

# TRAFFIC ACCIDENT STUDY GUIDE 2010

## SECTION NINE



This study guide is designed to provide the law enforcement Explorer with basic principles. The guide is not all inclusive, and does not delineate specific techniques that must be used. The focus of this guide is to provide principals that are flexible and adaptable to various law enforcement situations.

Following the basic principals in this guide should allow the law enforcement Explorer to successfully handle various law enforcement training activities safely and professionally.

The study guide was developed through the cooperation of International Association of Chiefs of Police and the Federal Law Enforcement Training Center.



# **SECTION NINE**

## **DETERMINING THE ACCIDENT CAUSE**

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# SYLLABUS

**COURSE TITLE:** Determining the Accident Cause

**LENGTH OF PRESENTATION:**

LECTURE	LAB	P.E.	TOTAL	PROGRAM	OPTION
2:00			2:00		2

**DESCRIPTION:**

This course teaches the student what evidence and information the officer needs to collect at the scene of a motor vehicle accident to determine the cause of the accident.

**TERMINAL PERFORMANCE OBJECTIVE (TPO):**

The student will identify the proper procedures for determining the cause of a vehicular accident.

**ENABLING PERFORMANCE OBJECTIVES:**

EPO #1: Identify how to gather all the facts as accurately as possible and record them in a logical sequence.

EPO #2: Identify the three general areas in which an accident investigator will obtain facts and evidence relevant to the investigation.

EPO #3: Identify what physical evidence to note and record at the scene of a vehicular accident.

**STUDENT SPECIAL REQUIREMENTS:**

There are no special requirements

## **Instructor Guide**

### **METHODOLOGIES:**

1. Lecture.
2. Discussion.

### **TRAINING AIDS AND EQUIPMENT:**

1. Instructor.
  - a. Computer enhanced media presentation (optional).
2. Student
  - a. Note taking materials

### **INSTRUCTOR SPECIAL REQUIREMENTS:**

There are no special requirements

## Outline of Instruction

### I. INTRODUCTION

#### A. Establishing Rapport and Opening Statement

1. In most vehicle accidents, the scene is usually in a state of chaos.
  - a. The vehicles involved or debris may block or partially block traffic.
  - b. There may be electrical power lines, leaking hazardous materials, or other dangers at the scene.
  - c. There may be a crowd of spectators gathered at the scene that might interfere with emergency personnel working the scene.
2. All this chaos would undoubtedly hamper the investigation of the accident if officers did not effectively control it.
  - a. The chaos and confusion could permit the destruction or loss of physical evidence.
  - b. In addition, the chaos and confusion could cover the theft of personal property belonging to the accident victims by onlookers.
3. It is the responsibility of the officers on scene to control, secure, and investigate the accident scene.
  - a. Remember that your first priority is to make the scene safe for the victims, public, and emergency personnel.
  - b. This may require extreme measures like evacuating the neighborhood or rerouting traffic.
4. Officers should never allow anyone to tamper with the accident scene until they have completed their investigation.
  - a. Tow truck operators will want to remove the vehicles and firefighters will want to hose down the road. Every effort must be made to prevent these actions until you complete the at scene investigation.
  - b. Remember that once they “clean up the scene,” all the evidence is lost.

c. It is very important that you “get it right the first time.”

B. Lesson Plan Overview

1. First, you will learn how to gather all the facts as accurately as possible and record them in a logical sequence.
2. Next, you will learn the three general areas in which an accident investigator will obtain facts and evidence relevant to the investigation.
3. Finally, you will learn what physical evidence to note and record at the scene of a vehicular accident.

**II. PRESENTATION**

A. EPO #1: Identify how to gather all the facts as accurately as possible and record them in a logical sequence.

1. It is difficult and sometimes impossible for an investigator to gather all the facts and evidence involved in a vehicular accident.
2. Investigators can improve their chances by:
  - a. Getting to the accident scene safely and quickly.
  - b. Making sure the scene is safe.
  - c. Conducting a thorough initial survey and assessment of the scene to establish priorities.
  - d. Obtaining all the facts relevant to the accident.
  - e. Assessing all facts and evidence objectively.
3. Do not make hasty decisions about the accident.
  - a. Compare the physical evidence found at the scene with the statements of the driver(s) and witness(es).
    - (1) Remember that people often have different recollections of the same event.
    - (2) In addition, the drivers involved may try to slant their version of the event to minimize their own liability.

- (3) Keep in mind that witnesses may not have actually seen the accident, but rather reacted to the sound and observed after crash events.
    - b. Try to reconstruct the accident in your mind as you investigate, but avoid jumping to a conclusion before you have all the facts.
    - c. Do not discount evidence or statements because they conflict with your theory.
  4. If the accident was at night, return to the scene in daylight the next day, and make sure you did not overlook any evidence.
  5. Remember that the plain view doctrine applies while you investigate the scene. Your observations may include, but not necessarily be limited to:
    - a. Evidence that would lead you to believe a vehicle involved in an accident is a stolen vehicle.
    - b. Illegal drugs or other evidence that would lead you to believe a vehicle involved in an accident is used to traffic narcotics.
    - c. A weapon that might be evidence of other crimes or itself is a stolen weapon.
    - d. Evidence or contraband that would lead you to believe the operator may have used the vehicle in the commission of burglaries or other crimes.
    - e. Evidence that would lead you to believe that alcohol or drug use may have contributed to the accident.
- B. EPO #2: Identify the three general areas in which an accident investigator will obtain facts and evidence relevant to the investigation.
  1. Your investigation of the accident scene will focus on three areas:
    - a. The driver(s) and pedestrians (people) involved.
    - b. The vehicle(s) involved.
    - c. The road or driving environment.



