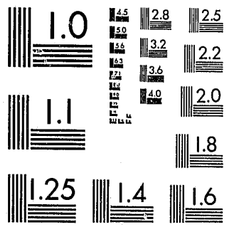

LABORATORY PROFICIENCY TESTING PROGRAM

SUPPLEMENTARY REPORT

SAMPLES 6 -10

Prepared for the Department of Justice, Law Enforcement Assistance Administration, National Institute of Law Enforcement and Criminal Justice, under Grant 76-NI-99-0091.

Points of view or opinions stated in this document are those of the authors and do not necessarily represent the official position or policies of the U.S. Department of Justice.

PREFACE

The analyses summarized in this report are intended for use as a supplement to previously distributed reports.

The Proficiency Testing Project, initiated in the fall of 1974, is a research study of how to prepare and distribute specific samples; how to analyze laboratory results; and how to report those results in a meaningful manner. Participation in the program is voluntary and anonymous, and involves approximately 240 laboratories. To date, 14 samples of evidence have been distributed. A Test Report has been published or is in the process of being published for each of these samples, each report being a statistical summary of the findings of the participating laboratories.

This report is the second of a series of supplementary reports which evaluates results from a grouping of samples. The observations are based on data which has been reported in the individual test reports for those samples.

The citing of any product or method in this report is done solely for reporting purposes and does not constitute an endorsement by the project sponsors.

Comments or suggestions relating to any portion of this report or of the program in general will be appreciated.

July, 1976

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INTRODUCTION

This document is the second of a series of supplementary reports which evaluates results from a grouping of proficiency testing samples. The observations are based on data which have been presented in the individual test reports for samples six through ten.

This supplementary report addresses the second iteration of the initial five sample categories: drugs, firearms, blood, glass, and paint. Samples and data sheets were designed to elicit more specific information than had been requested in the first round of testing. However, a continuation of unforseen and sometimes unavoidable problems encountered in the production and packaging of samples underscores the fact that this still must be regarded as a research project.

Test Sample #8, Blood, was reported by some to have exhibited characteristics caused by age or exposure to extreme heat thereby making identification difficult. Although extreme care was exercised in the preparation of the sample, it is possible that conditions out of the control of the manufacturer contributed to the problem found in some of the samples.

Test Sample #9, Glass, was a single headlight lens which was cut by the manufacturer rather than broken to assure an adequate number of samples of uniform size. This created tool markings on the glass and pieces of uniform shape that proved to be misleading to some participants.

Test Sample #10, Paint, was poorly packaged resulting in the cancellation of the test and the substitution of another paint sample, #10A.

The information and insight gained through a review of these difficulties has proven valuable in the construction of subsequent test samples. This monitoring and review process should aid in the refinement of testing procedures to the point where valid and reliable data are generated with an absolute minimum of unanticipated and extraneous variables.

The Project Advisory Committee believes that many significant trends are demonstrated in the responses returned and that a number of generalizations can be made which are fully supported by the nature and quality of the responses.

RESPONSE RATES

#6 DRUG ANALYSIS (179)	N.R. (46)	(8)

Participation rate = 80%

#7 FIREARMS (130)	N.R. (26)	(70)

Participation rate = 80%

#8 BLOOD ANALYSIS (128)	N.R. (59)	(48)

Participation rate = 69%

#9 GLASS (112)	N.R. (61)	(62)

Participation rate = 65%

#10 PAINT (110)	N.R. (66)	(59)

Participation rate = 62%

TEST #6 - DRUG ANALYSIS

A mixture of heroin, cocaine, procaine, and lactose was sent out as Test Sample #6. The mixture was made up with the levels of heroin, cocaine, and procaine set at 3% each, the remainder being lactose.

Heroin was correctly reported by 177 of the 179 laboratories participating, representing 98.9% of the laboratories involved in this study. Cocaine was identified by 126 of the laboratories, or 70.4% of those participating. Procaine was correctly identified by 130 laboratories, or 72.6% of the laboratories participating. It should be noted that in some instances statutory considerations or laboratory or agency policy require that only one controlled material need be identified.

