



**Firearms Section**  
**Evidence Technician Training Manual**  
Forensic Analysis Division



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### **Introduction to Student**

You are expected to carry out a study of all pertinent section equipment, the Standard Operating Procedures Manual, the Quality Assurance Manual, the Safety Manual, as well as print, video, and physical reference files. Integral to your course of study is frequent daily contacts with section personnel having special expertise in certain areas. Do not hesitate to ask anyone a question, whether a supervisor or examiner.

Your study includes many printed references, including the basic material listed within each area of study. It is expected that during the training period you become thoroughly familiar with these basic references. Further, it should be noted that you should not restrict your efforts and research to those required references. One of your primary sources of additional information is the section's reference library. Familiarize yourself with the library's contents, including the reference files, related indices, and manufacturers' literature.

In addition to maintenance of this manual, you are required to keep a record of your study notes on each of the items shown in the training program for research, discussion, demonstration, study, or practical work. This record can include hand or type-written notes, charts, graphs, photographs, photocopied material, etc. What is included is at your discretion, but it must address and broaden on each of the required items of study set out in the training program. Organization of your records in a format that parallels the training program is suggested. This record assists in the documentation of your progress during training and serve as a ready reference in the months and even years following the completion of training.

Written tests require a grade of 80% or greater to pass. The student must receive a passing grade for all written tests in order to successfully complete the training program.

The student's results on practical exercises/tests must conform to the expected results in order to successfully complete the training program.



## **1 Unit 1 – Administrative Orientation**

### **1.1 Sections**

- 1.1.1 **Houston Forensic Science Center (HFSC)** New Hire Orientation
- 1.1.2 **Tour**
- 1.1.3 **Firearms** Section In-Processing

### **1.2 Training Objectives**

To provide the **student** with an understanding of the mission of **HFSC**, the operation of the Firearms Section, as well as the other sections of the crime laboratory.

### **1.3 Method of Testing**

Oral discussion

### **1.4 Training Methods**

- 1.4.1 Self-directed study
- 1.4.2 Discussion
- 1.4.3 Tour of **some or** all sections of **HFSC**
- 1.4.4 **HFSC** New Hire Orientation (if applicable)

### **1.5 Practical Exercise**

#### 1.5.1 Section **1.1.3**

- 1.5.1.1** The student reads the section's Standard Operating Procedure Manual and discusses the section's mission with the Principal Instructor. **Discussions with the student are to include section and HFSC procedures.**

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Principal Instructor

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Date

### **1.6 Reading**

#### 1.6.1 Required Reading

- **HFSC** Quality Manual
- Firearms Section Standard Operating Procedures
- **HFSC Health and** Safety Manual

### **1.7 Terminology**

Common Acronyms

**HFSC**

**Houston Forensic Science Center**

SOP

Standard Operating Procedures



ANSI-ASQ  
ANAB

American National Standards Institute-American Society for Quality  
ANSI-ASQ National Accreditation Board

**1.8 Estimated Training Time**  
40 hours



## 2 Unit 2 – Handling of Evidence and Safety

### 2.1 Sections

- 2.1.1 Overview of Evidence Receiving and Transfer
- 2.1.2 Laboratory Safety

### 2.2 Training Objectives

To instruct the student in the proper methods of handling, preserving, and marking of evidence. Also the safe handling of firearms, how to fill out log in worksheets, and a working knowledge of firearm terminology **are** learned at the conclusion of this section.

### 2.3 Method of Testing

Written/practical examinations

### 2.4 Training Methods

- 2.4.1 Self-**directed** study
- 2.4.2 Practical exercises
- 2.4.3 Familiarization with the Evidence Section
- 2.4.4 Discussion

### 2.5 Practical Exercises

#### 2.5.1 Section 2.1.1

2.5.1.1 The student **is** taken through the procedure of receiving evidence. Emphasis **is** placed on **handling** evidence discrepancies, checking for an unloaded condition in submitted firearms, handling evidence in unusual circumstances, and biohazard handling procedures.

\_\_\_\_\_  
Principal Instructor

\_\_\_\_\_  
Date

#### 2.5.2 Section 2.1.2

2.5.2.1 Review the procedure for handling biohazardous substances with your Principal Instructor.

\_\_\_\_\_  
Principal Instructor

\_\_\_\_\_  
Date

2.5.2.2 The student reviews all procedures pertaining to the marking of evidence and be given practical exercises in marking bullets, cartridge cases, firearms, and other evidence.



