

FBI

**CONFIDENTIAL**

Date: 4/17/64

Transmit the following in \_\_\_\_\_

(Type in plain text or code)

Via \_\_\_\_\_

**AIRTEL**

**AIRMAIL**

(Priority or Method of Mailing)

**TO: DIRECTOR, FBI (105-82555)**

**FROM: SAC, TAMPA (105-2142) (P)**

**LEE HARVEY OSWALD  
IS - R - CUBA**

Re Bureau airtel to Albany 4/15/64.

All security informants and PSIs in Nov. 1963 were contacted pursuant to Butel to all offices 11/22/63 captioned "ASSASSINATION OF PRESIDENT JOHN F. KENNEDY". These contacts were reported in report of SA WILLIAM C. HAY 12/4/63 captioned "LEE HARVEY OSWALD, aka".

[redacted] and following PSIs, approved since Nov. 1963, were contacted 4/16 and 17/64, pursuant to retel:

[redacted] c

[redacted]

- 3 - Bureau (RM)
  - 2 - Dallas (100-10461) (RM)
  - 2 - Tampa
- HKR:nh  
(7)

REC-43

105-82555-3238

10 APR 20 1964

Classified by 2040  
Exempt from GDS Category 2  
Date of Declassification Indefinite  
7/13/77

SOVIET SECTION

79 APR 22 1964

Special Agent in Charge **CONFIDENTIAL**

Date: 4/17/64

Transmit the following in \_\_\_\_\_  
(Type in plain text or code)

Via AIRTEL AIR MAIL - REGISTERED  
(Priority)

TO: DIRECTOR, FBI (105-82555)  
FROM: SAC, LOS ANGELES (105-15823)  
RE: LEE HARVEY OSWALD  
IS - R - CUBA  
OO: Dallas

*act*

Re Bureau airtel to all offices dated 4/15/64 which deals with contacting informants.

Identity of informants contacted and date of contact set out in report of SA NEAL MC GINNIS dated 12/1/63 at Los Angeles, captioned LEE HARVEY OSWALD, aka., IS - R.

*B*

- c. 644 RBR*
- 3 - Bureau (RM)
- 2 - Dallas (100-10461) (AM) (RM)
- 1 - Los Angeles

CCO: cem  
(6)

REC-43

105-82555-3239

**EX-101**

APR 20 1964

*SOVIET SECTION*

Approved: *[Signature]* Special Agent in Charge

Sent \_\_\_\_\_ Per \_\_\_\_\_

79 APR 22 1964



Date: 4/17/64

Transmit the following in \_\_\_\_\_  
(Type in plain text or code)

Via AIRTEL AIR MAIL - REGISTERED  
(Priority)

TO: DIRECTOR, FBI (105-82555)  
FROM: SAC, LITTLE ROCK (105-406) -RUC-  
SUBJECT: LEE HARVEY OSWALD  
IS - R - CUBA

*Handwritten initials*

Re Bureau airtel to all Field Offices dated 4/15/64.

[Redacted] was contacted on 11/22/63 with negative results concerning the assassination of President JOHN F. KENNEDY.

The above negative contact was furnished to the Dallas Office, along with the fact that in accordance with Bureau instructions all racial and criminal informants have been contacted with negative results, by Little Rock airtel dated 12/3/63. This information was not furnished to the Bureau in view of Butel to all offices dated 11/23/63 instructing that daily teletypes be discontinued and regular contact with informants be resumed.

*Handwritten letter B*

[Redacted] was contacted on 4/16/64 at which time he advised that LEE HARVEY OSWALD was unknown to him and he had absolutely no information concerning OSWALD's activities.

3 - Bureau (RM) *PC 644 RBR*  
1 - Dallas (100-10461) (RM)  
2 - Little Rock (1 - 105-406) (1 - [Redacted])  
EFM/jew  
(6)

REC-43

105-82555-3240

APR 18 1964

*Stamp: APR 17 1964*

*Handwritten signature*  
SOYER SECTION

Approved: *[Signature]*  
Special Agent in Charge

Sent \_\_\_\_\_ M Per \_\_\_\_\_

79 APR 22 1964

Date: 4/17/64

Transmit the following in \_\_\_\_\_  
(Type in plain text or code)

Via AIRTEL \_\_\_\_\_  
(Priority)

TO: DIRECTOR, FBI (105-82555)

FROM: SAC, DENVER (89-41)

LEE HARVEY OSWALD  
IS - R - CUEA

*dcj*

Re Bureau airtel to Albany dated 4/15/64.

Please be advised that all security informants of the Denver Office were contacted and reported in the report of SA RAYMOND J. FOX dated 12/1/63 at Denver captioned "LEE HARVEY OSWALD, Aka., IS - R." These informants were familiar with some phases of the activity of the Communist Party, SWP, FPCC, as well as racial extremists. The informants reported were [redacted] and [redacted]

*1/2*

Since that time the Denver Office has developed two new informants, [redacted] and [redacted] so all Denver informants were recontacted and have no information pertaining to above-captioned individual.

[redacted] contacted 4/17/64; [redacted] contacted 4/16/64; [redacted] contacted 4/17/64; [redacted] contacted 4/17/64.

- ③ - Bureau (RM) (All)
- 2 - Denver
- LDN:nll
- (5)

REC-43 105-82555-3241

10 APR 20 1964

*C. Wick*  
*[Signature]*

APR 20 1964

*[Signature]*  
SOVIET DIVISION

Approved: \_\_\_\_\_ Sent \_\_\_\_\_  
Special Agent in Charge

79 APR 22 1964



- 1 - J. R. Malley
- 1 - G. N. Coakley
- 1 - W. A. Branigan
- 1 - R. E. Lenihan
- 1 - J. M. Sizoo

April 9, 1964

BY COURIER SERVICE

REC-11 105-82555-34

APR 9 5 49 PM '64  
 REC'D-READING ROOM  
 FBI

Honorable J. Leo Rankin  
 General Counsel  
 The President's Commission  
 200 Maryland Avenue, N. E.  
 Washington, D. C.

*See Serial J*

Dear Mr. Rankin:

Reference is made to my previous letters of March 17 and 26, 1964, which forwarded copies and translations of articles by Thomas Gittings Buchanan, Jr., in recent issues of the French newspaper, "L'Express."

There are enclosed a copy of Buchanan's article which appeared in the March 19, 1964, issue of that newspaper and two copies of a translation of the article made by this Bureau.

For your information, a copy of the translation of the article is being furnished to the United States Secret Service inasmuch as certain information in Buchanan's article relates to possible threats against the President of the United States.

You will be furnished copies of future articles authored by Buchanan in "L'Express," as well as translations thereof.

76 APR 1 11  
 COMM - FBI

Sincerely yours,  
 J. Edgar Hoover

105-82555

Tolson \_\_\_\_\_  
 Belmont \_\_\_\_\_  
 Mohr \_\_\_\_\_  
 Casper \_\_\_\_\_  
 Callahan \_\_\_\_\_  
 Conrad \_\_\_\_\_  
 DeLoach \_\_\_\_\_  
 Evans \_\_\_\_\_  
 Gale \_\_\_\_\_  
 Rosen \_\_\_\_\_  
 Sullivan \_\_\_\_\_  
 Tavel \_\_\_\_\_  
 Trotter \_\_\_\_\_  
 Tele. Room \_\_\_\_\_  
 Holmes \_\_\_\_\_  
 Gandy \_\_\_\_\_

Enclosures - 3

JMS:klw

NOTE: See cover memorandum W. A. Branigan to W. C. Sullivan, 4/8/64, captioned "Lee Harvey Oswald, IS - R - Cuba," prepared by JMS:klw.

XEROX

APR 22 1964

MAIL ROOM TELETYPE UNIT

UNRECORDED COPY FILED IN 105-82555-34





THE FOREIGN SERVICE  
OF THE  
UNITED STATES OF AMERICA

American Embassy  
Paris 8, France

Date: March 20, 1964  
To: Director, FBI  
From: Legat, Paris (100-1793) (P)  
Subject: THOMAS GITTINGS BUCHANAN, JR.  
SM - C  
Bufile 100-354341  
Paris 100-1793

ASSASSINATION OF PRESIDENT  
JOHN F. KENNEDY  
NOVEMBER 22, 1963  
DALLAS, TEXAS  
MISCELLANEOUS - INFORMATION CONCERNING  
Bufile 62-109060  
Paris 62-148

Re Paris letter 3/13/64.

There is enclosed a copy of the latest article in the series by THOMAS GITTINGS BUCHANAN, JR. which appeared in "L'Express" on March 19, 1964.

The current article differs slightly from those proceeding in that BUCHANAN interrupts his discussion of the assassination of President Kennedy in order to comment on and give his impressions of his recent trip to the United States when he visited Dallas, Miami and Washington D. C.

Concerning Dallas, BUCHANAN stated that on the day he arrived in that city the panel of jurors had almost been completed. He goes on to predict that JACK RUBY will commit suicide and urges strongly that he be incarcerated.

- 6 - Bureau (ENCL: 1)
- (1 - Liaison)
- (1 - Baltimore, 100-12596)
- Paris (100-1793) (62-148)

REP: 13  
(8)

ENCLOSURE  
ENCLOSURE AND FILMS RETAINED IN LAB.  
ENCLOSURE FOR LAB ACTION AND REPORT

25 MAR 30 1964

105-82555-3042  
4-20  
SUBV CONTROL  
Social Section

Handwritten notes on the left margin:  
4/15/69  
W. J. Sullivan (CNC)  
JMS:klw 4-8-64  
L. E. Frankin (CNC)  
JMS:klw 4-9-64  
Secret Service  
W. J. Sullivan  
1-6-64  
JMS:PAH 4/15/69

Handwritten notes on the right margin:  
EX-100  
91072-44  
62-109060-109060



Paris 100-1793

away from Dallas in order to protect him from himself as well as from the Dallas police. BUCHANAN then discusses generally prior comments he has made concerning the slaying of President Kennedy and mentions that no journalist has had an opportunity to view the windshield of the presidential car which would assist in determining the number and direction of the shots. He comments again on the absence of powder marks on LEE HARVEY OSWALD's cheek.

Turning to Miami, BUCHANAN mentions rumors to the effect that when President Johnson recently visited there security officials uncovered a plot whereby his plane was to be rammed by another plane. The plan allegedly was prepared by anti-Castro elements in Miami with the hope it would be attributed to CASTRO forces and result in some sort of reprisal action on the part of the United States.

Concerning his visit to Washington, D. C., BUCHANAN states that he met and talked with Assistant Attorney General NICHOLAS DE KATZENBACH and, thereafter, with HOWARD P. WILLENS, a member of the Warren Commission and the liaison representative between the Commission and the Department of Justice. In general, BUCHANAN states that he was given a friendly audience by WILLENS and left with the impression that the Warren Commission is giving more serious consideration to facts which tend to disprove the official version of the slaying which has been offered to date.

BUCHANAN implies that the next article in the series will resume his discussion of the assassination and will deal in general terms with the unknown individual or individuals who planned the slaying.

As in the case of previous articles in this series the Bureau may wish to have this one translated in its entirety. If this is done, it is requested that we be furnished a copy of the translation.

We will, of course, continue to follow this matter closely and furnish to the Bureau any information of interest.

CONFIDENTIAL Date: APRIL 17, 1964

Transmit the following in \_\_\_\_\_  
(Type in plain text or code)

Via AIR-TEL \_\_\_\_\_  
(Priority)

TO: DIRECTOR, FBI (105-82555)  
FROM: SAC, MEMPHIS (105-891) (RUC)  
SUBJECT: LEE HARVEY OSWALD;  
IS - R - CUBA  
DALLAS OO

ReBuair-tel to all offices, 4/15/64.

