetings and conferences; teaching; publishing; or conducting research in keeping with the following definition: Firearms & Toolmark Identification is that discipline of the Forensic Sciences directed to the examination and comparative analysis of firearms and ammunition components, and other tools or instruments, and the markings they produce. The primary purpose of comparative analysis as applied to Firearms/Toolmark identification is to determine whether or not two objects were once part of the same object, had been in contact with each other, or share some class or other individual characteristics. Firearms/Toolmark identification may also include the application of other knowledge such as: Methods of tool use and manufacture; gunshot residue, and powder/shot pattern analysis; number restoration; and imprint and physical matching problems.

Examinations

A. Applicants will be required to pass a written, practical, and possibly an oral examination in firearms identification and/or toolmark identification, including

*Ibid
**Ibid

problems in the areas of operability/function, determination of class characteristics, comparison of individual characteristics and related matters. Applicants will have the option of taking an additional examination in gunshot residue and gunpowder/shot pattern analysis for determination of distance/trajectory.

B. An applicant who fails to pass the examination(s) may apply, after one year, for re-examination.

Temporary Waivers

A. For the period ending June 1, 1983, the educational qualifications and a full time one year laboratory training program are permanently waived for otherwise qualified applicants. In order to be eligible for this waiver, applicants must document four years full time* laboratory experience, or its equivalent, in the practice of firearms and/or toolmark identification as recognized by the Board.

B. The Board will review the qualifications of persons who may apply under this waiver and may require the applicant to undergo testing: written, practical, and possibly oral examination.

GENERAL PROVISIONS CONCERNING CERTIFICATION

A. The right to deny, suspend, or revoke certification for cause is reserved by the Board.

B. Certificates of Qualification in Firearms Identification and/or Toolmark Identification are valid for five(5) years and are renewable according to standards and under conditions established by the Board.

C. To be re-certified, Diplomates of the Board will be required to demonstrate continuing professional activity by participation in, but not limited to, seminars, teaching, study groups, related professional meetings, publishing papers, conducting research, touring manufacturers, etc. and/or performance on an examination. Individuals afforded the waiver under "Temporary Waivers" above will be required to take an examination. Such examination for recertification will be established by the Board.

*Ibid

The intent and purpose of the recertification requirements referred to in C. above are essentially the same as the interim certification proposals recommended by the other CCSC Peer Groups and can be interpreted as follows:

Interim Certificates

During the first three years after the official announcement that applications for certification are being accepted, candidates with four years of experience who meet all other qualifications for certification as outlined above may receive interim certificates upon approval of their applications by the Board. Interim certificates will expire after two years, at which time these persons will be required to pass all written, practical, and possibly oral tests required of all new applicants to the Board.

ATTACHMENTS

Fall 1979 meetings of Regional Associations at which the CCSC Report will be discussed are listed below. If you cannot attend a regional meeting and need further information or explanation of the CCSC report, contact the CCSC representative in your area.

Date/Location	Organization	CCSC Representative
September 6, 7, 8 Raleigh, N.C.	Southern Association of Forensic Scientists	James Halligan Florida Department of Criminal Law Enforcement (904)488-7071
September 28, 29 Kings Dominion, Va.	Mid Atlantic Association of Forensic Scientists	Antonio Cantu Bureau of Alcohol, Tobacco, and Firearms (301)443-5213
October 18, 19, 20 Oakland, Ca.	California Association of Criminalists	Jan Bashinski Oakland Police Department (415)273-3386
October 21-25 Quantico, Va.	American Society of Crime Laboratory Directors	Donald Flynt Oklahoma State Bureau of Investigation (405)427-5421
October 26, 27 Albany, NY	Northeastern Association of Forensic Scientists	Thomas Kubic Nassau County Police Department (516)535-4253
October 25, 26, 27 Spokane, Wa.	Northwestern Association of Forensic Scientists	K. M. Sweeney Western Washington State Crime Lab (206)464-7075
November 2, 3 Dallas, Texas	Southwestern Association of Forensic Scientists	Donald Flynt Oklahoma State Bureau of Investigation (405)427-5421
November 7, 8, 9 Springfield, Ill.	Midwestern Association of Forensic Scientists	Theodore Elzerman Illinois Bureau of Scientific Services (217)782-4649

SAMPLE BALLOTING INSTRUCTIONS

1. PLEASE DO NOT VOTE IF YOU HAVE NOT READ AND FULLY UNDERSTOOD THE CCSC REPORT ON CERTIFICATION.

   If you have any questions about the certification proposal, contact your regional forensic science association or CCSC representative for information.