\_\_\_\_\_  
Principal Instructor

\_\_\_\_\_  
Date

2.5.2.3 The student **is** given practical exercises using the firearms section inventory worksheet. This includes a variety of firearms such as: autoloading shotguns, sawed off shotguns, top break shotguns, **semiautomatic** pistols, revolvers, and rifles. Safety features **are** cited, as **are** precautions in unloading or determining if a firearm is loaded.

\_\_\_\_\_  
Principal Instructor

\_\_\_\_\_  
Date

## **2.6 Reading**

### 2.6.1 Required reading

- **HFSC** Quality Manual
- **Firearms Section** Standard Operating Procedures
- **HFSC Health and** Safety Manual

## **2.7 Estimated Training Time**

**64 hours**





### **3 Unit 3 – Firearm Development**

#### **3.1 Sections**

- 3.1.1 Firearm Safety
- 3.1.2 Long Guns (Single shot to repeating)
- 3.1.3 Long Guns (Semiautomatic)
- 3.1.4 Submachine Guns & Machine Guns
- 3.1.5 Handguns (Revolvers)
- 3.1.6 Handguns (Semiautomatic)
- 3.1.7 Shotguns

#### **3.2 Training Objectives**

To develop in the student a thorough knowledge of firearms of all types so that he/she **is** familiar with those weapons most frequently encountered. In addition, a working knowledge of firearm terminology continues to develop.

#### **3.3 Method of Testing**

- 3.3.1 Written/practical examination
- 3.3.2 Manual demonstration

#### **3.4 Training Method**

- 3.4.1 Reading
- 3.4.2 Discussion
- 3.4.3 Practical exercises

#### **3.5 Practical Exercises**

In the following practical exercises involving the examination of firearms, substitutions of similar types, makes, and models **is** done if any of the listed firearms cannot be obtained. The use of the **section's** videos is recommended if a particular firearm is not available. Use of various assembly/disassembly guides is recommended.

##### **3.5.1 Section 3.1.1**

- 3.5.1.1 Review firearm safety and test firing rules with your Principal Instructor. Cite the rules and explain the reason for each rule.

---

Principal Instructor

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Date

##### **3.5.2 Section 3.1.2**



3.5.2.1 The student **is** required to identify external parts and know how to unload the following types of firearms:

- Bolt action rifle with a wing on bolt safety (i.e. Springfield 1903)
- Lever action rifle with a half cock safety (i.e. Model 1894 Winchester)
- Lever action rifle with a sliding button on the tang (i.e. Savage Model 99)
- Pump action rifle (i.e. Savage Model 170 Series A)
- Slide action carbine (i.e. Remington 760)

\_\_\_\_\_  
Principal Instructor

\_\_\_\_\_  
Date

3.5.2.2 The Principal Instructor gives an **oral** practical examination involving at least two of the above listed firearms. The student discusses the external parts of the included firearms and demonstrate how to safely unload the firearms.

\_\_\_\_\_  
Principal Instructor

\_\_\_\_\_  
Date

### 3.5.3 Section 3.1.3

3.5.3.1 The student **is** required to identify external parts and know how to unload the following types of firearms:

- Gas operated carbine with a crossbolt safety (i.e. M-1 Carbine)
- Gas operated rifle with a trigger guard lever and hammer block (i.e. Ruger Mini-14)
- Gas operated rifle with a crossbolt safety (i.e. Remington 742)
- Gas operated rifle with a trigger guard lever (i.e. AKS/SKS type)

\_\_\_\_\_  
Principal Instructor

\_\_\_\_\_  
Date

3.5.3.2 The Principal Instructor gives an **oral** practical examination **involving** at least two of the above listed firearms. The student discusses the external parts of the included firearms and demonstrate how to safely unload the firearms.

\_\_\_\_\_  
Principal Instructor

\_\_\_\_\_  
Date

### 3.5.4 Section 3.1.4

3.5.4.1 The student **is** required to identify external parts and know how to unload the following types of firearms:

- Blowback pistol (i.e. SWD/Cobray M-11)



- Full automatic submachine gun that fires from open bolt (i.e. Uzi Model A)

\_\_\_\_\_  
Principal Instructor

\_\_\_\_\_  
Date

3.5.4.2 The Principal Instructor gives an **oral** practical examination involving the above listed firearms. The student discusses the external parts of the included firearms and demonstrate how to safely unload the firearms.