All logical security informants and PSIs as well as racial informants and sources were contacted with regard to any knowledge re assassination of the late President JOHN F. KENNEDY as well as any information concerning LEE HARVEY OSWALD and his activities. All were unable to furnish any positive information.

These contacts were reported by Memphis in report of SA WILLIAM H. LAWRENCE at Memphis, 12/1/63, in instant case. Identities of sources were not, however, set forth in this report.

For information of Bureau and Dallas following are identities of sources negatively contacted:

ALL COPIES REGISTERED MAIL

- 3 - Bureau
- 1 - Dallas (INFO) (100-10461)
- 1 - Memphis

WHL:mjh  
(5)

REC-11 105-82555-3243

12 APR 20 1964

Classified by 2040  
Exempt from GDS Category 2  
Date of Declassification Indefinite

SOVIET SECTION

- Airtel \_\_\_\_\_
- Teletype \_\_\_\_\_
- A. M. \_\_\_\_\_
- A. U. S. D. \_\_\_\_\_
- Spec. Del. \_\_\_\_\_
- Reg. Mail \_\_\_\_\_
- Registered/Approved \_\_\_\_\_

Special Agent in Charge

CONFIDENTIAL

79 APR 22 1964



**CONFIDENTIAL**

IDENTITY OF SOURCE      DATE OF CONTACT      CONTACTING AGENT

IDENTITY OF SOURCE	DATE OF CONTACT	CONTACTING AGENT
[REDACTED]	11/25/63	SA WILLIAM H. LAWRENCE
[REDACTED]		
[REDACTED]	11/24/63	
[REDACTED]	11/24/63	
[REDACTED]	11/25/63	
[REDACTED]	11/23 & 11/25/63	
[REDACTED]	11/25/63	
[REDACTED]	11/24/63	
[REDACTED]	11/23 & 11/24/63	
[REDACTED]	11/25/63	
[REDACTED]	11/25/63	
[REDACTED]	11/27/63	
[REDACTED]	12/2/63	

**CONFIDENTIAL**

Date: 4/17/64

Transmit the following in \_\_\_\_\_  
(Type in plain text or code)

Via AIRTEL \_\_\_\_\_  
(Priority or Method of Mailing)

TO: DIRECTOR, FBI (105-82555)

FROM: SAC, ANCHORAGE (44-48)

RE: LEE HARVEY OSWALD  
IS - R - CUBA

Re Bureau airtel to Allany and all field offices dated 4/15/64.

Due to lack of Communist activity in the State of Alaska, the Anchorage Division has no Security Informants or Potential Security Informants to contact.

CC 644 RBK  
3 Bureau  
2 Dallas  
1 Anchorage  
DEC:CLB  
(6)

REC-11

105-82555-3214

3 APR 20 1964

*[Signature]*  
SOVIET SECTION

Approved: \_\_\_\_\_ Sent \_\_\_\_\_ M Per \_\_\_\_\_  
Special Agent in Charge

79 APR 22 1964



FBI

Date: 4/17/64

Transmit the following in

**CONFIDENTIAL**

(Type in plain text or code)

Via

**AIRTEL**

**AIR MAIL - REGISTERED**

(Priority or Method of Mailing)

**TO: DIRECTOR, FBI (105-82555)**

**FROM: SAC, SAN DIEGO (105-5158)(RUC)**

**LEE HARVEY OSWALD  
IS - R - CUBA  
(OO: Dallas)**

Re Bureau airtel to all field offices 4/15/64.

Reference is made to a San Diego teletype to the Bureau, 11/22/63, captioned, "ASSASSINATION OF PRESIDENT JOHN F. KENNEDY," San Diego file 62-1529, Bureau file 62-109060. The teletype reflected pertinent San Diego informants alerted to advise of information they receive concerning assassination.

On 11/26/63 the San Diego Office prepared a memo to all agents requesting agents having CIs, PCIs, SIs and PSIs to contact informants assigned to them regarding any information they might possess pertaining to the assassination of President KENNEDY, or to JACK LEON RUBY and LEE HARVEY OSWALD.

The results of the informant contacts were negative, and for the Bureau's assistance, there is set forth a complete list of security informants and potential security informants contacted.

③ CC 644 RBY  
Bureau (AM - REGISTERED)  
1 - San Diego

REC-11 105-82555-3245

RSB:klb  
(4)

3 APR 20 1964

Classified by 2040  
Exempt from GDS Category 2  
Date of Declassification Indefinite  
7/13/77 arhc

SOVIET SECTION

Approved: *ECW*  
Special Agent in Charge

Sent \_\_\_\_\_ M

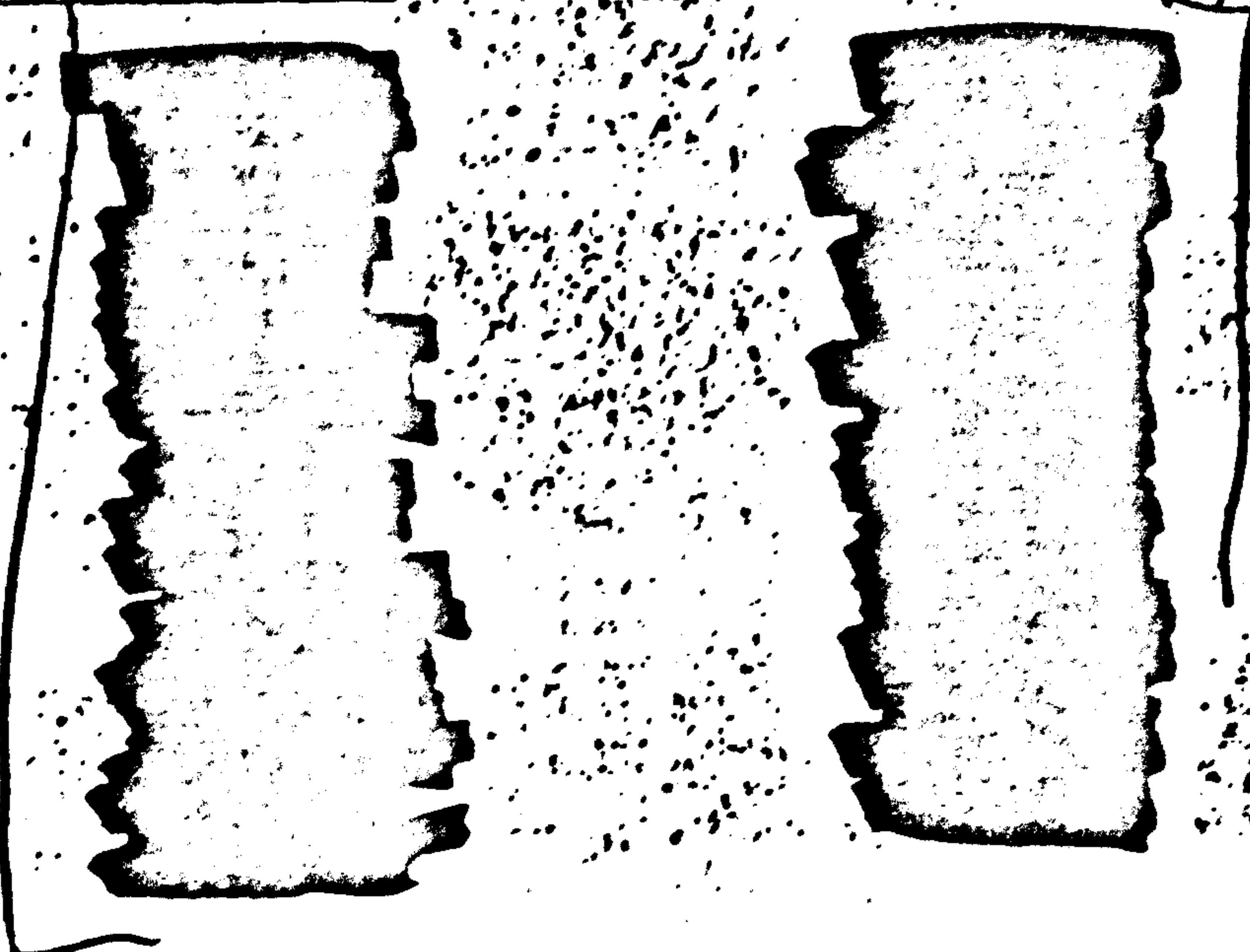
79 APR 22 1964

**CONFIDENTIAL**

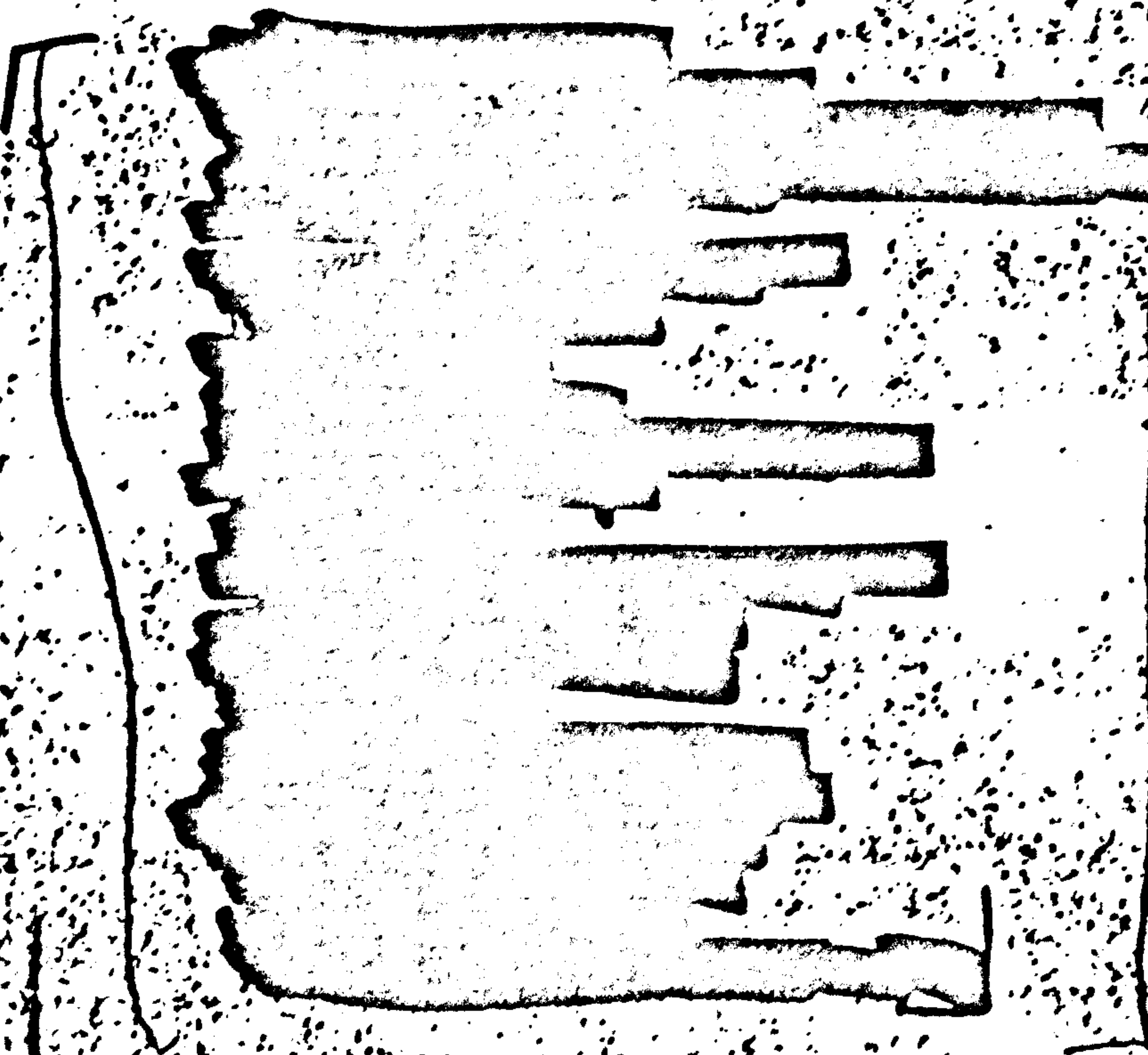
SD 105-5158

CONFIDENTIAL

Security Informants



Potential Security Informants



CONFIDENTIAL



THIS SERIAL HAS BEEN REFERRED TO  
ANOTHER AGENCY AND IS IN A PENDING STATUS:

FILE NO. 105-82555

SERIAL NO. NR April 20, 1964 Hoover - Rankin let

PAGE NO. 1-2

NO. OF PAGES 2

SECTION NO.