2. You may receive ballots from more than one source.

   COMPLETE ONLY ONE(1) BALLOT.

3. Return your ballot in the enclosed envelope TO THE REGIONAL FORENSIC SCIENCE ASSOCIATION IN YOUR AREA.

4. BE SURE TO FILL IN YOUR NAME AND LABORATORY AFFILIATION ON THE UPPER LEFT HAND CORNER OF THE RETURN ENVELOPE. Your ballot will not be counted if this identifying information does not appear on the outside envelope. This information will be used only to insure that each individual votes only once. Your name and laboratory will be stripped from the envelope by your regional association before your ballot is opened and before the results are tabulated. Your anonymity will be entirely protected.

SAMPLE BALLOT

Criminalistics Certification

Question 1

What types of evidence do you examine? (Mark all that apply)

( )controlled substances
( )serology
( )firearms ( ) toolmarks
( )toxicology

Trace Evidence

( )arson ( )paint
( )explosives ( )glass
( )hairs ( )soil
( )fibers ( )gunshot residue

Question 2

If certification is implemented, in what area(s) will you apply for certification?

( )controlled substances
( )serology
( )firearms ( ) toolmarks
( )toxicology

Trace Evidence

( )arson ( )paint
( )explosives ( )glass
( )hairs ( )soil
( )fibers ( )gunshot residue

Question 3

To what regional/national forensic science associations do you belong?

( )AAFS ( )CAC ( )NEAFS ( )SWAFS
( )AFTE ( )MAAFS ( )NWAFS ( )Other_____
( )ASCLD ( )MAFS ( )SAFS
Name

Question 4

In which geographical region of the country do you reside?

( )Northeast ( )Midwest ( )California
( )Mid Atlantic ( )Southwest ( )Other_____
( )Southeast ( )Northwest
Canada, territories, etc.

Question 5 *

Are you in favor of implementation of certification as described in the CCSC report?

( )Yes ( )No

* The firearms/toolmark requirements outlined in this report are tentative; final specific recommendations of the Peer Group will be sent to members of AFTE and the regional associations as soon as they are developed. The CCSC would, however, like an expression of opinion on the basic concepts from all practitioners at this time.

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FINAL REPORT

OF THE

CRIMINALISTICS CERTIFICATION STUDY COMMITTEE (CCSC)

At the San Diego meeting in 1977 the Criminalistics Certification Study Committee (CCSC) received the charge from the Criminalistics Section of the American Academy of Forensic Sciences to study the "desirability and feasibility" of the certification of persons in the Criminalistics field. An intensive study since that time has attempted to contact as many practitioners as possible. As promised at the outset, we concluded our study by providing the profession nationwide with a certification proposal. A survey was included which took the form of a ballot.

The analysis of the survey revealed that only 38% of the 1396 persons who responded approved of certification as proposed. However, a substantial number of those responding indicated they would apply for certification if it were implemented:

80% of those examining controlled substances	(649 persons)
77% of those in serology	(396 persons)
73% of those examining firearms	(227 persons)
68% of those doing toxicology	(209 persons)

On this basis we determined that certification is feasible, but because of the lack of a majority vote in favor of certification the American Board of Criminalistics (ABC) will not be incorporated at the direction of the CCSC.

A great deal of information was developed during the course of our study from questionnaires, peer group recommendations, and finally from the survey ballot itself. The CCSC believes that some form of certification would be beneficial to the profession of Criminalistics. We also believe certification will be adopted in the future. We strongly recommend that any criminalistics certification program incorporate our fundamental concepts of regional representation and peer group review.

All of the members of the CCSC wish to thank everyone who helped so much in our deliberations.

W.J. Carman,
Chairman, CCSC

CATEGORICAL VOTING RESULTS (1396 Votes Cast) BY GEOGRAPHIC REGIONS

(Percentages exceed 100% because some individuals rightfully voted under more than one category.)