Eight laboratories reported traces of monoacetylmorphine in addition to heroin, many having used sensitive techniques such as GC/MS in performing these analyses. Although the supplier's statement makes no mention of monoacetylmorphine, it is reasonable to expect a trace of this material due to incomplete acetylation hydrolysis of the heroin. Three laboratories, also utilizing GC/MS, found traces of acetylcodeine. Again, it is not unreasonable to encounter a trace quantity of acetylcodeine as a constituent normally found with heroin, and, although the supplier's statement makes no mention of acetylcodeine, the Project Advisory Committee does not consider the reporting of either acetylcodeine or monoacetylmorphine to be an incorrect response.

One laboratory failed to identify any controlled substance in the test sample, one laboratory identified quinine, three laboratories identified starch, one laboratory found tentative indications of methapyrilene, one laboratory found morphine but no monoacetylmorphine, and two laboratories identified monoacetylmorphine as the major component with heroin present in lesser or trace concentrations.

The Project Advisory Committee is in accord with the following general comments in regard to these responses:

- The laboratory reporting no controlled drug material used only an unspecified color reaction and a microcrystal test. The limited methodology applied was insufficient for the purpose of detection and identification of drug or narcotic materials.

- Three laboratories reported starch, although from the data sheets returned it is unclear what methodology was used in the identifications. The Project Advisory Committee concludes that the cause of these errors most likely rests in carelessness or lack of experience on the part of the examiner.

- One laboratory reported a trace of morphine, but specifically eliminated the presence of monoacetylmorphine. On the basis of what is known of the hydrolysis of heroin through monoacetylmorphine to morphine, the Project Advisory Committee views these results with skepticism.

The laboratory reporting quinine used UV, IR, Spot Tests, Microcrystal Tests, and Melting Point Tests. The Project Advisory Committee can conclude that either one or both of the following may have occurred:

- Mislabelled or contaminated primary standard.

- Misinterpretation of the Test results by the operator resulting from carelessness or lack of experience. Examples of this type would include the misinterpretation of IR spectra, the failure to properly recognize and interpret crystal forms, and other types of operator error.

Two laboratories reported traces of heroin and larger concentrations of monoacetylmorphine. The Project Advisory Committee regards these as two instances of misidentification. One of the laboratories reported using Color Tests, Microcrystal Tests, UV Spectrophotometry, and TLC. The other laboratory reported using Color Tests, Melting Points, GC, and TLC in three solvent systems. The Project Advisory Committee concludes that one or more errors such as those previously cited may have occurred.

TEST #7 - FIREARMS EXAMINATION

Each laboratory received three projectiles and two cartridge cases, in accord with a specific scenario (See Appendix, Data Sheet #7 and Quick Report #7). The scenario required the participating laboratory to compare the three projectiles to determine if they had been fired through the same weapon, and to compare the two cartridge cases to determine if they had been fired in the same weapon.

The projectiles marked A, B, C, D, E, F, G, H, J, K, L, O, P, Q, R, S, T, U, V, or Y, and the cartridge cases marked 5, 7, or 8, were fired through one weapon, a Colt .32 Auto pistol, Serial #214325. The projectiles marked I, M, N, X, or Z, and the cartridge cases marked 2, 3, or 4, were fired in another weapon, a Colt .32 Auto pistol, Serial #521524.

One laboratory reported inconclusive results in the portion of the exercise involving projectiles, and 26 laboratories reported inconclusive results in the portion dealing with the comparison of cartridge cases. Five laboratories reported results in the section dealing with projectiles which are at variance with the supplier's statement, and four laboratories reported results in the section dealing with cartridge case comparisons which are at variance with the supplier's statement.

The Project Advisory Committee is in accord with the following general statements in regard to these responses:

Either a "no" or an "inconclusive" response to question 1b (dealing with the cartridge cases) is acceptable. The Project Advisory Committee recognizes that although a "no" response is more correct in an absolute sense, the general area of firearms identification is one that calls for considerable caution. Ultimately, unless other issues are involved, it remains for the examiner to determine for himself the modicum of proof necessary to arrive at a definitive opinion. At the same time, however, the firearms examiner should not divest himself of the responsibility to refine his attitudes in light of additional experience so that a more definitive opinion can be rendered when the circumstances warrant.