132

CIA

REFERRAL

1 - Y Rosen-  
 1 - M Sullivan  
 1 - Mr Malley  
 -  
 1 - Mr. Conrad

April 20, 1964

By Courier Service

REC'D. READING ROOM  
 FBI  
 APR 20 2 11 PM '64

Honorable J. Lee Rankin  
 General Counsel  
 The President's Commission  
 200 Maryland Avenue, Northeast  
 Washington, D. C.

Dear Mr. Rankin:

In accordance with the telephonic request of Mr. Melvin Eisenberg on April 16, 1964, evidence items numbered C254, C261, D94, D95 and D96 were delivered to Mr. Eisenberg on April 17, 1964.

Also delivered at this time were two sets of photographs consisting of 108 photographs per set. These photographs are of evidence items obtained from Robert L. Oswald on March 15, 1964.

Sincerely yours,

J. Edgar Hoover

BY COURIER SVC.  
 APR 20  
 COMM-FBI

11/10/62  
 NOT RECORDED  
 199 APR 21 1964

62-109060

NOTE: Telephonic request was made to SA Roy H. Jevons. Above-listed numbered items are described as follows:

- C254 Oswald's "Val-Pak" type suitcase
- C261 Oswald's sea bag
- D94 Copy of Railway Express Agency receipt re gun shipment to A. J. Midell
- D95 Railway Express Agency form bearing receipt #70638
- D96 Envelope postmarked 11/10/62, to New York Labor News Co. bearing Oswald's return address

NOTE: Photographs are of books and other personal items reportedly belonging to Lee or Marina Oswald, and obtained from Robert Oswald by Dallas Office 3/15/64

REN:KO (10)

Tolson \_\_\_\_\_  
 Belmont \_\_\_\_\_  
 Mohr \_\_\_\_\_  
 Casper \_\_\_\_\_  
 Callahan \_\_\_\_\_  
 Conrad \_\_\_\_\_  
 DeLoach \_\_\_\_\_  
 Evans \_\_\_\_\_  
 Gale \_\_\_\_\_  
 Rosen \_\_\_\_\_  
 Sullivan \_\_\_\_\_  
 Tavel \_\_\_\_\_  
 Trotter \_\_\_\_\_  
 Tele. Room \_\_\_\_\_  
 Holmes \_\_\_\_\_  
 Gandy \_\_\_\_\_

MAIL ROOM  TELETYPE UNIT

ORIGINAL FILED IN



20/64

CODE

RADIOGRAM

URGENT - OKAY TO HOLD FOR NEXT CONTACT

TO SAC, DALLAS (100-10461)

FROM DIRECTOR, FBI (105-82555)

LEE HARVEY OSWALD, AKA. IS DASH R DASH CUBA.

REBULET TO PRESIDENT'S COMMISSION MARCH TWENTY SEVEN LAST AND BUREAU AIRTEL APRIL NINE LAST CAPTIONED QUOTE ASSASSINATION OF PRESIDENT JOHN FITZGERALD KENNEDY, NOVEMBER TWENTY TWO, SIXTY THREE, DALLAS, TEXAS. MISC. DASH INFO CONCERNING UNQUOTE, RELATING TO A REQUEST OF THE PRESIDENT'S COMMISSION TO OBTAIN THE ORIGINALS OR PHOTOGRAPHIC COPIES OF ALL DOCUMENTS RELATING TO THE SIX POINT FIVE MM MANNLICHER DASH CARCANO ITALIAN MILITARY RIFLE.

ADVISE STATUS OF EFFORTS TO INCORPORATE PERTINENT DATA IN LETTERHEAD MEMORANDUM AND DATE WHEN SAME CAN BE EXPECTED AT BUREAU.

REC-11 105-82555-3246

RDR:vh  
(6)

19 APR 21 1964

*PR*  
*me*  
*fw*

1 - 62-109060 (Assassination Pres. Kennedy)

1 - Mr. J. C. Cadigan

1 - Mr. R. E. Lenihan

NOTE: This matter will continue to be followed closely at the Bureau and when the necessary data is received, the President's Commission will be advised.

205940  
APR 20 1964  
APPROVED BY *[Signature]*  
TYPED BY

VIA RADIOGRAM  
APR 20 1964  
3:26 PM RAR

- Tolson
- Belmont
- Mohr
- DeLoach
- Casper
- Callahan
- Conrad
- Evans
- Gale
- Rosen
- Sullivan
- Tavel
- Trotter
- Tele. Room
- Holmes
- Gandy

APR 22 1964 MAIL ROOM  TELETYPE UNIT

RECORDED COPY FILED

*10-10*

# Memorandum

Belmont	_____
Mohr	_____
Casper	_____
Callahan	_____
Conrad	_____
Felt	_____
Gale	_____
Rosen	_____
Sullivan	_____
Tavel	_____
Trotter	_____
Tele. Room	_____
Holmes	_____
Gandy	_____

TO : Mr. Conrad *Conrad*

DATE: 4/15/64

FROM : R. H. Jevons *Jevons*

SUBJECT: LEE HARVEY OSWALD, AKA  
IS - R - CUBA

During the course of the pretestimony conference, Mr. Melvin Eisenberg, an attorney on the staff of the President's Commission, requested SA John F. Gallagher to obtain certain background information on the analytical technique known as neutron activation analyses. The public source information consists of excerpts from quarterly reports prepared under Atomic Energy Commission contract AT (04-3)-167. They are being furnished to Mr. Eisenberg on this date. The reports furnished all carry the title "Applications of Neutron-Activation Analyses in Scientific Crime Detection" and the three reports furnished are for the periods ending October 31, 1962, January 31, 1963, and July 31, 1963. Copies of these items are attached hereto.

Although the above documents are public source information, Dr. Spofford G. English, Assistant General Manager for Research and Development, Atomic Energy Commission (AEC) was telephonically contacted. He advised AEC has absolutely no objection to the dissemination of these items to the President's Commission.

**ACTION:**

For information.

**Enclosures (3)**

- 1 - Mr. Belmont
- 1 - Mr. Rose
- 1 - Mr. Sullivan
- 1 - Mr. Malley

JFG:KO (8)

XEROX

64 APR 21 1964

UNRECORDED COPY FILED IN

*Jevons* *Conrad* *W*

REC-11

SOVIET SECTION

*[Handwritten signature]*



**GENERAL ATOMIC**

**DIVISION OF GENERAL DYNAMICS**

**GA-4041**

**APPLICATIONS OF NEUTRON-ACTIVATION ANALYSIS  
IN SCIENTIFIC CRIME DETECTION**

**QUARTERLY REPORT  
FOR THE PERIOD ENDING JANUARY 31, 1963**

**Contract AT(04-3)-167  
Project Agreement No. 15  
U. S. Atomic Energy Commission**

**February 28, 1963**

**ENCLOSURE**

*100 X 2555 - 3247*

2

neutron flux of  $1.8 \times 10^{12}$  neutrons/cm<sup>2</sup>-sec (in the rotary specimen rack) or  $2.8 \times 10^{12}$  neutrons/cm<sup>2</sup>-sec (in the pneumatic-tube position in the reactor core).

Personnel engaged in these studies during this quarter included Sandra C. Bellanca, Diane M. Fleishman, V. P. Guinn, J. C. Migliore, and R. R. Ruch.

### III. EXPERIMENTAL RESULTS GA 4041 1/31/63

#### Gunpowder Residues

Work on this phase of the investigation was restricted this quarter to procurement of new samples and planning of new or modified techniques of residue removal from the hand. Further studies of the removal problem, and of Sb and Ba "blanks" on the hands of persons who have not recently fired a gun, are planned. Also, the possibility of detecting residues on the hands of persons who have fired guns other than revolvers, e.g., automatic pistols, rifles, and shotguns, will soon be explored.

Much interest has been shown by criminalists in the activation-analysis method of detecting gunpowder residues, since the older chemical test with diphenylamine (the so-called "paraffin test") is recognized as being unreliable and unacceptable in court. Work to date indicates that it is quite possible that the activation-analysis method can be refined and proven to the point that it can be introduced into court during 1963.

A related problem may soon be investigated also--that of proving, from identification of detonator traces, that a bomb has been exploded in airline-crash cases. It is possible that information on the type of detonator, type of powder, and type of bomb-casing material can also be determined. Discussions on this subject have been held with Mr. Charles M. Wilson, Superintendent of the State of Wisconsin Crime Laboratory, and Mr. Ray H. Pinker.

#### Grease-Soil Separations

Studies of pure chassis-lubricant greases, reported in GA-3491 and GA-3664, have shown that many minor-constituent and trace-level elements can be easily determined quantitatively in such samples by purely instrumental neutron-activation analysis with the reactor. Also, it has been shown that all of the commercial greases examined thus far differ considerably from one another in their minor and trace-level constituent compositions. However, in cases of practical forensic interest, such as in hit-and-run cases, any samples of grease to be identified or compared



**GENERAL ATOMIC**

**DIVISION OF GENERAL DYNAMICS**

**GA-4576**

**APPLICATIONS OF NEUTRON-ACTIVATION ANALYSIS  
IN SCIENTIFIC CRIME DETECTION**

---

**QUARTERLY REPORT  
FOR THE PERIOD ENDING JULY 31, 1963**

**Contract AT(04-3)-167  
Project Agreement No. 15  
U. S. Atomic Energy Commission**

**August 30, 1963**

*105-89533-3217*

**ENCLOSURE**

GA 4576

7/31/63

## L. INTRODUCTION

This is the fifth quarterly report on studies being carried out at General Atomic on the application of neutron-activation analysis to problems in the field of criminalistics. This work is being done in close cooperation with Mr. Ray Pinker, Chief Criminalist of the Los Angeles Police Department, and Mr. Wayne Burgess, Criminalist of the San Diego Police Department.

## II. FACILITIES AND PERSONNEL

The facilities are the same as those described in previous reports. In general, the TRIGA Mark I reactor was used exclusively, and all counting was performed using 3 in. by 3 in. scintillation detectors coupled to multi-channel pulse-height analyzers. In one instance, a prolonged irradiation was performed at Idaho Falls using the Materials Testing Reactor (MTR).

Personnel engaged in the studies during this quarter were R. R. Ruch, Sandra B. Madigan, David A. Ellison, Lin Sen Hsia, and V. P. Guinn.

