

**SEM ANALYSIS of  
GUNSHOT RESIDUE SAMPLES**

DCI Forensic Laboratory  
Case Number 05-346

SABOW, James Emery

RJ Lee Group Project Number FRH602036

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#05-346*

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INTRODUCTION

Eight (8) gloves and two (2) shells were received from Frans Maritz of DCI Forensic Laboratory for GSR (gunshot residue) analysis. Particle extraction samples were collected from the gloves at RJ Lee Group using permanently-tacky adhesive stubs. The samples were identified as follows:

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| Client's Sample ID                                       | RJ Lee Group Sample No. |
|--|-------------------------|
| Case Number 05-346: SABOW, James Emery                   |                         |
| 1.01 Sample #12 Glove-Control                            | 1009082                 |
| 1.02 Sample #13 Glove-Control                            | 1009083                 |
| 1.03 Sample #15 Glove-R Hand Normal Position             | 1009084                 |
| 1.04 Sample #16 Test Sample Glove-R Hand Normal Position | 1009085                 |
| 1.05 Sample #18 Glove-R Hand Thumb                       | 1009086                 |
| 1.06 Sample #19 Test Sample Glove-R Hand Thumb           | 1009087                 |
| 1.07 Sample #20 Glove-R Hand with Index Finger           | 1009088                 |
| 1.08 Sample #22 Test Sample Glove-R Hand Index Finger    | 1009089                 |
| 5 Tow (2) 12 GA Winchester Shells                        | 1009090                 |

The particle extraction samples were carbon coated and then placed directly into the PSEM (PERSONAL SEM<sup>®</sup>) for analysis.

SEM ANALYSIS

The samples were initially examined using manual microscopy to set run parameters and sample analysis area. They were then analyzed using an automated scanning electron microscope (PERSONAL SEM<sup>®</sup>) equipped with a full gunshot residue analysis package, including automated stage, backscattered electron (BSE) detector, energy dispersive x-ray spectrometer (EDS) and automated GSR analysis software.

When lead (Pb), antimony (Sb), and barium (Ba), combine or fuse into a single particle, it is defined as being unique to GSR, barring elemental tags from other sources. Any particles with a combination of two of these elements (Pb, Sb and Ba) with high-temperature features or morphology are classified as consistent with GSR. Particles confirmed as being unique to or consistent with GSR could have resulted from the discharge of a firearm, being in close proximity to a discharging firearm or from contact with a surface contaminated with GSR.

The SEM analysis, on a particle-by-particle basis, retains the individual feature characteristics and can relate the presence of lead (Pb), antimony (Sb) and barium (Ba) to a single particle. When the instrument detects particles with the presence of Pb, Sb and Ba, it flags the particles as potential GSR and stores images, composition and coordinate data for relocation and confirmation by manual microscopy after the automated analysis is completed. A summary run sheet is printed with stored images and spectral data for relocation and confirmation applications. Summary sheets and images of flagged potential GSR particles from the automated analyses are found in the appendix of this report. Flagged particles were relocated for compositional confirmation.

### ANALYTICAL RESULTS

A list of confirmed particles detected during the analysis is as follows:

| Sample ID  | RJ Lee Group Sample No. | TIFF Image No. | Composition  | Number of Particles | Figure No. |
|--|-------------------------|----------------|--|---------------------|------------|
| 1.01 Sample #12 Glove-Control                            | 1009082                 |                | Total Unique Particles - 0<br>Total Consistent-With Particles - 0<br>Total Single Component Particles - 2  |                     |            |
| 1.02 Sample #13 Glove-Control                            | 1009083                 |                | Total Unique Particles - 0<br>Total Consistent-With Particles - 0<br>Total Single Component Particles - 3  |                     |            |
| 1.03 Sample #15 Glove-R Hand Normal Position             | 1009084                 | 9084001        | Pb-Sb-Ba   | Unique to GSR       | 1          |
|  |                         | 9084002        | Pb-Sb-Ba   | Unique to GSR       | 1          |
|  |                         | 9084003        | Pb-Sb-Ba   | Unique to GSR       | 1          |
|  |                         | 9084004        | Pb-Sb-Ba   | Unique to GSR       | 1          |
|  |                         | 9084005        | Pb-Sb-Ba   | Unique to GSR       | 2          |
|  |                         | 9084007        | Pb-Sb-Ba   | Unique to GSR       | 2          |
|  |                         |                | Total Unique Particles - 6<br>Total Consistent-With Particles - 4<br>Total Single Component Particles - 10 |                     |            |
| 1.04 Sample #16 Test Sample Glove-R Hand Normal Position | 1009085                 | 9085001        | Pb-Sb-Ba   | Unique to GSR       | 3          |
|  |                         | 9085002        | Pb-Sb-Ba   | Unique to GSR       | 3          |
|  |                         | 9085003        | Pb-Sb-Ba   | Unique to GSR       | 3          |
|  |                         | 9085004        | Pb-Sb-Ba   | Unique to GSR       | 3          |
|  |                         | 9085005        | Pb-Sb-Ba   | Unique to GSR       | 4          |
|  |                         | 9085006        | Pb-Sb-Ba   | Unique to GSR       | 4          |
|  |                         | 9085007        | Pb-Sb-Ba   | Unique to GSR       | 4          |
|  |                         | 9085008        | Pb-Sb-Ba   | Unique to GSR       | 4          |
|  |                         |                | Total Unique Particles - 8<br>Total Consistent-With Particles - 3<br>Total Single Component Particles - 8  |                     |            |
| 1.05 Sample #18 Glove-R Hand Thumb                       | 1009086                 | 9086001        | Pb-Sb-Ba   | Unique to GSR       | 5          |
|  |                         | 9086002        | Pb-Sb-Ba   | Unique to GSR       | 5          |
|  |                         |                | Total Unique Particles - 2<br>Total Consistent-With Particles - 0<br>Total Single Component Particles - 11 |                     |            |

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| Sample ID   | RJ Lee Group Sample No | TIFF Image No. | Composition | Number of Particles | Figure No. |
|---|------------------------|----------------|-------------|---------------------|------------|
| 1.06 Sample #19 Test Sample Glove-R Hand Thumb        | 1009087                | 9087001        | Pb-Sb-Ba    | Unique to GSR       | 6          |
|   |                        |                |             |                     |            |
| 1.07 Sample #20 Glove-R Hand with Index Finger        | 1009088                |                |             |                     |            |
|   |                        |                |             |                     |            |
| 1.08 Sample #22 Test Sample Glove-R Hand Index Finger | 1009089                |                |             |                     |            |
|   |                        |                |             |                     |            |

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### CONCLUSIONS

#### 1.01 Sample #12 Glove-Control

There were no particles classified as being unique-to or consistent-with GSR found. Only single-component particles were found.

#### 1.02 Sample #13 Glove-Control

There were no particles classified as being unique-to or consistent-with GSR found. Only single-component particles were found.

#### 1.03 Sample #15 Glove-R Hand Normal Position

Particles confirmed as being unique-to and consistent-with GSR were found.

#### 1.04 Sample #16 Test Sample Glove-R Hand Normal Position

Particles confirmed as being unique-to and consistent-with GSR were found.

#### 1.05 Sample #18 Glove-R Hand Thumb

Particles confirmed as being unique to GSR were found.

#### 1.06 Sample #19 Test Sample Glove-R Hand Thumb

Particles confirmed as being unique-to and consistent-with GSR were found.

#### 1.07 Sample #20 Glove R-Hand With Index Finger

Particles confirmed as being consistent with GSR were found.

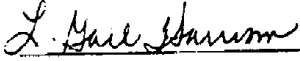
#### 1.08 Sample #22 Test Sample Glove-R Hand Index Finger

There were no particles classified as being unique-to or consistent-with GSR found. Only single-component particles were found; therefore, the results of the analysis of these samples must be deemed inconclusive.

These results are submitted pursuant to RJ Lee Group's current terms and conditions of sale, including the company's standard warranty and limitation of liability provisions. No responsibility or liability is assumed for the manner in which the results are used or interpreted. The submitted items are being returned to your office and are enclosed.

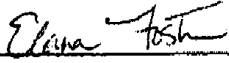


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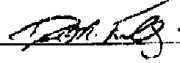


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