Five laboratories misidentified a projectile, reporting that one of the projectiles actually fired through the Colt .32 Auto pistol, Serial #521524, had been fired through the other weapon, the Colt .32 Auto pistol, Serial #214325. Five laboratories (including three of the laboratories who misidentified a projectile) misidentified a cartridge case, reporting that one of the cartridge cases actually fired through the Colt .32 Auto pistol, Serial #521524, had been fired in the other weapon, the Colt .32 Auto

pistol, Serial #214325. Five laboratories represent 3.8% of all the laboratories participating in this study. The Project Advisory Committee considers these errors to be particularly grave in nature, and urges the laboratories involved to immediately undertake such measures as necessary to correct their deficiencies. A criminal prosecution may hinge entirely, or virtually so, upon firearms evidence and the testimony of the firearms identification expert, and the potential exists for a truly severe miscarriage of justice. Responsibility for errors such as those under discussion rests squarely with the examiner and those responsible for his supervision. The Project Advisory Committee concludes that these errors may have resulted from one or more of the following:

Carelessness on the part of the examiner.

A lack of experience or training on the part of the examiner.

Inadequate supervision by a qualified firearms identification expert.

TEST #8 - BLOOD ANALYSIS

Two samples, each consisting of several drops of blood on a swatch of cloth, were sent to participating laboratories. Reports were received from 131 laboratories. The following four questions were asked (See Appendix, Data Sheet #8 and Quick Report #8):

Question 1: Have the stains been confirmed as blood?

Question 2: Have the stains been confirmed as human blood?

Question 3: Could Item A and Item B (the two stains) have originated from the same source?

Question 4: What information did you develop to arrive at your conclusion in Question #3?

The responses to these questions have been tabulated in considerable detail in the document entitled "Laboratory Proficiency Testing Program Report No. 8 - BLOOD". The Project Advisory Committee wishes to address several broad areas, and the reader is advised to refer to Report No. 8 for details concerning specific areas.

Forty-nine of the 131 laboratories returning data correctly reported that the two bloodstains could not have shared a common source. This represents 37.4% of the participating laboratories. Forty-nine laboratories incorrectly reported that the two stains could have shared a common origin, and 26 labs reported inconclusive results. Two laboratories reported incorrect results for the ABO system. This represents 1.6% of the 123 laboratories reporting this system. Six laboratories, or 20% of the 30 laboratories using this system, reported incorrect results for the MN system. Five of the 20 laboratories reporting results for the Rh system reported incorrect results. This represents 25% of the laboratories reporting the Rh system. Two laboratories, or 6.1% of the 33 laboratories attempting the PGM system reported incorrect results. One laboratory of the 8 laboratories reporting Esterase D results reported an incorrect type. One laboratory of the 7 attempting the AK system reported incorrect results, and 1 of the 15 labs reporting the Hemoglobin type reported an incorrect type.

The Project Advisory Committee is in accord with the following general comments in regard to these results:

Forty-nine laboratories incorrectly reported that two stains could have shared a common origin, and 26 laboratories reported inconclusive results. In the overwhelming majority of these cases these opinions were based on minimal data, in most cases based only on the

ABO type. The Project Advisory Committee takes issue with the practice of conducting only an ABO typing and reporting that two stains could have shared a common origin, and is only slightly more sympathetic with the practice of reporting inconclusive results after conducting only ABO typing. The Project Advisory Committee is on record previously on this point, but wishes to reiterate its opinion that the Crime Laboratories in the nation cannot rely upon ABO grouping alone as a general rule. Laboratories doing so are ignoring the very powerful discriminating abilities of the isoenzyme and serum protein techniques. With proper education and training these examinations should be within the reach of virtually any laboratory conducting forensic blood testing. The capital outlay for equipment is modest, and the techniques are based on sound scientific principles. The Project Advisory Committee considers the number of laboratories conducting the more recently developed blood protein and isoenzyme group examinations to be insufficient, and urges laboratories not now conducting these examinations to systematically build a capability in this area.

One of the laboratories reporting an incorrect response for the ABO type relied upon the Lattes slide method alone. The Project Advisory Committee wishes to reiterate its previous comments, that the Lattes test or other test for blood group antibodies is, by itself, insufficient for purposes of forensic blood group analysis.