## III. EXPERIMENTAL RESULTS

### GUNSHOT RESIDUE DETECTION

Previous experimental results using paraffin have led to its choice as the best over-all medium for gunpowder residue removal from the hand because of its inherent chemical purity as-purchased and the ease of over-all handling. Although much time and effort have gone into the evaluation of various liquid scrubbing methods, as previously reported, some inconsistencies persist. Additional experiments performed during this quarter, using both acetone and a shampoo, did not yield consistent results. The fact that liquids can drip onto contaminated areas of the hand (which touched the gun) and still be collected is another drawback in the use of the liquid scrubbing method. For this method to be effective, the technique requires further development as well as additional instruction of personnel in the use of the method. Hence, the paraffin test approach has been adopted for residue removal. The detailed procedure follows.



## Paraffin Procedure

Paraffin wax ("Parawax," manufactured by American Oil Company) is rinsed with distilled water and acetone and then melted and heated to 120°F in a thoroughly cleaned porcelain dish. A reagent blank should also be obtained. A small brush, which has been well cleaned with distilled water and allowed to dry, is used to apply the melted paraffin to the hand. In general, a flowing application is best, and the cast is built up with repeated applications to a thickness of 1/8 to 1/4 in. so that it will be strong enough to remove in one piece after solidification. A photograph of a typical cast is shown in Fig. 1. Care must be taken that the cast does not touch the areas normally in direct contact with the gun. After the cast is removed it should be stored in a polyethylene bag which has been rinsed in a water-acetone solution.

After neutron irradiation in the reactor (1 hr at  $1.8 \times 10^{12}$  neutrons/cm<sup>2</sup>-sec), the sample is placed in a 250-ml beaker which contains known amounts of Sb<sup>+3</sup> and Ba<sup>+2</sup> carrier (~20 mg each), 30 ml of water, 5 ml of concentrated HCl, and 1 ml of concentrated HNO<sub>3</sub>. The mixture is boiled for about 5 min. Stirring the two phases is recommended at this point to ensure isotopic exchange with the carriers. The mixture is then swirled in an ice bath in order to solidify the paraffin phase. The aqueous layer is poured into a 40-ml centrifuge tube containing milligram amounts of holdback carriers of Na<sup>+</sup>, K<sup>+</sup>, Mn<sup>++</sup>, and Cl<sup>-</sup>. Two milliliters of concentrated H<sub>2</sub>SO<sub>4</sub> are added, and the solution is agitated to precipitate BaSO<sub>4</sub>. The precipitate is centrifuged, filtered on a preweighed filter paper, washed with water and ethyl alcohol, dried at 110°C for 15 min, weighed, mounted on an aluminum card, and counted for Ba<sup>139</sup> (0.165 Mev, 85m t<sub>1/2</sub>) on a 3 in. by 3 in. NaI(Tl) scintillation crystal, using a multichannel pulse-height analyzer.

The supernatant solution from the above operation, containing the Sb fraction, is precipitated as Sb<sub>2</sub>S<sub>3</sub>, using about 1 g of thioacetamide and heating for about 1 hr. The Sb<sub>2</sub>S<sub>3</sub> formed is centrifuged, dissolved in about 10 ml HCl, boiled for 15 min to remove H<sub>2</sub>S, cooled, diluted to about 30 ml, the colloidal S centrifuged out, and 10 ml CrCl<sub>2</sub> solution added to the supernate. The black Sb<sup>0</sup> formed after heating is centrifuged, filtered, washed well with water and alcohol, dried at 110° for 15 min, weighed, mounted on an aluminum card, and after a decay period of approximately three days is counted for Sb<sup>122</sup> (0.57 Mev, 2.8d t<sub>1/2</sub>), using gamma-ray spectrometry.

The measurements are made quantitative through comparator standards of Ba and Sb treated in the same way as the samples. The procedure described here differs slightly from that described in GA-3664 in that Cu is no longer being determined, Sb is not extracted, and a Cu carrier is not

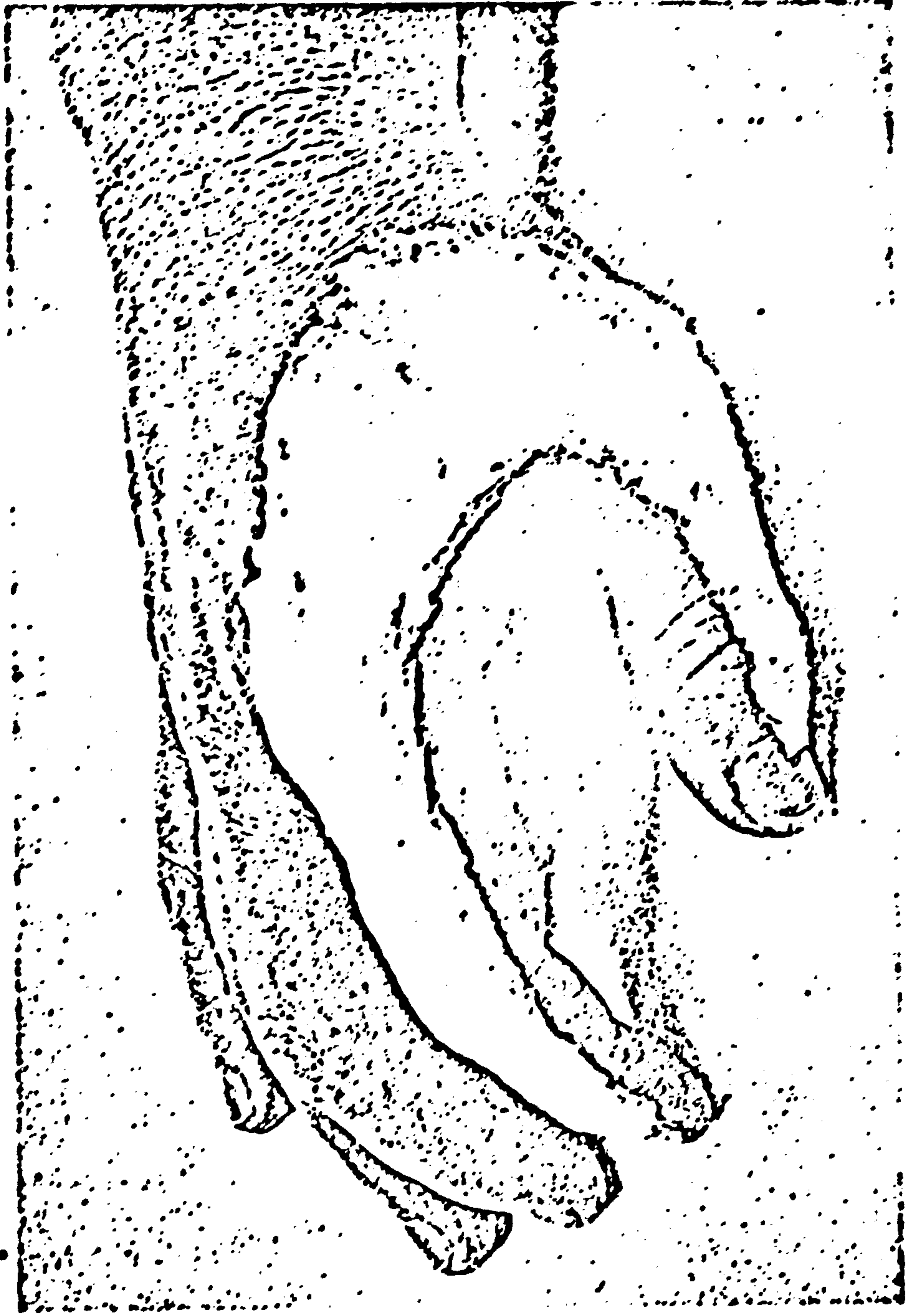


Fig. 1--Photograph of a typical cast



added; therefore it is a somewhat faster operation. The radiochemical purity of the  $Sb^{122}$  suffers slightly in that  $Cu^{64}$  appears in the  $Sb^0$  precipitate. This Cu interference may be minimized by not counting until approximately three days after the end of irradiation and by subtracting out the remaining  $Cu^{64}$  contribution if necessary.

### Control Study

In order to interpret the data obtained after firing a gun, the normal levels of Sb and Ba found on the back of the hand must be determined. Some work along these lines has already been done, using the dilute  $HNO_3$  swabbing technique (GA-3664, p. 5), but not as used with the paraffin technique. The results of measurements on 22 pair of hands are shown in Table 1. The right hands averaged  $0.15 \mu g$  of Ba and  $0.016 \mu g$  of Sb, and the left hands averaged  $0.11 \mu g$  of Ba and  $0.012 \mu g$  of Sb. In general, the standard deviation for each element is high, and hence the statistical range imposed on a population is high.

Table 1

NEUTRON-ACTIVATION ANALYSIS OF RESIDUES FROM LEFT AND RIGHT HANDS OF INDIVIDUALS WHO HAD NOT RECENTLY FIRED A REVOLVER  
(Element values in  $\mu g$ , net)

Right Hand				Left Hand			
Ba	Sb	Ba	Sb	Ba	Sb	Ba	Sb
0.14	0.06	0.15	<0.01	0.22	0.06	0.07	<0.01
0.32	0.03	0.04	0.02	0.19	0.01	0.01	0.01
0.03	<0.01	0.22	<0.01	0.04	<0.01	0.08	0.01
0.18	0.02	0.03	<0.01	0.12	0.02	0.04	<0.01
0.48	0.01	0.09	<0.01	0.44	0.01	0.08	0.03
0.18	<0.01	0.26	<0.01	0.32	<0.01	0.09	<0.01
0.07	<0.01	0.11	<0.01	0.02	<0.01	0.06	<0.01
0.07	<0.01	0.10	0.02	0.02	<0.01	0.08	0.01
0.03	0.03	0.26	<0.01	0.03	<0.01	0.13	0.01
0.17	<0.01	0.15	<0.01	0.06	<0.01	0.25	0.02
0.09	<0.01	0.09	---	0.07	<0.01	0.09	---

Avg.  $Ba_R = 0.15 \pm 0.11 \mu g$   
Avg.  $Sb_R = 0.016 \pm 0.012 \mu g$

Avg.  $Ba_L = 0.11 \pm 0.11 \mu g$   
Avg.  $Sb_L = 0.014 \pm 0.012 \mu g$

One can see that for a 99% statistical population, the normal hand values for Ba may run from 0.00 to 0.48  $\mu\text{g}$  and for Sb from 0.00 to 0.06  $\mu\text{g}$ . The left- and right-hand values do not differ significantly.

### Single and Multiple Firings Using the Same Gun and Ammunition

The amount of deposit left by a single shot and a series of shots from a particular gun was evaluated for .38- and .22-caliber revolvers and for a .45-caliber automatic. Results are given in Table 2 for single firings and in Table 3 for multiple firings. The same gun and ammunition were used for all firings of a series. Both the left and right hands were used in the firings and are indicated by L and R in the tables. In general, the hand of the individual who fired the gun was sampled within 10 min after the firing. The results are net values corrected for reagent blank and normal hand content.

The results in Table 2 clearly show that the average deposits of Sb and Ba per shot, regardless of caliber, are higher than the average normal deposits (Table 1). The only disturbing factor is that 1- $\sigma$  deviations are rather high. This points to the possibility that there may be a considerable difference among cartridges, or that the deposition or method of removal of the deposit from the hand are not reproducible. The reproducibility of the method of removal has been partially evaluated in that by using repeated casts it was shown that 71  $\pm$ 6% of the Ba and 77  $\pm$ 8% of the Sb were removed. Thus, even with the greater difference between "normal" and "one-shot" values, one can expect to get somewhat variable results because of the statistical fluctuations of the over-all system.

A comparison of right- and left-hand data for one firing (Table 2) shows no significant difference between the .22- and .38-caliber revolvers, but the .45-caliber automatic tends to give a significantly lower value when the right hand is used. The fact that the shell is ejected on the right side may have something to do with this. Another observation is that the variation in the values for Sb is in general less than that for Ba, indicating that perhaps the hand does not pick up and retain Ba as readily as Sb and that Sb and Ba recoveries are independent of each other.