	Northeast (153)	Mid-Atlantic (133)	Southeast (238)	Midwest (374)	Southwest (171)	Northwest (79)	California (233)	Other (13)	National Mean (1391)
1. LABORATORY POSITION									
(A) Management	10%	13%	10%	11%	19%	18%	12%	8%	13%
(B) Supervisor	16%	20%	24%	19%	23%	22%	16%	23%	20%
(C) Case Examiner	58%	56%	66%	59%	53%	54%	64%	62%	60%
(D) Lab Technician	10%	4%	3%	5%	2%	4%	3%	0%	4%
(E) Other	9%	8%	3%	6%	7%	9%	6%	8%	6%
2. EVIDENCE EXAMINED									
(A) Controlled Substances	61%	59%	49%	50%	68%	70%	68%	77%	59%
(B) Serology	29%	27%	29%	28%	44%	51%	59%	46%	37%
(C) Firearms	7%	8%	14%	20%	21%	42%	45%	31%	22%
(D) Toolmarks	21%	14%	15%	19%	20%	46%	49%	38%	25%
(E) Toxicology	24%	16%	14%	17%	33%	38%	27%	23%	22%
(F) Arson	27%	29%	21%	28%	39%	43%	45%	54%	32%
(G) Explosives	18%	27%	12%	21%	22%	34%	30%	31%	22%
(H) Hairs	29%	26%	24%	29%	43%	53%	56%	54%	36%
(I) Fibers	29%	29%	24%	30%	43%	51%	54%	38%	36%
(J) Paint	29%	31%	21%	29%	44%	51%	56%	54%	36%
(K) Glass	25%	22%	17%	26%	39%	48%	52%	54%	31%
(L) Soil	20%	17%	12%	22%	35%	35%	41%	38%	26%
(M) Gunshot	25%	17%	13%	20%	30%	39%	38%	31%	24%
(N) Other	12%	13%	14%	16%	16%	11%	18%	15%	15%

CATEGORICAL VOTING RESULTS (1396 Votes Cast) BY GEOGRAPHIC REGIONS

(Percentages exceed 100% because some individuals rightfully voted under more than one category.)

3. AREAS YOU WOULD APPLY	Northeast (153)	Mid-Atlantic (133)	Southeast (238)	Midwest (374)	Southwest (171)	North-west (79)	California (233)	Other (13)	Natio al Mean (1391)
(A) Controlled Substances	49%	43%	41%	43%	57%	56%	42%	69%	47%
(B) Serology	25%	20%	25%	24%	31%	42%	39%	46%	28%
(C) Firearms	9%	5%	9%	16%	15%	30%	31%	31%	16%
(D) Toolmarks	16%	7%	10%	15%	16%	33%	29%	38%	17%
(E) Toxicology	20%	9%	12%	11%	25%	29%	11%	23%	15%
(F) Arson	24%	19%	16%	19%	25%	37%	24%	54%	22%
(G) Explosives	18%	17%	8%	16%	14%	27%	17%	38%	16%
(H) Hairs	18%	14%	22%	21%	30%	43%	31%	46%	25%
(I) Fibers	17%	14%	20%	21%	32%	39%	31%	39%	24%
(J) Paint	19%	14%	16%	20%	29%	37%	30%	54%	23%
(K) Glass	18%	11%	15%	20%	26%	35%	27%	46%	21%
(L) Soil	12%	8%	8%	14%	23%	29%	22%	31%	16%
(M) Gunshot	20%	10%	11%	15%	24%	23%	23%	31%	17%
(N) Other	12%	11%	11%	6%	13%	11%	14%	15%	11%
4. WHAT ASSOCIATION DO YOU BELONG									
(A) AAFS	20%	27%	23%	21%	25%	29%	24%	31%	23%
(B) AFTE	5%	2%	6%	13%	9%	1%	7%	0%	8%
(C) ASCLD	6%	5%	8%	8%	9%	14%	9%	8%	8%
(D) CAC	1%	0%	0%	2%	10%	5%	67%	23%	13%
(E) MAAFS	5%	78%	1%	3%	1%	1%	0%	0%	8%
(F) MAFS	2%	4%	4%	57%	6%	1%	0%	8%	17%
(G) NEAFS	78%	7%	1%	1%	1%	1%	1%	0%	10%
(H) NWAFS	0%	1%	1%	1%	1%	78%	9%	8%	6%
(I) SAFS	0%	5%	58%	1%	5%	1%	2%	23%	14%
(J) SWAFS	0%	0%	0%	1%	60%	1%	2%	0%	8%
(K) Other	7%	9%	5%	7%	12%	6%	10%	23%	6%
(L) None	16%	13%	21%	17%	8%	9%	20%	15%	16%