The error rate with the Rh system reflects, in part, the multiplicity of factors in this system. A number of laboratories reported all five factors, correctly reporting all but one of the factors. Nevertheless, the error rates encountered in the Rh system, points out the need for reliable, avid antisera, painstaking attention to technique, proper training on the part of the examiner, and proper supervision. Laboratories reporting incorrect responses for these systems, as well as in the isoenzyme and serum protein types, should undertake an assessment of the reliability of their methodologies and review the interpretive aspects of their determinations.

Several laboratories correctly reported that the stains A and B could not have shared a common source, but made an error at some point in the typing procedure. Although they obtained the correct answer, they did so for the wrong reasons. The Project Advisory Committee wishes to point out that a correct answer which is only coincidental still constitutes an error.

The Project Advisory Committee has observed that in a number of instances laboratories are invoking a sequence of testing which does not provide maximum discrimination. An example of this situation would be a laboratory that attempts three systems--the ABO system, the Hemoglobin type as a second choice, and, as the third choice, the AK system. The Project Advisory Committee encourages laboratories to reflect upon the probability of discrimination when establishing the order in which the tests are to be run.

TEST #9 - GLASS ANALYSIS

Each laboratory received three items of glass marked Item A, B, and C in accord with a specific hit and run scenario. The scenario required the laboratories to compare the three glass samples and to determine if Items A and B could have had common origin with C.

All of the glass samples were prepared from a single Corning headlight lens with a supplier's reported refractive index of 1.47777. When pieces from different locations of the lens were measured, the refractive index differed by no more than 4 in the 5th decimal place.

Test Sample #9 was reported correctly by 78 of the 112 laboratories responding. This represents 69.6% of the laboratories participating.

Ten (8.9%) laboratories reported only A could have had a common origin with C, while nine (8.0%) reported that only B could have shared a common origin with C.

Nine (8.0%) laboratories reported that neither A or B could have had a common origin with C, and 4 (3.5%) reported inconclusive results for both A and B.

The Project Advisory Committee is in accord with the following general comments in regard to this sample:

At least six of the incorrect responses were the result of laboratories performing an insufficient number of tests leading to the formulation of inappropriate conclusions. Density measurements, particularly those relying on the sink-float method, were too imprecise to be used as the only method for determining the origin of multiple glass samples.

Errors in refractive index and density determinations were largely responsible for incorrect responses from approximately eighteen laboratories. Refractive index variations were likely due to errors or carelessness by the operator, and failure to employ sufficiently sensitive techniques for the control and measurement of temperature and the refractive index of the immersion liquid itself. Accuracy and precision were generally improved through the utilization of more sophisticated instruments such as the phase contrast microscope and hot stage. Their use, however, did not assure correct answers as evidenced by errors from laboratories employing such refinements.

Several laboratories reported the correct answers (A and B shared a common origin with C), but reported incorrect density or refractive index values. The measurements were sufficiently precise but lacked accuracy. Such a condition indicates that these laboratories need to examine the immersion liquids and to calibrate the refractometers being utilized.

At least twelve laboratories reported that one or more of the glass samples fluoresced under UV light, with colors ranging from orange to blue-purple. The glass should not have fluoresced when subjected to either short or long wave UV; it is likely that several operators mistook the spillover from the UV light source itself as fluorescence of the sample, or that the supporting medium contributed to a background fluorescence.

Elemental analyses were significant in leading ten laboratories to erroneously report that A, B, and C did not all share a common origin. In fact, it appeared that were it not for the employment of elemental analysis, most of these laboratories would have submitted correct responses. The Project Advisory Committee does not suggest that elemental analysis should not be employed but does observe that instrumental and/or operator error resulted in spurious results in a sizeable number of cases. This area will be elaborated upon in a subsequent section of this report.

Although these glass specimens were not truly representative of evidence recovered from hit and run cases in that the pieces had been cut, rather than broken from a single headlight lens, their shape and size should not have led laboratories to conclude that they could not have shared a common origin. It appeared that some laboratories placed too much weight on the linear dimensions of the samples contributing to a conclusion that A, B, and C did not have a common origin.

TEST #10 - PAINT EXAMINATION

Laboratories received three paint samples, Item B representing a sample removed from the door jamb of a burglarized building and Items A and C representing samples found on the clothing of two different suspects. Laboratories were asked if Items A and C could have had a common origin with B.