The amount of deposit is not linear with the number of firings. This finding disagrees with an earlier indication of approximate linearity, which was, however, based on only a few measurements. One possible explanation is that additional blasts blow or shake off some of the deposits. It is possible that an "equilibrium" occurs in which a layer is blown off while another is applied. It would appear then, that one cannot generally tell, from such measurements, how many times a gun has been fired.



Table 2

**NEUTRON-ACTIVATION ANALYSIS OF HAND RESIDUES FROM SINGLE FIRINGS,  
USING SAME GUN AND SAME AMMUNITION**  
(Element values in  $\mu\text{g}$ . net)

.38-caliber Revolver, Winchester Ammunition		.22-caliber Revolver, Western Ammunition		.45-caliber Automatic, Winchester Ammunition	
Ba	Sb	Ba	Sb	Ba	Sb
1.03 (R)	0.22 (R)	0.33 (R)	0.05 (R)	3.8 (R)	0.39 (R)
0.99 (R)	0.17 (R)	0.69 (L)	0.07 (L)	7.6 (R)	1.54 (R)
0.37 (L)	0.27 (R)	0.08 (R)	0.04 (R)	3.1 (L)	0.70 (L)
0.40 (R)	0.19 (L)	0.23 (L)	0.04 (L)	5.0 (R)	0.58 (R)
0.32 (L)	0.12 (R)	0.33 (R)	0.06 (R)	1.5 (L)	0.19 (L)
0.27 (R)	0.26 (L)	0.19 (L)	0.05 (L)	5.1 (R)	0.60 (R)
0.38 (L)	0.18 (R)	0.09 (R)	0.05 (R)	3.9 (L)	0.32 (L)
0.82 (R)	0.22 (L)	-----	0.05 (L)	6.4 (R)	0.80 (R)
0.54 (L)	0.28 (R)	0.19 (R)	0.03 (R)	3.8 (L)	0.79 (L)
0.58 (R)	0.26 (L)	0.32 (L)	0.04 (L)	5.4 (R)	1.30 (R)
				15.3 (L)	3.10 (L)

<b>Over-all avg.</b>	<b>Over-all avg.</b>	<b>Over-all avg.</b>
Ba = 0.57 $\pm$ 0.27	Ba = 0.27 $\pm$ 0.18	Ba = 5.5 $\pm$ 3.6
Sb = 0.22 $\pm$ 0.05	Sb = 0.05 $\pm$ 0.01	Sb = 0.94 $\pm$ 0.82
<b>Right-hand avg.</b>	<b>Right-hand avg.</b>	<b>Right-hand avg.</b>
Ba = 0.68 $\pm$ 0.31	Ba = 0.20 $\pm$ 0.12	Ba = 5.6 $\pm$ 1.3
Sb = 0.21 $\pm$ 0.06	Sb = 0.05 $\pm$ 0.01	Sb = 0.40 $\pm$ 0.14
<b>Left-hand avg.</b>	<b>Left-hand avg.</b>	<b>Left-hand avg.</b>
Ba = 0.40 $\pm$ 0.09	Ba = 0.36 $\pm$ 0.23	Ba = 5.5 $\pm$ 4.9
Sb = 0.21 $\pm$ 0.04	Sb = 0.05 $\pm$ 0.01	Sb = 1.02 $\pm$ 1.18

Table 3

**NEUTRON-ACTIVATION ANALYSIS OF HAND RESIDUES FROM MULTIPLE FIRINGS,  
USING SAME GUN AND SAME AMMUNITION**  
(Element values in  $\mu\text{g}$ , net)

.38-caliber Revolver, Winchester Ammunition		.22-caliber Revolver, Western Ammunition		.45-caliber Automatic, Winchester Ammunition	
Ba	Sb	Ba	Sb	Ba	Sb
<b>Three Firings</b>					
0.68 (L)	0.32 (L)	0.11 (L)	0.03 (L)	2.8 (L)	0.56 (L)
0.73 (L)	0.55 (L)	0.33 (R)	0.12 (R)	8.2 (L)	1.5 (L)
1.9 (R)	0.59 (R)				
0.73 (L)	0.36 (L)				
Avg. Ba = 1.01 $\pm$ 0.89		Avg. Ba = 0.22 $\pm$ 0.16		Avg. Ba = 5.5 $\pm$ 3.3	
Sb = 0.45 $\pm$ 0.13		Sb = 0.08 $\pm$ 0.06		Sb = 1.0 $\pm$ 0.6	
<b>Six Firings</b>					
1.1 (R)	0.43 (R)	0.15 (R)	0.08 (R)	2.5 (R)	0.87 (R)
0.68 (R)	0.35 (R)	0.22 (L)	0.22 (L)	0.82 (R)	0.16 (R)
Avg. Ba = 0.89 $\pm$ 0.29		Avg. Ba = 0.19 $\pm$ 0.05		Avg. Ba = 1.7 $\pm$ 1.1	
Sb = 0.39 $\pm$ 0.05		Sb = 0.15 $\pm$ 0.10		Sb = 0.51 $\pm$ 0.36	



## Single and Multiple Firings Using Different Guns & the Same Ammunition

Using the same ammunition (.38-caliber Peters) five revolvers were each fired once and the hand was sampled. A series of three firings was then made with each revolver, and the hand was sampled after each series. The sampling procedure was the same as that previously discussed. The results are shown in Table 4 and have been corrected for reagent blank and normal hand levels.

The single firings using different guns gave slightly higher standard deviation values than single firings using the same gun (Table 2). The multiple firings using different guns gave about the same standard deviation values for Sb as did those using the same gun (Table 3), but the Ba standard deviation values are lower. The multiple firings with different guns show some increased deposit but do not exhibit a linear relationship.

Table 4  
NEUTRON-ACTIVATION ANALYSIS OF .38-CALIBER SINGLE  
AND MULTIPLE FIRINGS, USING DIFFERENT  
GUNS BUT THE SAME AMMUNITION  
(Element values in  $\mu\text{g}$ , net)

One Firing, Peters Ammunition		Three Firings, Peters Ammunition	
Ba	Sb	Ba	Sb
1.31	0.60	2.27	0.61
0.51	0.31	1.41	0.56
0.83	0.24	3.15	0.54
0.12	0.06	1.60	0.27
0.72	0.28	0.56	0.37

Avg. Ba =  $0.70 \pm 0.43$   
Sb =  $0.30 \pm 0.19$

Avg. Ba =  $1.79 \pm 0.96$   
Sb =  $0.49 \pm 0.14$

### Effect of Wind Direction

Using an upright high-velocity fan placed about 5 ft from a .38-caliber revolver, a wind velocity of  $500 \pm 100$  linear feet per minute was maintained (measured by an Alnor Thermo-anemometer). The fan was moved so that it blew toward, from the side of, from the back of, and from below the gun hand. Three shots (Winchester ammunition) from a .38-caliber revolver were fired for each wind direction. The results, corrected for reagent blank and normal hand content, are shown in Table 5.

**Table 5**  
**EFFECT OF VARIOUS WIND DIRECTIONS ON RESIDUE DEPOSIT**  
 (Element values in  $\mu\text{g}$ , net)

Wind Direction	Ba	Sb
From front	0.49	0.24
From right side	0.25	0.17
From behind	0.08	0.11
From below	0.03	0.11

The results of the experiments lead to several tentative conclusions. Wind from the front tends to blow everything back across the hand, thus increasing the amount of deposit; wind from the back and from below tends to allow no gases or "blow-back" to reach the hand, resulting in very small deposits; and wind from the side tends to lower the normal amount of deposit. More tests with different calibers and varied wind velocities should be carried out to substantiate and extend these tentative conclusions.

Effect of Wet and Dry Hands

Identical firings were performed with a .38-caliber revolver, except that the amount of moisture on the hands was varied. One pair of hands was wiped apparently dry with paper towels before firing, and another pair of hands was left completely wet. The gun was fired three times under each condition, and the gun hand was sampled for deposit. The results are shown in Table 6. The data point to the conclusion that the presence of moisture on the hands does not have any pronounced effect on the amount of deposit. Guns of other caliber, including both revolvers and automatics, should also be evaluated under these conditions.

**Table 6**  
**EFFECT OF DRY AND WET HANDS ON AMOUNT OF DEPOSIT**  
 (Element value in  $\mu\text{g}$ , net)

Dry Hands		Wet Hands	
Ba	Sb	Ba	Sb
2.0	0.60	0.84	0.37
2.4	0.64	2.4	0.55



### Effect of Washing Hands after Firing

An attempt was made to ascertain the effect of washing the hands after firing. The gun hand of an individual was sampled before firing, and after he had washed his hand and fired a .38-caliber revolver six times. The Ba content before firing was 0.11  $\mu\text{g}$  and after washing and firing it was 0.05  $\mu\text{g}$ . The corresponding Sb values were 0.01  $\mu\text{g}$  and 0.01  $\mu\text{g}$ , respectively, showing that normal washing essentially destroys the evidence of having fired a gun.

### Effect of Handling Guns

In an effort to ascertain what amounts of Sb and Ba could be picked up by the hands by just handling guns, the hands of a person were sampled after he had handled several guns over a period of time but had not fired any of them. A normal dorsal sample and also a sample from the palm of the hand were obtained; the results are shown in Table 7. A definite increase over normal levels was indicated (0.11 to 0.15  $\mu\text{g}$  for Ba and approximately 0.02  $\mu\text{g}$  for Sb; cf. Table 1). As would be expected, the palms pick up a considerable amount of Ba and Sb.

Table 7

#### EFFECT OF MERELY HANDLING GUNS EXTENSIVELY (Element values in $\mu\text{g}$ , net)

Location	Ba	Sb
Right hand, dorsal	0.36	0.28
Left hand, dorsal	0.31	0.23
Right palm	0.49	0.42
Left palm	0.58	0.47

Various guns were swabbed with a wet filter paper to ascertain what levels of Sb and Ba could be removed. The handle and the barrel and chamber areas of the gun were sampled separately. The results are shown in Table 8 which again indicates that significant amounts of Ba and Sb can be transferred just by handling, especially by touching the chamber area.

### Results of an Actual Case

Five paraffin samples were sent to General Atomic from a municipal police department for analysis and interpretation. Two were from the victim, after his hands had been washed, two were from the suspect, and one was from a person in the laboratory who fired once with the confiscate .38-caliber revolver. According to the authorities, there was a strong possibility that suicide was involved, rather than murder. The results are shown in Table 9.

Table 8

**NEUTRON-ACTIVATION ANALYSIS OF SWABBINGS  
FROM VARIOUS GUNS  
(Element values in  $\mu\text{g}$ , net)**

Caliber	Area	Ba	Sb
.22	Handle	0.27	0.27
.22	Rest	5.1	0.56
.38	Handle	1.8	0.57
.38	Rest	8.7	4.8
.45	Handle	0.60	0.39
.45	Rest	3.1	2.1

Table 9

**RESULTS OF PARAFFIN CASTS TAKEN IN A  
MURDER OR SUICIDE CASE<sup>a</sup>  
(Element values in  $\mu\text{g}$ , net)**

Samples	Ba	Sb
Victim (L)	0.24	0.01
Victim (R)	0.29	0.01
Suspect (L)	0.17	0.05
Suspect (R)	0.04	0.03
Laboratory control (R)	0.75	0.09

<sup>a</sup>A .38-caliber Colt revolver  
and Peters ammunition were used.

The results from the suspect and the victim fall well within statistical limits for normal hands (see Table 1). The fact that the hospital had washed the victim's hands before sampling destroyed the possibility of reaching any conclusion regarding the victim. The laboratory firing appears normal compared with data already obtained using .38-caliber Peters ammunition (see Table 4), the Sb being on the low side but within the 2- $\sigma$  limit.