\_\_\_\_\_  
Principal Instructor

\_\_\_\_\_  
Date

### 3.5.5 Section 3.1.5

3.5.5.1 The student **is** required to identify external parts and know how to unload the following types of firearms:

- Smith & Wesson single action/double action revolver (i.e. Model 10-5)
- Ruger single action only revolver (i.e. Blackhawk or New Model Blackhawk)

\_\_\_\_\_  
Principal Instructor

\_\_\_\_\_  
Date

3.5.5.2 The Principal Instructor gives an **oral** practical examination **involving** the above listed firearms. The student discusses the external parts of the included firearms and demonstrate how to safely unload the firearms.

\_\_\_\_\_  
Principal Instructor

\_\_\_\_\_  
Date

### 3.5.6 Section 3.1.6

3.5.6.1 The student **is** required to identify external parts and know how to unload the following types of firearms:

- Single action only recoil operated pistol (i.e. Model 1911/1911A1)
- Recoil operated double action only pistol (i.e. Glock 17)
- Recoil operated single action/double action pistol (i.e. Beretta 92S)
- Recoil operated pistol with a magazine disconnect (i.e. Browning Hi-Power)
- A single action only blowback pistol (i.e. Raven MP-25)

\_\_\_\_\_  
Principal Instructor

\_\_\_\_\_  
Date



3.5.6.2 The Principal Instructor gives an **oral** practical examination **involving** at least two of the above listed firearms. The student discusses the external parts of the included firearms and demonstrate how to safely unload the firearms.

\_\_\_\_\_  
Principal Instructor

\_\_\_\_\_  
Date

### 3.5.7 Section 3.1.7

3.5.7.1 The student **is** required to identify external parts and know how to unload the following types of firearms:

- Single shot shotgun
- Pump action shotgun (i.e. Remington 870)
- Semiautomatic shotgun (i.e. Winchester 1200)
- Side-by-side **or over/under** shotgun

\_\_\_\_\_  
Principal Instructor

\_\_\_\_\_  
Date

3.5.7.2 The Principal Instructor gives an **oral** practical examination **involving** at least two of the above listed firearms. The student discusses the external parts of the included firearms and demonstrate how to safely unload the firearms.

\_\_\_\_\_  
Principal Instructor

\_\_\_\_\_  
Date

3.5.7.3 Demonstrate your knowledge of the basic nomenclature of handguns, rifles, and shotguns.

3.5.7.3.1 Include, but do not restrict your study to the following:

- |              |                 |
|--------------|-----------------|
| • Breechface | • Barrel        |
| • Bolt       | • Magazine      |
| • Extractor  | • Clip          |
| • Ejector    | • Ejection port |
| • Firing pin | • Receiver      |

3.5.7.3.2 Point out these parts in several handguns, rifles, and shotguns (**as applicable**).

\_\_\_\_\_  
Principal Instructor

\_\_\_\_\_  
Date

## 3.6 Reading

3.6.1 Review as Necessary **Section 3.1.1**



- *Small Arms of the World, 9<sup>th</sup> or 10<sup>th</sup> Edition* by Smith; pp. 15-43.
- *The Book of Rifles* by Smith; pp. 5-36.
- *The Story of Firearm Ignition* by James Edsall; Pioneer Press, 1974.
- *The Age of Firearms, A Pictorial History* by Robert Held; Gun Digest Company, 1970.
- *Cartridges; A Pictorial Digest of Small Arms Ammunition* by Herschel C. Logan; pp. 1-10; Standard Publication, 1959.
- *Firearms Investigation, Identification, and Evidence* by Hatcher, Jury, and Weller; Chapter 2 pp. 23-39.
- *The Development of Firearms* by H.L. Peterson; Parts 1-3; American Rifleman, March-April-May, 1960.
- *The Complete Handgun* by Ian V. Hogg; – 1300 to the Present; Peerage Books, 1984.
- *The Story of the Gun* on the Arts & Entertainment (A&E) Channel - (Video).
- *Guns and How They Work* by Ian V. Hogg; Everest House (1979); pp. 6-25.

3.6.2 **Review as Necessary Section 3.1.2**

- *Small Arms of the World, 9<sup>th</sup> or 10<sup>th</sup> Edition* by Smith; pp. 33-35, 41-57, and 61-81.
- *The Book of Rifles* by Smith; Chapters 4 and 5 and p. 78.
- *Firearms Investigation, Identification, and Evidence* by Hatcher, Jury, and Weller; Chapter 3 pp. 40-62.
- *American Rifle Design and Performance, Part I* by L.R. Wallack; pp. 3-122; Winchester Press, 1977.
- *Guns and How They Work* by Ian V. Hogg; Everest House (1979); pp. 26-39, 68-77.