3. AREAS YOU WOULD APPLY	Checked Percent	Of Those Checked Percent Yes
(A) Controlled Substances (649)	47%	36%
(B) Serology (396)	28%	44%
(C) Firearms (227)	16%	43%
(D) Toolmarks (242)	17%	44%
(E) Toxicology (209)	15%	45%
(F) Arson (306)	22%	37%
(G) Explosives (217)	16%	37%
(H) Hairs (341)	24%	40%
(I) Fibers (335)	24%	39%
(J) Paint (315)	23%	37%
(K) Glass (295)	21%	38%
(L) Soil (218)	16%	38%
(M) Gunshot (241)	17%	36%
(N) Other (147)	11%	33%
4. WHAT ASSOCIATION DO YOU BELONG		
(A) AAFS (325)	23%	48%
(B) AFTE (106)	8%	50%
(C) ASCLD (115)	8%	49%
(D) CAC (188)	13%	38%
(E) MAAFS (117)	8%	49%
(F) MAFS (241)	17%	43%
(G) NEAFS (138)	10%	50%
(H) NWAFS (90)	6%	33%
(I) SAFS (186)	13%	42%
(J) SWAFS (111)	8%	39%
(K) Other (110)	8%	45%
(L) None (224)	16%	30%

CRIMINALISTICS CERTIFICATION

BALLOTING RESULTS

REVISED 2/28/80

1. LABORATORY POSITION*	Checked Percent	Of Those Checked Percent Yes
(A) Management (177)	13%	45%
(B) Supervisor (278)	20%	41%
(C) Case Examiner (831)	60%	36%
(D) Lab Technician (60)	4%	37%
(E) Other (86)	6%	35%

2. EVIDENCE EXAMINED		
(A) Controlled Substances (816)	58%	32%
(B) Serology (513)	37%	38%
(C) Firearms (309)	22%	35%
(D) Toolmarks (347)	25%	35%
(E) Toxicology (307)	22%	35%
(F) Arson (449)	32%	32%
(G) Explosives (311)	22%	28%
(H) Hairs (502)	36%	35%
(I) Fibers (498)	36%	35%
(J) Paint (497)	36%	32%
(K) Glass (439)	31%	33%
(L) Soil (356)	26%	32%
(M) Gunshot (341)	24%	30%
(N) Other (210)	15%	40%

* Individuals may have checked more than one position.

Base = 1396

5. GEOGRAPHICAL REGION	Checked Number	Checked Percent	Of Those Checked Percent Yes
(A) Northeast	153	11%	42%
(B) Mid-Atlantic	131	9%	38%
(C) Southeast	236	17%	39%
(D) Midwest	371	27%	41%
(E) Southwest	171	12%	32%
(F) Northwest	79	6%	35%
(G) California	233	17%	31%
(H) Other	13	1%	62%

(1387 Ballots where respondent checked geo. region and yes/no questions)

6. ARE YOU IN FAVOR OF CERTIFICATION?

	Number	Percent
Yes	526	38%
No	870	62%

(1396 ballots in which yes/no checked)

VOTING BY NUMBER OF MEMBERSHIPS

IN NATIONAL/REGIONAL ASSOCIATIONS

Number of Memberships	Vote	
	Yes	No
0	10 (13%)	65 (87%)
1	313 (35%)	570 (65%)
2	125 (42%)	171 (58%)
3	62 (60%)	42 (40%)
4	11 (42%)	15 (58%)
5	3 (60%)	2 (40%)
7	1(100%)	0 (0%)
8	2 (67%)	1 (33%)

CRIMINALISTICS CERTIFICATION BALLOTING RESULTS

2/28/80

National Results of All Respondents Who Indicated They Examined Only a Single Type of Evidence

	In Favor of Certification	
	Yes	No
Controlled Substances	63 (25%)	186 (75%)
Serology	38 (53%)	34 (47%)
Firearms	2 (15%)	11 (85%)
Toolmarks	1 (50%)	1 (50%)
Toxicology	17 (53%)	15 (47%)
All Categories Total	121 (33%)	247 (67%)

Results of Respondents Examining Only
One Evidence Type and Belonging to AAFS

	In Favor of Certification?	
	Yes	No
Controlled Substances	15 (50%)	15 (50%)
Serology	9 (60%)	6 (40%)
Firearms	1 (25%)	3 (75%)
Toolmarks	0 (0%)	0 (0%)
Toxicology	5 (71%)	2 (29%)
All Categories Total	30 (54%)	26 (46%)