Gunshot Residues on Gloves

A pair of gloves, possibly worn in a shooting case, was submitted for gunshot-residue analysis. The palm, web, and forefinger of each glove were gently rubbed with filter papers moistened with 2% HNO<sub>3</sub>. The six



samples, plus a reagent blank, were irradiated in the reactor for 30 min and radiochemically analyzed for Sb and Ba. No Sb ( $\leq 0.01 \mu\text{g}$ ) was detected in any sample, but small amounts of Ba were found in identical locations on each glove (palm 0.72 and 0.89  $\mu\text{g}$ , web 0.22 and 0.27  $\mu\text{g}$ , forefinger 0.56 and 0.35  $\mu\text{g}$ ). The fact that the gloves had been handled so much and wiped with a moist cloth prior to being received prevented a good evaluation.

### Future Work

Additional work involving .44-caliber and .45-caliber revolvers, .45-caliber automatics, and .22-caliber automatics is planned within the contract period. The reproducibility of deposits obtained from different .45-caliber automatics is of considerable interest. It would be advantageous to ascertain the effect of additional variables in connection with .45-caliber and .22-caliber automatics, including which hand is used in firing, wind direction and velocity, etc. If time permits, measurements with rifles and shotguns would also be desirable.

### PAINT ANALYSIS

Twenty-one different paint samples (DuPont automobile paints), ranging from 2.84 to 13.6 mg each, were irradiated in the reactor for 30 sec and for 60 min, respectively, to determine the short- and long-lived radioisotopes produced. Visually, the different samples of the same color appear to be almost identical, but large differences in their compositions are evident from the activation-analysis data. The results are shown in Table 10. All the samples of each color were from different batches except Samples 9 through 9C, which were from the same can. In general, different batches of the same color show significant differences in composition, with the exception of the red paint. Here, the difference between Sample 4 and Samples 9 through 9C is small. Additional study is planned on house paints, outside paints, and varnishes.

### ANALYSIS OF YELLOW MILO GRAIN SAMPLES

Nine yellow milo grain samples suspected of excessive fumigation were submitted to us for study by the California Department of Agriculture. Samples ranging from 9.09 to 10.55 g were irradiated in the reactor for 30 min at a thermal-neutron flux of  $1.8 \times 10^{12}$  neutrons/cm<sup>2</sup>-sec and then analyzed instrumentally for Br<sup>82</sup>. The results exhibit quite a large range, as shown in Table 11. According to authorities, 50 ppm Br is considered to be the tolerance limit. Additional unfumigated samples will be analyzed to determine an average blank, or normal, Br value. An illustrative gamma-ray spectrum of the grain is shown in Fig. 2.

**GENERAL ATOMIC**  
**DIVISION OF GENERAL DYNAMICS**

GA-3664

**APPLICATIONS OF NEUTRON-ACTIVATION ANALYSIS  
IN SCIENTIFIC CRIME DETECTION**

---

**QUARTERLY REPORT  
FOR THE PERIOD ENDING OCTOBER 31, 1962**

**Contract AT(04-3)-167  
Project Agreement No. 15  
U. S. Atomic Energy Commission**

November 15, 1962

105-82555-3247  
ENCLOSURE



## I. INTRODUCTION

This is the second quarterly report on studies at General Atomic on the applications of neutron-activation analysis to problems of scientific crime detection (criminalistics). This work is being done in cooperation with the Los Angeles Police Department, and particularly with their Chief Criminalist, Mr. Ray H. Pinker. The work performed during the first quarter is described in General Atomic Report GA-3491.

The two main areas of investigation in this work are (1) the identification of gunshot residues and (2) the characterization and identification of materials which are introduced as evidence in criminal cases. The work on gunshot residues during this period has been primarily the analysis of a large number of "control" samples in order to determine the amounts of the characteristic elements Cu, Sb, and Ba on the hands of persons who had not fired a gun. Work on the characterization of materials included non-destructive analysis of additional samples of greases and plastic, and of automobile-tire rubber samples. A rather unique group of fingernail samples was also analyzed. At the request of Mr. Pinker, work was done on the analysis of small rubber particles involved in a criminal case, and on the determination of arsenic in samples of hair and nails from an individual with suspected arsenic poisoning.

## II. FACILITIES EMPLOYED

The facilities and instruments used in this work are described and illustrated in the first quarterly report (GA-3491). These include the TRIGA reactor with rotary specimen rack and pneumatic sample-transfer tube, and the multichannel pulse-height analyzer systems used for gamma-ray scintillation spectrometry. Irradiations at  $1.8 \times 10^{12}$  neutrons/cm<sup>2</sup>-sec were performed using the rotary specimen rack of the TRIGA Mark I reactor. Irradiations ranging from 0.25 to 2 min at a thermal neutron flux of  $2.8 \times 10^{12}$  neutrons/cm<sup>2</sup>-sec were carried out in the pneumatic sample-transfer tube of the TRIGA Mark I reactor.

## III. PERSONNEL ENGAGED IN STUDY

During this quarter, the following chemists from the activation-analysis group at General Atomic were actively engaged in the investigation:

V. P. Guinn, J. D. Buchanan, R. R. Ruch, Sandra C. Bellanca, and J. C. Migliore. Total manpower effort during this quarter was about 897 man-hours.

#### IV. RESULTS OF STUDIES TO DATE

##### GUNPOWDER RESIDUES

###### Control Study

The determination of the amounts of Sb, Ba, and Cu on the hands of individuals who have not fired a gun recently is an important part of the over-all gunpowder-residue study. It must be ascertained, with good statistical certainty, that the average person ("control") has negligible amounts of these elements on his hands compared with the amounts a person might acquire by firing a revolver.

The first attempt to determine these "normal" levels consisted in obtaining samples from the right hands of five individuals, using a filter paper wetted with dilute nitric acid solution. The areas of the hands (about 20 to 30 cm<sup>2</sup>) were wiped and mechanically rubbed with Whatman No. 41 filter paper that was partially moistened with 1 ml of 1% TransistAR-grade nitric acid. (The filter paper had previously been rinsed with distilled water and acetone.) The hands were then mopped with the dry portion of the filter paper until all apparent liquid was removed. Samples from the web, back side of the forefinger, and the central area of the palm were obtained separately. The filter papers were then irradiated for 30 min in a thermal neutron flux of  $1.8 \times 10^{12}$  neutrons/cm<sup>2</sup>-sec, and the amounts of Sb, Ba, and Cu were determined radiochemically. The radiochemical procedure is shown in Fig. 1. Appropriate filter-paper and reagent "blanks" (not wiped on hands) were also tested; the quantities of Sb, Ba, and Cu obtained from these blanks were subtracted from the total amounts to determine the net amounts from the hands alone. The results are shown in Table 1.

Another sampling technique utilizing paraffin oil and filter paper was used to evaluate the "normal" amounts of Sb, Ba, and Cu on the hands. Five drops of a very pure grade of paraffin oil was applied to an area of about 20 to 30 cm<sup>2</sup>, and Whatman No. 41 filter paper (previously rinsed with distilled water and acetone) was then used to mechanically rub the wet areas and mop up the apparent liquid. The filter papers were then irradiated and analyzed radiochemically for Sb, Ba, and Cu. Again, the samples were obtained from the web, back side of the forefinger, and the central palm of the right hand. Appropriate reagent blanks (filter paper and paraffin alone) were tested. The results are shown in Table 2.



Table 1

ACTIVATION ANALYSIS OF 1% HNO<sub>3</sub>/FILTER-PAPER WIPINGS OF  
THE RIGHT HANDS OF FIVE INDIVIDUALS

Person	Net Amounts ( $\mu\text{g}$ )								
	Web			Forefinger			Palm		
	Ba	Cu	Sb	Ba	Cu	Sb	Ba	Cu	Sb
Michele M. *	$\leq 0.06$	0.4	$< 0.02$	$\leq 0.09$	1.0	$< 0.03$	$\leq 0.11$	2.6	$\leq 0.02$
Pat K. *	$< 0.10$	0.9	$< 0.02$	$\leq 0.14$	2.7	$\leq 0.02$	$\leq 0.29$	6.0	$\leq 0.02$
John B.	$\leq 0.06$	0.2	$< 0.02$	$\leq 0.11$	0.5	$\leq 0.03$	$\leq 0.11$	1.4	0.09
Sandra B.	$\leq 0.04$	$< 0.1$	$< 0.02$	$\leq 0.10$	0.5	$< 0.02$	$\leq 0.13$	1.5	$\leq 0.02$
Rick C.	$\leq 0.06$	$< 0.1$	$< 0.03$	$\leq 0.10$	0.2	$\leq 0.02$	$\leq 0.13$	3.5	$< 0.02$

\*Person smokes cigarettes moderately.

Table 2

ACTIVATION ANALYSIS OF PARAFFIN-OIL/FILTER-PAPER  
WIPINGS OF THE RIGHT HANDS OF FOUR INDIVIDUALS

Person	Net Amounts ( $\mu\text{g}$ )								
	Web			Forefinger			Palm		
	Ba	Cu	Sb	Ba	Cu	Sb	Ba	Cu	Sb
John B.	0.12	0.3	$\leq 0.03$	0.07	$< 0.1$	$\leq 0.01$	0.14	0.2	$< 0.04$
Sandra B.	0.03	$< 0.1$	$< 0.02$	0.01	$< 0.1$	$< 0.01$	0.15	1.6	$\leq 0.04$
Michele M. *	0.03	$< 0.1$	$< 0.01$	0.14	0.1	$\leq 0.02$	3.07	0.7	$\leq 0.04$
Pat K. *	0.07	0.3	$\leq 0.02$	0.14	0.9	$\leq 0.02$	0.36	1.1	0.07

\*Person smokes cigarettes moderately.

Resolution of the problem of determining whether the right hand and the left hand of a person who has not fired a gun are equivalent in deposits of Sb, Ba, and Cu was started by taking samples from the forefinger and web of each hand of four people. A section of a Whatman No. 41 filter paper (previously rinsed with distilled water and acetone) was moistened with 0.5 ml of 1% TransistAR-grade nitric acid and mechanically rubbed over the surface in question (about 20 to 30 cm<sup>2</sup>). The dry portion of the filter paper was then used to mop up all the apparent liquid on the surface of the hand. The filter-paper samples were placed in clean 2-dram polyethylene vials, and irradiated. The content of Sb, Ba, and Cu for the samples was then determined radiochemically. Appropriate blanks for the acid and filter paper were also tested in order to obtain a value for the contribution from the skin only. The results are shown in Table 3.