Item A was an acrylic based paint while Items B and C were soya alkyd based paint samples. Item C contained a substantial quantity of ZnO while Items A and B contained only trace amounts of zinc.

Given the above specifications neither A nor C could have shared a common origin with B.

Test Sample #10 was reported correctly by 53 of the 106 laboratories responding. This represents 50% of the laboratories participating. This sample was intended to be a test of both the organic and inorganic analysis capabilities of forensic science laboratories. That is, laboratories needed organic capabilities to differentiate Item A from Item B and inorganic analysis capabilities to differentiate Item C from Item B.

Of the laboratories reporting results, 24 were unable to discriminate Item A from Item B (those with different organic compositions), and 36 were unable to differentiate Item C from Item B (samples possessing inorganic dissimilarities). In the first category 16 laboratories reported Item A and Item B could have had a common origin, with 8 laboratories reporting inconclusive results. In the second category, 31 laboratories reported Item B and Item C could have had a common origin, with the remaining 5 laboratories citing inconclusive results. Only two laboratories incorrectly reported both A and C could have shared a common origin with B.

The Project Advisory Committee is in accord with the following general comments in regard to this sample:

The laboratories which failed to detect the organic differences in Items A and B should review their instrumentation, methodologies and operator skills in the organic analysis area. Of the 16 laboratories that reported Items A and B to share a common origin, only 2 employed Pyrolysis G-C and 14 did not. Those laboratories which utilized PGC should have been able to detect differences in the two samples.

Practically twice as many laboratories (31) reported that Items B and C could have shared a common origin and therefore failed to detect the higher level of zinc in C. Of the 31 incorrect responses, 21 failed to employ any elemental analysis techniques, while 10 did. Those not employing elemental analysis should consider doing so and those that did, but failed to detect the large quantitative difference in zinc composition between Items B and C should undertake an assessment of the validity and reliability of their instrumentation, methods of analysis and guidelines for the interpretation of results.

A single laboratory reported the use of Marquis, Mecke, and Froehde reagents in an effort to differentiate the paint samples. Such procedures have no basis for the characterization of paint and should be discontinued.

There was great variation among laboratories in the use and interpretation of chemical spot tests/solubility tests. The manufacturer of the paint samples reports that the samples could have been differentiated on the basis of non-instrumental tests alone. It seems clear from reviewing the data sheets that there exists great variability in the use and interpretation of solubility tests among the nations crime laboratories and that LEAA/NILECJ should fund efforts in compiling and disseminating information/guidelines on the use and interpretation of chemical spot tests/solubility tests.

INSTRUMENTAL ANALYSIS

The Project Advisory Committee wishes to draw attention to the fact that the results of instrumental analyses reported in connection with various test samples have varied widely, both qualitatively and quantitatively. The following two tables attempt to depict this variation, using data abstracted from Test Sample No. 9, Glass, and Test Sample No. 10, Paint.

Table I illustrates the elements reported by a number of laboratories for the glass samples. The glass samples were homogeneous and were cut from a single automobile headlamp. The Project Advisory Committee recognizes that the failure of a laboratory to report a specific element does not necessarily imply that the element was in fact sought for with negative results. Nevertheless, the wide variation in the reporting of the elements present suggests to the Project Advisory Committee that those laboratories utilizing elemental analysis by whatever instrumental approach should take whatever precautions necessary to ensure that proper standards are run and that the operator possesses the requisite skill inventories to interpret the instrumental data.

Table II illustrates the elements reported by a number of laboratories for the three paint samples, Test Sample No. 10. Again, the lack of consistency in the reporting of the elements present suggests to the Project Advisory Committee that elemental analysis is an area that deserves attention, and suggests that laboratories employing instrumental techniques for elemental analysis carefully review their methodology.

TABLE I.

INSTRUMENTAL ANALYSIS OF GLASS - TEST SAMPLE #9

Elements Reported	Lab A	Lab B	Lab C	Lab D	Lab E
Li	X	X			
B	X		X		X
Na	X		X		
Mg	X	X	X		
Al	X	X	X		
Si	X		X	X	X
P					X
Ca	X	X	X		
Ti			X		
Mn	X	X			
Fe	X	X	X		
Cu	X	X			
Ni			X		
Zn				X	
As	X	X		X	
Zr			X		
Pb					X

TABLE II.