3.6.3 **Review as Necessary Section 3.1.3**

- *Small Arms of the World, 9<sup>th</sup> or 10<sup>th</sup> Edition* by Smith; Chapter 7 and Chapter 8 pp. 93, 104-107, and 641-642.
- *The Book of Rifles* by Smith; Chapter 6 and pp. 86-88.
- *Guns and How They Work* by Ian V. Hogg; Everest House (1979); pp. 125 (2nd paragraph)-131 and 148-157.

3.6.4 **Review as Necessary Section 3.1.4**

- *Small Arms of the World, 9<sup>th</sup> or 10<sup>th</sup> Edition* by Smith; Chapters 8 and 9.
- *Guns and How They Work* by Ian V. Hogg; Everest House (1979); pp. 58-67, 80-89, 108-125, and 132-147.
- *The Worlds Submachine Guns, Vol. I* by Thomas B. Nelson, and Hans B. Lockhaven; T.B.N. Enterprises (1977); pp. 1-28; and briefly review remainder of text as necessary.
- *The Worlds Machine Pistols and Submachine Guns Vol. IIa* by Thomas B. Nelson and Daniel D. Musgrave; T.B.N. Enterprises (1980); Chapter III, pp. 95-104; Chapter V, pp.297-354; Chapter X, pp. 647-658; and briefly review remainder of text as necessary (esp. pp. 407-416, 507-522) .



- *The Terrifying Three* by Duncan Long; Paladin Press (1989).
- 3.6.5 Review as Necessary Section 3.1.5
- *Book of Pistols and Revolvers* by Smith; pp. 6-24 and 43-52.
  - *Small Arms of the World, 9<sup>th</sup> or 10<sup>th</sup> Edition* by Smith; Chapters 10 and 11.
  - *Military Pistols and Revolvers* by Ian V. Hogg; pp. 13-33.
  - *American Pistol and Revolver Design and Performance* by L.R. Wallack; Chapters 1 and 2.
  - *Guns and How They Work* by Ian V. Hogg; Everest House (1979); pp. 40-57.
- 3.6.6 Review as Necessary Section 3.1.6
- *Small Arms of the World, 9<sup>th</sup> or 10<sup>th</sup> Edition* by Smith; Chapter 12, pp. 179-192.
  - *Military Pistols and Revolvers* by Ian V. Hogg; pp. 7-11 and 35-77.
  - *American Pistol and Revolver Design and Performance* by L.R. Wallack; Chapters 3 and 4 and pp. 51, 69-70.
  - *Book of Pistols & Revolvers* by Smith; pp. 36-43.
  - *Guns and How They Work* by Ian V. Hogg; Everest House (1979); pp. 90-107.
- 3.6.7 Review as Necessary Section 3.1.7
- *American Shotgun Design and Performance* by L.R. Wallack; Chapters 1-9 and 13.
  - *NRA Firearms Fact Book, 3<sup>rd</sup> Edition*, pp. 169-181.
  - *The World's Fighting Shotguns* by Thomas F. Swearingen; Ironside International Publishers (1978); pp. 1-19 and review remainder as necessary.
- 3.6.8 Other Reading
- *Machine Shop Practice Vol. 1 & 2* by K. H. Moltrecht.
  - *Machinist's Handbook Revised 21<sup>st</sup> Edition* by Oberg, Jones and Horton.
  - *Firearms Identification Part I, Vol. I*, by Mathews.
  - *AFTE Journals* (as specified by principal instructor).
  - *AFTE Glossary*.
  - *Hatcher's Notebook* by Hatcher, Chapters VII to IX, pp. 180-231.
  - *Ruger Investment Casting* (Company Brochure).
  - *Choke Tube Roundup!* from Guns & Ammo (July 1994).
  - *Firearms Investigation, Identification, and Evidence* by Hatcher, Jury and Weller; The Stackpole Company (1957); Chapter 5, pp. 106-136 and 187-196.
  - *The Identification of Firearms* by Gunther and Gunther; John Wiley & Sons, Inc. (1935); pp. 13-19.
  - *Firearms Identification Vol. I* by J. Howard Mathews; Charles C. Thomas (1962); Part I, Chapter 1, pp. 3-9.
  - *Firearms Identification Vol. II* by J. Howard Mathews; Charles C. Thomas (1962); Part VI, pp. 467-492.