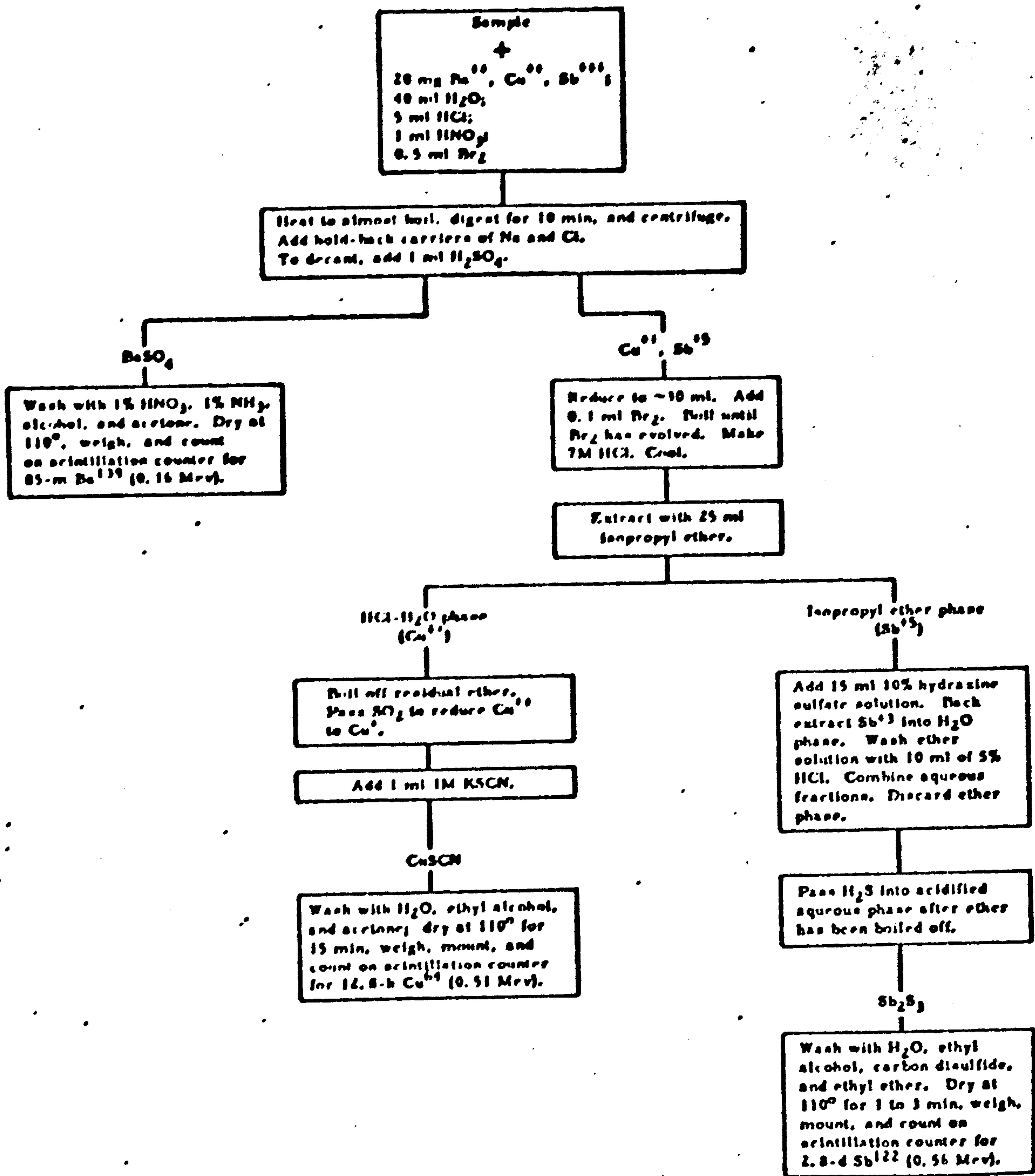


Fig. 1--Radiochemical procedure for Ba, Cu, and Sb  
in gunpowder residues



Table 3

ACTIVATION ANALYSIS OF 1% HNO<sub>3</sub>/ FILTER-PAPER WIPINGS OF FOREFINGER AND WEB OF BOTH HANDS OF FOUR INDIVIDUALS\*

Sample	Net Amounts (μg)		
	Cu	Sb	Ba
John right web	0.2	<0.02	0.04
John left web	0.1	<0.01	0.05
John right forefinger	0.3	<0.02	0.04
John left forefinger	0.2	<0.02	0.03
Rick right web	0.1	<0.02	0.02
Rick left web	0.1	<0.01	0.01
Rick right forefinger	0.6	<0.02	0.03
Rick left forefinger	0.1	<0.02	0.06
Michele† right web	0.2	<0.02	0.09
Michele† left web	0.1	<0.02	0.05
Michele† right forefinger	0.8	<0.03	0.13
Michele† left forefinger	0.8	<0.03	0.16
Pat† right web	0.4	<0.03	0.11
Pat† left web	0.1	<0.01	0.03
Pat† right forefinger	0.4	<0.02	0.10
Pat† left forefinger	0.8	<0.03	0.12

\*The two blanks were Cu = 0.20, 0.21 μg; Sb = <0.01, <0.02 μg; Ba = 0.05, 0.05 μg

†Person smokes cigarettes moderately.

Possible contributions to the "control" level from the hand, such as fumes from matches, are under study. A damp filter paper was placed above a book match after the match had been lighted. The resultant residue collected on the filter was then analyzed radiochemically for Sb and Ba. The results from seven different brands of paper matches are shown in Table 4.

Another possible factor contributing to the amounts of Sb, Ba, and Cu on the hands is the handling of ammunition by an individual. A moist filter paper was used to wipe a 0.45-caliber bullet and was then analyzed

**Table 4**  
**ACTIVATION ANALYSIS OF FUME RESIDUES FROM SEVEN**  
**MATCHES UPON MOIST FILTER PAPER**

Sample No.	Brand and Type	Net Amounts ( $\mu\text{g}$ )	
		Sb	Ba
1	Match Corp., white head	0.18	$\leq 0.08$
2	Lion Match, green head	0.25	$< 0.11$
3	Monarch Match, red head	$< 0.02$	$\leq 0.08$
4	Universal Match, white head	$< 0.04$	$< 0.08$
5	Ohio Match, purple head	$< 0.04$	$\leq 0.11$
6	Diamond Match, green head	$< 0.04$	$< 0.12$
7	Avalon Match, green head	0.53	$\leq 0.04$

radiochemically for the three elements. The results are high, yielding: 10.6  $\mu\text{g}$  for Sb, 6.8  $\mu\text{g}$  for Ba, and 50  $\mu\text{g}$  for Cu. Thus, merely handling bullets and rubbing the hands together could raise the apparent over-all "normal" level highly, if not consistently.

In general, there appears to be no major problem in determining the normal amounts of Sb, Ba, and Cu found on the web and forefinger of either hand of the individuals tested to date. Of course, many more samples will be needed to establish this determination with high statistical certainty. The Ba and Sb amounts for the "control" individuals are well below the amounts which are deposited by the gunshot, but the amount of Cu for the "control" is higher, which tends to make it difficult to detect any additional Cu deposited while firing. The palms show greater amounts of all elements but further work on palms would be intended only to lend evidence that a person perhaps has handled a gun rather than fired it. More work will be done with matches; however, the results for the hands of persons who smoked showed no rise in Sb content. The people tested so far have been two chemists, a secretary, and two technicians. Testing of individuals in a variety of occupations is intended in order to find out the over-all statistical limitations.

#### Elements Detected in Gunpowder Residues

The first quarterly report lists the results on powder-blast residues obtained by shooting into polyethylene sheets at 6 inches (see pp. 12-16, GA-3491). More work with the same types of ammunition was done this quarter in an attempt to see how reproducible the Ba to Sb ratios might be. Again, only Ba, Sb, and Cu were detected. The results are shown in Table 5. (The procedure is described on pp. 12-16 of GA-3491.)



Table 5

**ANALYSIS OF MUZZLE-BLAST AND CYLINDER-BLAST PRODUCTS  
FROM 0.38-CALIBER AMMUNITIONS**

Brand of Ammunition	Sample Type	Elements Found ( $\mu\text{g}$ )			Ba/Sb Ratio This Quarter	Ba/Sb Ratio Reported Last Quarter
		Sb	Ba	Cu		
Peters	Muzzle blast, inner	6.7	13.3	0.9	2.0	2.1
	Muzzle blast, outer	9.9	9.9	1.5	1.0	1.2
	Cylinder blast, inner	4.0	5.5	0.4	1.4	0.76
	Cylinder blast, outer	9.0	13	1.7	1.4	1.1
Remington	Muzzle blast, inner	3.8	10	0.5	2.7	2.5
	Muzzle blast, outer	10.6	20	1.5	1.9	1.3
	Cylinder blast, inner	3.4	3.3	0.6	1.0	1.2
	Cylinder blast, outer	5.1	5.3	1.4	1.0	1.5
Winchester	Muzzle blast, inner	33	21	2.9	0.64	0.75
	Muzzle blast, outer	25	11	2.9	0.44	0.54
	Cylinder blast, inner	6.9	4.3	ND*	0.62	0.52
	Cylinder blast, outer	23	17	1.1	0.74	0.47
Western	Muzzle blast, inner	11	12	6.7	0.92	0.73
	Muzzle blast, outer	14	15	10	1.1	0.58
	Cylinder blast, inner	6.9	3.9	3.5	0.57	---
	Cylinder blast, outer	35	43	64	1.2	19

\*ND = not determined.

The results to date indicate a definite difference between blast-product ratios for different powders. The reproducibility of the Ba/Sb ratios for the same ammunitions is fair; however, more work should be done on every powder and primer sample available.

#### Removal of Gunpowder Residues

The method of removing gunpowder residues from the skin with a 1%  $\text{HNO}_3\text{-H}_2\text{O}$  solution using Whatman No. 41 filter paper was tested on eight individuals who had fired a gun with their right hand. Two different revolvers and ammunitions were used. The filter paper moistened with four drops of the 1% solution was wiped gently over the outer surface of the index finger, web, and dorsal surface of the hand. The right and left hands of the individuals firing the gun were tested (the left hand served as a blank). After the wipe samples were placed in a clean polyethylene vial and irradiated, the samples were analyzed radiochemically for Sb, Ba, and Cu. The results are shown in Table 6.

Table 6

ANALYSIS OF WIPINGS OF THE RIGHT AND LEFT HANDS OF EIGHT INDIVIDUALS WHO HAD FIRED A REVOLVER WITH THEIR RIGHT HANDS (1% HNO<sub>3</sub>/Filter-paper Method)

Sample	Total Amount (μg)			Conditions
	Sb	Ba	Cu	
1 - Left hand	0.03	0.20	1.73	0.38 S and W revolver, Peters ammunition
1 - Right hand	0.09	0.30	3.80	
2 - Left hand	0.04	0.20	0.60	
2 - Right hand	0.14	0.36	1.03	
3 - Left hand	≤0.04	0.27	0.46	0.38 S and W revolver, Western ammunition
3 - Right hand	0.26	1.26	1.44	
4 - Left hand	0.13	0.29	0.43	
4 - Right hand	0.11	0.34	0.42	
5 - Left hand	0.18	0.45	1.61	0.38 Colt revolver, Peters ammunition
5 - Right hand	0.23	0.59	1.08	
6 - Left hand	0.02	0.63	1.02	
6 - Right hand	0.11	0.53	1.18	
7 - Left hand	0.04	0.21	0.47	0.38 Colt revolver, Western ammunition
7 - Right hand	0.06	0.32	0.72	
8 - Left hand	0.11	0.29	1.94	
8 - Right hand	0.20	0.35	7.20	
Reagent blank 1	0.01	0.12	0.14	Filter paper plus 4 drops of HNO <sub>3</sub> solution
Reagent blank 2	0.03	0.05	0.10	

A second method of removing residues was by scrubbing with 1% HNO<sub>3</sub> solution and a cleaned nylon brush over the concerned area of the hand (same areas as mentioned above) of a person who had fired a revolver once. As much as possible of this scrub solution was recovered, irradiated and determined radiochemically for Sb, Ba, and Cu. The results are shown in Table 7.

Many additional methods of removal will be tested, including paraffin oil, "snoop" solution, organic detergents with NH<sub>4</sub><sup>+</sup> instead of K<sup>+</sup> or Na<sup>+</sup>, organic solvents, and mechanical rubbing. The results to date indicate that the residue is not being removed completely. In the small amount of work done with the scrubbing technique (Table 7) it appears that the over-"normal" level is raised and even contradictory in the case of copper in that the right hand was used to fire the gun.