INSTRUMENTAL ANALYSIS OF PAINT - TEST SAMPLE #10

Elements Reported for Paint Samples

Lab	A	B	C
A	Sb Mg Fe Ti Ca Zn Si no Al	Sb Mg Fe Ti Ca Zn Si no Al	Mg Ti Ca Al Zn Si no Fe or Sb
B	Ti Mg Si high Zn	Ti Mg Si low Zn	Ti Mg Si low Zn
C	Ti low Zn	Ti low Zn	Ti high Zn
D	Cu	Cu	Cu
E	Pb Ti Ca	Pb Ti Ca	Pb Zn
F	Sb Ti Cr Cu Al High Zn	Sb Ti Cr Cu Al Zn	Sb Ti Cr Cu Al Zn

PAINT CHEMICAL/SOLUBILITY TESTS

The Project Advisory Committee wishes to draw attention to the fact that wide variation was reported in connection with the behavior in various solvents and reagents of the paint samples in Test Sample 10. Table III abstracts a portion of the data reported concerning the solubility of the three paint samples in a single solvent, sulfuric acid. The Project Advisory Committee recognizes that certain of the discrepancies may be attributed to different operating conditions, e.g., cold or hot solvent. Nevertheless, it appears to the Project Advisory Committee that this is an area with considerable potential for confusion, and again urges LEAA/NILECJ to fund research projects to develop more standardized procedures for paint solubility determinations.

TABLE III.

REPORTED SOLUBILITY OF PAINTS IN H_2SO_4 - TEST SAMPLE #10

	Paint		
Labs	A	B	C
A	+	+	+
B	-	-	-
C	+	+	+
D	-	-	-
E	-	-	+
F	+	-	-
G	+	-	-
H	-	-	+
I	+	-	-
J	+	+	+
K	-	-	-

\+ = soluble

\- = insoluble

APPENDIX

FIGURE 1

LAB CODE A-_____

☐ CHECK HERE (AND RETURN) IF YOU DO NOT PERFORM DRUG ANALYSIS

DATE RECEIVED IN LAB _____

DATE PROCESSED IN LAB _____

DATA SHEET

PROFICIENCY TESTING PROGRAM

TEST #6

DRUG ANALYSIS

1. The enclosed substance was a street buy. The agent needs all the qualitative and quantitative information you can give him.

(Over)

2. Indicate method(s) used:

DATA SHEETS MUST BE RECEIVED AT THE FOUNDATION OFFICE

BY JULY 14, 1975.

FIGURE 2

QUICK REPORT

PROFICIENCY TESTING PROGRAM

TEST #6
DRUG ANALYSIS

Thank you for returning your data sheets and test results. The white powder contains heroin, cocaine, procaine and lactose.

According to the manufacturer, the sample is a blend with a nominal value of 3% heroin, 3% cocaine, 3% procaine and 91% lactose. Results submitted by two referee laboratories have an average value of 2.7% heroin, 2.6% cocaine and 3.1% procaine.

At a later date a complete report will be sent to you including the results submitted by all laboratories (by Code Number).

FIGURE 3 LAB CODE A-_____

☐ CHECK HERE (AND RETURN) IF YOU DO NOT PERFORM FIREARMS EXAMINATIONS

DATE RECEIVED IN LAB _____

DATE PROCESSED IN LAB _____

DATA SHEET

PROFICIENCY TESTING PROGRAM
TEST NO. 7

FIREARMS EXAMINATION

Examine according to your normal laboratory procedures and complete portion(s) below which complies with your laboratory policy.

SCENARIO: Two homicides have occurred, approximately ten days apart. At the scene of homicide #1 there were recovered one projectile and one cartridge case. At the scene of homicide #2 there were recovered two projectiles and one cartridge case.

(All bullets are marked with a letter on the base; cartridge cases, with a number on the side near the open end, read with the open end to your right.)

1. BULLET AND CARTRIDGE CASE COMPARISONS

a. Which, if any, of the three projectiles were fired from the same gun?