- Firearms Identification Vol. III by J. Howard Mathews; Charles C. Thomas (1962); Part VII, pp. 703-714.
- American Pistol & Revolver Design and Performance by L.R. Wallack; Winchester Press (1978); pp.71-80.
- American Shotgun Design and Performance by L.R. Wallack; Winchester Press (1977); pp.69-80.
- American Rifle Design and Performance by L.R. Wallack; Winchester Press (1977); pp.71-88.
- The Standard Directory of Proof Marks by Gerhard Wirncherger; Blacksmith Publishers.
- Gunmarks by David Byron Crown Publishers (1979).
- The Identification and Registration of Firearms by Vaclav “Jack” Krcma; Charles C. Thomas (1971).
- Encyclopedia of Modern Firearms, Parts and Assembly, Vol. 1 by F.R. “Bob” Brownell; (1959).

### 3.7 Terminology

Be familiar with the following terms:

#### 3.7.1 Section 3.1.1

Barrel	Bore	Bore Diameter
Buckshot	Bullet	Butt
Butt Plate	Caliber	Cartridge
Cock	Derringer	Firearm
Full Cock	Gauge	Half Cock
Hammer	Land and Groove Impression	Muzzle
Pistol	Projectile	Shot
Shotgun	Smooth Bore	Stock

#### 3.7.2 Section 3.1.2

Bolt Handle	Bolt Release	Breech
Breechblock	Breech Bolt	Breech Face
Butt Plate	Firing Pin	Forearm
Hinged Frame	Rifle	Single Action
Stock	Trigger	Trigger Guard

#### 3.7.3 Section 3.1.3

Carrier	Clip	Ejection Port
Ejector	Extractor	Magazine
Magazine, Box	Magazine, Detachable	Magazine, Rotary
Magazine Floorplate	Magazine Follower	Magazine Lock



Magazine Well	Operating Handle	Pistol
Receiver	Recoil Spring	Recoil Spring Guide
Rifle	Safety, Magazine	Slide
Slide Lock	Slide Lock Safety	Stock
3.7.4 Section 3.1.4		
Automatic	Autoloading	Flash Suppressor
Machine Gun	Open Bolt System	Semiautomatic
Submachine Gun		
3.7.5 Section 3.1.5		
Action – Revolver	Backstrap	Crane
Cylinder	Double Action	Ejector Rod
Firing Pin	Full Cock	Grip (Handguns)
Half Cock	Handgun	Revolver
Safety	Sideplate	Single Action
Top Strap	Trigger	Yoke
3.7.6 Section 3.1.6		
ACP	Cocking Indicator	Ejection Port
Ejector	Grip Safety	Semiautomatic
3.7.7 Section 3.1.7		
Action, Slide or Pump	Barrel	Bore Diameter, Shotguns
Butt (Long Guns)	Butt Plate	Carrier
Crossbolt	Forearm	Lifter
Over and Under	Overall Length of a Firearm	Shotgun
Slide Action		

### 3.8 Estimated Training Time

105 hours total

3.8.1 Section 3.1.1 (1 hour)

3.8.2 Section 3.1.2 (24 hours)

3.8.3 Section 3.1.3 (24 hours)

3.8.4 Section 3.1.4 (8 hours)

3.8.5 Section 3.1.5 (8 hours)

3.8.6 Section 3.1.6 (24 hours)

3.8.7 Section 3.1.7 (16 hours)





## 4 Unit 4 – LIMS

### 4.1 Sections

None

### 4.2 Training Objective

To instruct the student in the use of the laboratory information management system (LIMS) and its relationship to Houston Police Department Property Room’s evidence management system (EMS).

### 4.3 Method of Testing

Written/practical examinations

### 4.4 Training Method

- 4.4.1 Self-directed study
- 4.4.2 Practical exercises
- 4.4.3 Discussion

### 4.5 Practical Exercises

4.5.1 The student is taken through the procedure of creating a case in LIMS and entering items of evidence. The student is given at least ten mock cases for entry into LIMS. The student learns about the relationships between LIMS and the EMS.

\_\_\_\_\_  
Principal Instructor

\_\_\_\_\_  
Date

4.5.2 The student is shown how to query the LIMS for the following: pending requests assigned to the section, common reports, and methods for searching the database for information.

\_\_\_\_\_  
Principal Instructor

\_\_\_\_\_  
Date

4.5.3 The student is taken through the procedure for querying LIMS for case/evidence information.

\_\_\_\_\_  
Principal Instructor

\_\_\_\_\_  
Date

### 4.6 Reading

- Porter Lee BEAST LIMS Training Manual (Current Edition)
- Firearms Section Standard Operating Procedures



**4.7 Terminology**

None

**4.8 Estimated Training Time**

40 hours