Table 7

ANALYSIS OF NYLON BRUSH/1% HNO<sub>3</sub> SCRUBBINGS  
OF RIGHT AND LEFT HANDS OF AN INDIVIDUAL  
WHO HAD FIRED A REVOLVER WITH HIS RIGHT HAND

Sample	Total Amount (μg)		
	Sb	Ba	Cu
Left hand	0.08	0.36	11.8
Right hand	0.08	0.36	7.7
Reagent blank	0.01	0.04	0.4

COMMERCIAL PLASTICS

Nineteen plastic samples had been studied during the first quarter. In this quarter, one additional plastic sample was submitted by Mr. Pinker, together with the group of rubber samples discussed in a subsequent section of this report. The experimental procedure used for the plastic sample was the same as that for the rubber samples (described on p. 22).

The new plastic sample was a polyvinyl chloride used to make street-marking cones and was a bright fluorescent-red color. Small pieces of such cones might be found as evidence in automobile injury cases. The elements detected in this sample and their concentrations are as follows: Na, 500 ppm; Cl, 30%; and Zn, 700 ppm.

GREASES

During the first quarter, six commercial automobile greases (chassis lubricants) had been studied by the purely instrumental technique. During this quarter, seven additional samples were analyzed. These seven samples were collected in the San Diego area from different service stations: Signal, Texaco, Douglas, Richfield, Tidewater, Seaside, and the General Atomic garage. The Seaside and General Atomic garage greases were manufactured by Tidewater.

The samples, which weighed 0.5 to 0.8 g, were analyzed using the same procedure as for the first six samples, i. e., by obtaining gamma-ray spectra on samples irradiated 30 min in a flux of  $1.8 \times 10^{12}$  neutrons/cm<sup>2</sup>-sec and on samples irradiated 30 sec in a flux of  $2.8 \times 10^{12}$  neutrons/cm<sup>2</sup>-sec. In the seven samples studied this quarter, a total of nine elements were detected: Na, Al, Cl, Cu, V, Mn, Zn, As, and Ba. The results for these seven samples are summarized in Table 8; for comparison, the results for the first six samples are also included. (Copper was not detected in the

4/15/64

CODE

CABLEGRAM

URGENT

TO LEGAT MEXICO CITY (105-3702)  
FROM DIRECTOR FBI (105-82555)

*Lee Harvey Oswald*

REURCAB NUMBER FIVE FOUR FOUR CONCERNING REQUESTS OF MEMBERS  
PRESIDENT'S COMMISSION. IMMEDIATELY PREPARE FOR DISSEMINATION TO  
COMMISSION THE REQUESTED MATERIAL RE COMPLETION OF HOTEL DEL  
COMERCIO INQUIRIES; ANALYSIS OF OSWALD EXPENDITURES IN MEXICO; THE  
MEXICO CITY MAP; COMPLETION OF GUTIERREZ VALENCIA ALLEGATION AND  
OTHER ITEMS YOU DESCRIBE OF SUPERFICIAL NATURE. CONCERNING REQUESTS  
RE ANALYSIS OF WORKING HOURS OF CUBAN AND SOVIET CONSULATES AND  
OPERATING PROCEDURES IN OBTAINING CUBAN TRANSIT VISAS, IT APPEARS TO  
BUREAU THAT THIS AREA OF INTEREST LIES MORE PROPERLY WITHIN THE  
PROVINCE OF CIA. FURNISH YOUR VIEWS THIS REGARD, SUBMITTING YOUR  
RECOMMENDATION FOR HANDLING. REGARDING REQUEST CONCERNING MEXICAN  
IMMIGRATION TO LOCATE AND CONTROL ALBERT OSBORNE FOR POSSIBLE  
APPEARANCE BEFORE COMMISSION, TAKE NO ACTION AT THIS TIME PENDING  
ADDITIONAL BUREAU INSTRUCTIONS. FURNISH YOUR VIEWS AS TO WHETHER  
OR NOT THIS REQUEST LIES WITHIN PURVIEW OF STATE DEPARTMENT AND  
SUBMIT RECOMMENDATION FOR HANDLING.

RECORDED COPY FILED

1 - DALLAS (100-10461) (ENCLOSURE)

- Tolson
- Belmont
- Mohr
- Casper
- Callahan
- Conrad
- DeLoach
- Felt
- Gale
- Rosen
- Sullivan
- Tavel
- Trotter
- Tele. Room
- Holmes
- Gandy

VIA CABLEGRAM

APR 15 1964

APR 22 1964

MAIL ROOM TELETYPE UNIT

REC-11

FBI REC.D

APR 20 1964

EXROX

APR 21 1964

APR 12 2 13 PM '64

3248



CABLEGRAM TO LEGAT, ME X CITY  
RE: LEE HARVEY OSWALD  
105-82555

SUCAB YOUR VIEWS AND RECOMMENDATIONS AND ADVISE WHEN MATERIAL  
REQUESTED BY COMMISSION IS TO BE SUBMITTED.

BUREAU IS DISCUSSING WITH COMMISSION THE NECESSITY OF  
FURNISHING COMMISSION THE IDENTITIES OF BUREAU AGENTS WITH OUTLINE  
OF INVESTIGATION BY EACH IN MEXICO. TAKE NO ACTION IN REGARD TO  
THIS REQUEST AT THIS TIME.

COPY MAILED DALLAS.

NR.	42
ENC.	me
CK.	me
APPROVED BY	[Signature]
TYPED BY	12. P

COPIES 11:11

FBI

Date: 4/16/64

Transmit the following in \_\_\_\_\_  
(Type in plain text or code)

AIRTEL

AIRMAIL

Via \_\_\_\_\_  
(Priority)

TO: DIRECTOR, FBI (105-82555)

FROM: SAC, ST. LOUIS (105-3665) <sup>p-</sup> ~~(988)~~

SUBJECT: LEE HARVEY OSWALD  
IS - R - CUBA  
OO: DL

*Handwritten notes:*  
205  
G...  
de...  
an

Re Bureau airtel to St. Louis, 4/2/64, and  
Washington Field airtel to the Bureau, 4/10/64.

A review of the Marine Corps service record on  
file at the Military Personnel Records Center, St. Louis,  
Mo., for DONALD MACK OSBORNE, SN 166 61 53, failed to contain  
any information re reports of statements furnished by CALL,  
DELGADO, or OSBORNE as indicated in re Bureau airtel,  
4/2/64.

*Handwritten:* Call

OSBORNE's address was shown as 3415 29th St.,  
Lubbock, Texas.

③ - BUREAU (RM)  
2 - DALLAS (100-10461) (RM)  
1 - ST. LOUIS  
LL/svm  
(6)

REC-11 105-82555-3249

25 APR 18 1964

SOVIET ACTION

79 APR 22 1964

Approved: *[Signature]*

*Handwritten:* CG 6-8LL  
E G - YAC

Special Agent in Charge

Sent \_\_\_\_\_ M Per \_\_\_\_\_



FBI

Date: 4/17/64

CONFIDENTIAL

Transmit the following in \_\_\_\_\_

(Type in plain text or code)

Via

AIRTEL

AIR MAIL

(Priority or Method of Mailing)

TO : DIRECTOR, FBI (105-82555)

FROM : SAC, BUTTE (100-8446) (RUC)

SUBJECT: LEE HARVEY OSWALD  
 IS - R - CUBA  
 OO: Dallas

ReBuairtel to Albany, 4/15/64.

[REDACTED]

[REDACTED]

- 3 - Bureau (Reg.) (AM)
  - 2 - Dallas (100-10461) (Reg.) (AM)
  - 1 - Butte
- THZ/ar  
(6)

Classified by 2040  
 Exempt from GDS, Category 2  
 Date of Declassification Indefinite  
 7/21/77 AFM

REC-11 105-82555-3250

3 APR 20 1964

C. C. WICK

*R. A. [Signature]*

SOVIET SECTION

CONFIDENTIAL

Approved: \_\_\_\_\_

Special Agent in Charge

Sent \_\_\_\_\_

M

Per \_\_\_\_\_

79 APR 22 1964

FBI

Date: 4/14/64

REC-25

Mr. Casper	_____
Mr. Callahan	_____
Mr. Conrad	_____
Mr. DeLoach	_____
Mr. Evans	_____
Mr. Gale	_____
Mr. Rosen	_____
Mr. Sullivan	_____
Mr. Tavel	_____
Mr. Trotter	_____
Tele. Room	_____
Miss Holmes	_____
Miss Gandy	_____

Transmit the following in \_\_\_\_\_  
(Type in plain text or code)

Via AIRTEL \_\_\_\_\_  
(Priority)

TO: DIRECTOR, FBI (105-82555)

FROM: SAC, WFO (105-37111) (P)

LEE HARVEY OSWALD  
IS - R - CUBA  
(OO:DL)

*Handwritten notes and signatures:*  
 V. B. ...  
 [Signature]  
 [Signature]

On 4/13/64, JOSEPH A. GWYER, Senior Research Specialist, Industrial Engineering, Library of Congress, Washington, D. C., advised SA JAMES F. MORRISSEY that he had recently conversed with a Mrs. WANDA SCHMIDT, an acquaintance who is a probation officer attached to the Juvenile Court in Arlington, Virginia. GWYER stated that in such position she handles the cases of wayward girls. She told him about one girl, believed white, approximately 15 years old, who is in her charge and whom she placed in a school in Georgetown believed operated by religious sisters. In this girl's record, there is definite indication of association with the communists in the Washington, D. C. area. She also drew the attention of the Washington, D. C. police when she was with Negroes during the Negro march on Washington. SCHMIDT related to GWYER that a source not recalled by GWYER believed the girl is going "berserk" since the assassination. When SCHMIDT started to tell GWYER that OSWALD might be involved in the cause of her conduct and inquired as to the disposition of some information or thoughts concerning this girl and OSWALD, he told her he would relay it to the FBI so that the latter agency could get it firsthand from SCHMIDT. GWYER was of the opinion that from his conversation with SCHMIDT there was the suggestion that the girl knew OSWALD or may have met him. GWYER reported SCHMIDT as telling him that the FBI may have talked to the girl prior to the assassination. He did not know if SCHMIDT or the girl had any actual information concerning OSWALD, but because of the importance of the assassination, felt even the remote items should be run out.

- ③ - Bureau
- 2 - Richmond (RM)
- 1 - Dallas (100-10461) (RM) (AM) 4/15/64

E. D. Wick REC-25 105-82555-325

*Handwritten signature:* [Signature]

1 - WFO

*Handwritten notes and signature:*  
 Special Agent in Charge  
 [Signature]

Sent

*Handwritten signature:* [Signature]

58 MAY 1964



WFO 105-37111

GWYER has been previously interviewed in this case. By airtel dated 3/12/64, WFO forwarded an LHM reflecting the results of an interview of him concerning his thoughts and conjectures about MARINA OSWALD and the OSWALD Case in general.

GWYER said SCHMIDT could be reached through Crescent 3-2000 from 8:00 a.m. to 12 noon. She lives in Shirlington, and can also be reached through ADAM SCHMIDT, listing in the phone directory.

Richmond is requested to interview WANDA SCHMIDT for any information she may have that would indicate the girl in question may have known or met OSWALD. Set out all leads necessary to resolve any allegation possibly raised as the result of interview. Include complete background of girl involved. Submit pertinent results in form suitable for dissemination.

The attention of the Bureau and Richmond is invited to the case entitled PAULINE FRYE, SM-C, Richmond file 97-22-169. It is suggested that FRYE may be identical to the girl in question.

for 100 -

440970

(No indication in file  
She connected with  
Subject, 10/7)