☐ None

☐ Projectiles fired from same gun
(List letters)

_____

_____

_____

☐ Inconclusive
Explanation of inconclusive answer:

b. Were the two cartridge cases fired in the same gun?

☐ Yes

☐ No

☐ Inconclusive

(Over)

2. ADDITIONAL COMMENTS:

DATA SHEETS MUST BE RECEIVED AT THE FOUNDATION OFFICE BY AUGUST 11, 1975

FIGURE 4

QUICK REPORT

PROFICIENCY TESTING PROGRAM

TEST #7

FIREARMS EXAMINATION

Thank you for returning your data sheets and test results. The firearms sample can be characterized according to the sample manufacturer as follows:

"Crime Scene 1"

The copper-jacketed bullet (marked on the base with any one of the following letters assigned on the basis of random selection: A, B, C, D, E, F, G, H, J, K, L, O, P, Q, R, S, T, U, V, Y) was fired from a Colt .32 Auto pistol, Serial # 214325. A total of 352 rounds was fired in groups of 16.

The cartridge case (marked on the side with any one of the following numbers assigned on the basis of random selection: 5, 7, 8) was also fired in the Colt .32 Auto pistol, Serial # 214325, mentioned above.

"Crime Scene 2"

The copper-jacketed bullet (marked on the base with any one of the following letters assigned on the basis of random selection: A, B, C, D, E, F, G, H, J, K, L, O, P, Q, R, S, T, U, V, Y) was fired from the same gun and within the same group as the bullet from "Crime Scene 1"; the Colt .32 Auto pistol, Serial # 214325.

The other copper-jacketed bullet (marked on the base with any one of the following letters assigned on the basis of random selection: I, M, N, X, Z) was fired from a second Colt .32 Auto pistol, Serial # 521524.

The cartridge case (marked on the side with any one of the following numbers assigned on the basis of random selection: 2, 3, 4) was also fired in the same Colt .32 Auto pistol, Serial #521524.

At a later date a complete report will be sent to you including the results of three referee laboratories and the results of all laboratories (by code numbers).

FIGURE 5 LAB CODE A-_____

☐ CHECK HERE (AND RETURN) IF YOU DO NOT PERFORM BLOOD ANALYSIS

DATE RECEIVED IN LAB_____

DATE PROCESSED IN LAB_____

DATA SHEET

PROFICIENCY TESTING PROGRAM

TEST #8

BLOOD ANALYSIS

Please examine samples according to your normal laboratory procedures and complete portion(s) which comply with your laboratory policy. The checklists are intended as a convenience in filling out the report; they are not intended to suggest any specific test or battery of tests. Please add any additional information you consider pertinent to your response.

1. Have the stains been confirmed as blood?

	Item A	Item B
Yes	☐	☐
No	☐	☐
Inconclusive	☐	☐

Methods Used:

☐ Color test (Specify)_____
☐ Crystal test (Specify)_____
☐ Macroscopic
☐ Microscopic
☐ Precipitin
☐ Other (Specify)_____

Comments: _____

2. Have the stains been confirmed as human blood?

	Item A	Item B
Yes	☐	☐
No	☐	☐
Inconclusive	☐	☐

Methods Used:

☐ Electrophoresis
☐ Precipitin
☐ Other (Specify)_____

Comments: _____

(over)

FIGURE 6

QUICK REPORT

PROFICIENCY TESTING PROGRAM

TEST #8

BLOOD ANALYSIS

Thank you for returning your data sheets and test results. The blood samples can be characterized according to the sample manufacturer as follows:

	ITEM A (Yellow Cloth)	ITEM B (Blue-White Cloth)
A	-/- (Type O)	-/- (Type O)
B		
D	+	+
C	+	-
E	-	+
c	+	+
e	+	+
M	-	+
N	+	-
S	+	+
s	+	+
Kell	-	-
Duffy	-	-
Kidd	-	-
ADA	1-1	1-1
AK	1-1	1-1
G-^{6}PD	A-A	A-A
Gm (a)	+	+
Gm (x)	-	+
Gm (f_1)	+	+
Gm (b^1)	+	+
Inv 1	-	+
EAP	AB	AA
PGM	2-1	2-1
H_p	2-1	1-1
ESD	1-1	1-1
Gc	2-1	2-1
Amylase$_2$	B	A

At a later date a complete report will be sent to you including the results of three referee laboratories and the results of all laboratories (by code numbers).