Results of Respondents Examining Only
One Evidence Type and Belonging to AFTE

	In Favor of Certification?	
	Yes	No
Controlled Substances	0 (0%)	0 (0%)
Serology	0 (0%)	0 (0%)
Firearms	0 (0%)	10(100%)
Toolmarks	0 (0%)	1(100%)
Toxicology	0 (0%)	0 (0%)
All Categories Total	0 (0%)	11(100%)

Results of Respondents Examining Only
One Evidence Type and Belonging to ASCLD

	In Favor of Certification?	
	Yes	No
Controlled Substances	6 (50%)	6 (50%)
Serology	0 (0%)	0 (0%)
Firearms	0 (0%)	1(100%)
Toolmarks	0 (0%)	0 (0%)
Toxicology	1 (50%)	1 (50%)
All Categories Total	7 (47%)	8 (53%)

Results of Respondents Examining Only
One Evidence Type and Belonging to CAC

	In Favor of Certification?	
	Yes	No
Controlled Substances	4 (44%)	5 (56%)
Serology	5 (56%)	4 (44%)
Firearms	0 (0%)	0 (0%)
Toolmarks	1(100%)	0 (0%)
Toxicology	0 (0%)	1(100%)
All Categories Total	10 (50%)	10 (50%)

Results of Respondents Examining Only
One Evidence Type and Belonging to MAAFS

	In Favor of Certification ?	
	Yes	No
Controlled Substances	10 (42%)	14 (58%)
Serology	5 (71%)	2 (29%)
Firearms	0 (0%)	0 (0%)
Toolmarks	0 (0%)	1(100%)
Toxicology	3 (75%)	1 (25%)
All Categories Total	18 (50%)	18 (50%)

Results of Respondents Examining Only
One Evidence Type and Belonging to MAFS

	In Favor of Certification ?	
	Yes	No
Controlled Substances	14 (30%)	33 (70%)
Serology	5 (63%)	3 (37%)
Firearms	1 (14%)	6 (86%)
Toolmarks	0 (0%)	1(100%)
Toxicology	2(100%)	0 (0%)
All Categories Total	22 (34%)	43 (66%)

Results of Respondents Examining Only
One Evidence Type and Belonging to NEAFS

	In Favor of Certification ?	
	Yes	No
Controlled Substances	7 (23%)	24 (77%)
Serology	6 (67%)	3 (33%)
Firearms	0 (0%)	0 (0%)
Toolmarks	0 (0%)	0 (0%)
Toxicology	3 (75%)	1 (25%)
All Categories Total	16 (36%)	28 (64%)

Results of Respondents Examining Only
One Evidence Type and Belonging to NWAFS

	In Favor of Certification ?	
	Yes	No
Controlled Substances	2 (33%)	4 (67%)
Serology	4(100%)	0 (0%)
Firearms	0 (0%)	0 (0%)
Toolmarks	0 (0%)	0 (0%)
Toxicology	0 (0%)	2(100%)
All Categories Total	6 (50%)	6 (50%)

Results of Respondents Examining Only
One Evidence Type and Belonging to SAFS

	In Favor of Certification ?	
	Yes	No
Controlled Substances	10 (27%)	27 (73%)
Serology	6 (35%)	11 (65%)
Firearms	0 (0%)	0 (0%)
Toolmarks	0 (0%)	0 (0%)
Toxicology	6 (75%)	2 (25%)
All Categories Total	22 (35%)	40 (65%)

Results of Respondents Examining Only
One Evidence Type and Belonging to SWAFS

	In Favor of Certification ?	
	Yes	No
Controlled Substances	3 (14%)	18 (86%)
Serology	4 (67%)	2 (33%)
Firearms	0 (0%)	0 (0%)
Toolmarks	0 (0%)	0 (0%)
Toxicology	0 (0%)	2(100%)
All Categories Total	7 (24%)	22 (76%)

Results of Respondents Examining Only
One Evidence Type and Belonging to None

	In Favor of Certification ?	
	Yes	No
Controlled Substances	13 (22%)	46 (78%)
Serology	6 (40%)	9 (60%)
Firearms	1(100%)	0 (0%)
Toolmarks	0 (0%)	0 (0%)
Toxicology	2 (40%)	3 (60%)
All Categories Total	22 (28%)	58 (72%)

END