FIGURE 7

LAB CODE A - _____

☐ CHECK HERE (AND RETURN) IF YOU DO NOT PERFORM GLASS EXAMINATION

DATE RECEIVED IN LAB _____
DATE PROCESSED IN LAB _____

DATA SHEET
PROFICIENCY TESTING PROGRAM

TEST #9
GLASS EXAMINATION

Item A and B represent glass samples removed from the clothing of two hit and run victims found in different locations. Item C represents glass removed from a suspect vehicle.

1. Could Item A and B have common origin with Item C?

	Item A	Item B
Yes	☐	☐
No	☐	☐
Inconclusive	☐	☐

2. What information (qualitative and quantitative) did you develop to arrive at your conclusions in Question 1? (Please check all appropriate boxes and provide values where applicable.)

	Item A	Item B	Item C
a. Color			
b. Density			
c. Dispersion Curves			
d. Elemental Analysis			
e. Physical Match			
f. Refractive Index			
g. Thickness			
h. U.V. Light			
i. X-ray Fluorescence			
j. Other (Specify)			

- Over -

3. Please specify the methods and/or instructions which were used for those methods checked in Question 2. (Example: Refractive Index using Cargille liquids, hot stage; Density gradient tubes with mixture of bromobenzene and bromoform, etc. Attach additional sheets if necessary.)

Method:

Method:

Method:

Method:

DATA SHEETS MUST BE RECEIVED AT THE FOUNDATION OFFICE BY OCTOBER 6, 1975

FIGURE 8

QUICK REPORT

PROFICIENCY TESTING PROGRAM

TEST NO. 9 - GLASS ANALYSIS

Thank you for returning your data sheets and test results. The glass samples were all prepared from a single headlight lens (Corning) with a refractive index of 1.47777. When pieces from different locations on the lens were measured, the refractive index differed by no more than 4 in the 5th decimal place. Therefore, samples A, B, and C are the same.

At a later date a complete report will be sent to you including the results of the referee laboratories and the results of all laboratories (by code number).

FIGURE 9

LAB CODE A_____

☐ CHECK HERE (AND RETURN) IF YOU DO NOT PERFORM PAINT EXAMINATION

DATE RECEIVED IN LAB_____

DATE PROCESSED IN LAB _____

DATA SHEET
PROFICIENCY TESTING PROGRAM

TEST #10A
PAINT EXAMINATION

Item B represents a paint sample removed from the door jamb of a burglarized building. Items A and C represent samples found on the clothing of two different suspects.

1. Could Items A or C have common origin with B?

	ITEM A	ITEM C
YES	☐	☐
NO	☐	☐
INCONCLUSIVE	☐	☐

2. What information (qualitative and quantitative) did you develop to arrive at your conclusions in Question 1? Please check all appropriate boxes and provide values where applicable.

In the left hand column indicate the sequence (1,2,3 etc.) in which the tests were run. Indicate with an asterisk (*) the point where a conclusion was reached, even though subsequent tests were performed for confirmatory purposes.

Sequence of Testing		ITEM A	ITEM B	ITEM C
_____	DENSITY STUDIES			
_____	EMISSION SPECTROSCOPY (Specify Elements Identified)			
_____	FLUORESCENT STUDIES			
_____	INFRARED ANALYSIS			
_____	MACROSCOPIC EXAMINATION			
_____	MICROSCOPIC EXAMINATION			
_____	PYROLYSIS G-C			
_____	SOLUBILITY TESTS (Specify Solvents Used)			
_____	THIN LAYER CHROMATOGRAPHY			
_____	UV SPECTROPHOTOMETRY			
_____	X-RAY DIFFRACTION			
_____	X-RAY FLUORESCENCE (Count Ratio)			
_____	OTHER (SPECIFY)			

- OVER -

3. Please specify the information developed with each of the methods and instruments checked in Question 2. (Example: Solubility tests using HCl, H_2SO_4, Acetone and HNO_3). Please provide specific and complete responses. Attach additional sheets if necessary.

Method:

Method:

Method:

Method:

4. Additional Comments:

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END