2. The driver – In a majority of vehicle accidents the primary contributing factor is the driver.
  - a. By definition, an accident is an unforeseen and unplanned event resulting especially from carelessness or ignorance.
  - b. Driver inattention, pre-occupation, recklessness, and poor judgment can all contribute to causing an accident.
  - c. A classic example of this is the modern phenomenon of people using cellular telephones while driving.
  - d. There are many conditions that can impair a person's ability to operate a vehicle including, but not limited to:
    - (1) Alcohol consumption.
    - (2) The use of drugs including illegal drugs, prescription drugs, and over the counter medications.
    - (3) Carbon monoxide poisoning, the symptoms of which include:
      - (a) Flushed face.
      - (b) Dizziness or weakness.
      - (c) Headache.
      - (d) Inattention or confusion.
      - (e) Drowsiness, or fatigue.
      - (f) Nausea.
      - (g) Tightness across the chest.
      - (h) Lack of coordination.
      - (i) Severe poisoning can cause brain or heart damage, and even death.
    - (4) Drowsiness and fatigue.
    - (5) Sudden disablement due to medical conditions.
      - (a) Heart attack.
      - (b) Stroke.

- (c) Seizure.
- (6) Lack of knowledge:
  - (a) Ignorance of traffic control devices.
  - (b) Ignorance of rules of the road.
  - (c) Poor accident avoidance judgment.
  - (d) Lack of familiarity with the vehicle.
- (7) Driver attitude and temperament including:
  - (a) "Road rage" or aggressiveness.
  - (b) Risk taking.
  - (c) Emotion.
  - (d) Suicidal acting out.
- (8) Distractions including:
  - (a) Talking on a cellular telephone.
  - (b) Insect inside the vehicle.
  - (c) Lighting a cigarette, cigar, or pipe.
  - (d) Tuning the radio.
  - (e) Changing CD or tape cassette.
  - (f) Animals, or children, in the vehicle.
  - (g) Distractions outside the vehicle.
  - (h) Reading, applying makeup, etc.
- (9) Impaired vision:
  - (a) Check the license(s) of the operator(s) for restrictions due to vision impairment.
  - (b) If they were not wearing glasses or contact lenses as required, it may have been a contributing factor in the accident.

- (10) Other restrictions:
  - (a) Physical handicaps – check to see if their vehicle had handicap controls.
  - (b) Age –
    - (i) The slower reaction time common in elderly drivers can contribute to the accident cause.
    - (ii) However, look for serious conditions (e.g., senility, senile dementia, or Alzheimer’s disease).
    - (iii) If you can determine that age was a contributing factor in an accident, you can request a re-examination of their operator’s license.

3. The vehicle:

- a. When arriving on the scene, use all cautionary measures, just as when making a traffic stop.
- b. Check the identification of the vehicle by running a registration check through your dispatcher and determine the following:
  - (1) Is the registration current?
  - (2) Does the license plate match the registration of the vehicle? (For example, the plates are issued to a Ford, but they are on a Chevrolet.)
  - (3) Does the vehicle identification number (VIN) match the registration of the vehicle?
- c. Thoroughly examine the vehicle, checking for the following:
  - (1) Damage –
    - (a) Is all the observed damage the result of this collision?
      - (i) Driver may try to make a false claim for damage not sustained in this accident.

- (ii) Some people “stage” accidents for insurance money.
  - (iii) If there is rust present, the damage did not occur in this accident.
- (b) Could the damage be evidence of an earlier hit and run accident?
  - (c) Does the damage type and location, agree with statements and evidence?
- (2) Check mechanical defects including:
- (a) Brakes,
  - (b) Tires (e.g., the amount of tread – most states require  $\frac{3}{32}$  of an inch of tread),
  - (c) Headlights,
  - (d) Brake lights, and
  - (e) Turn signals.
- (3) Look at the skid marks for evidence of improperly adjusted or defective brakes.
- (a) If the brakes were working properly, there should be four skid marks or two overlapping skid marks.
  - (b) If the vehicle has anti-lock brakes, there may be “shadow” marks where conventional skid marks would be.

**NOTE:** The instructor may choose to engage the class by asking the following questions:

1. What happens to a vehicle when three tires skid and the right, front tire keeps rolling? Answer – The vehicle will slide or pull to the left.
2. What happens to a vehicle when the rear tires of a vehicle skid but the front tires continue to roll? Answer – The vehicle turns around and skids backwards.
3. What effect does the crown of the roadway have on a skidding vehicle? Answer – The vehicle will gradually slide down toward the edge of the roadway.

- (4) Other things to check:
  - (a) Rearview mirrors,
  - (b) Windshield, including:
    - (i) Cracks or damage resulting from this accident.
    - (ii) Obscured and impairing visibility.
    - (iii) If the accident occurred in the rain, were the windshield wipers functioning correctly?
  - (c) Driver's vision obscured to the side or rear (e.g., decals, clothes hanging from coat hook, cargo carried in back seat, etc.).
- (5) Safety devices –
  - (a) If the accident occurred in the snow, did the vehicle have snow tires or chains?
  - (b) Were the occupants using safety belts?
  - (c) Did the airbags deploy?
- 4. Physical condition of the roadway and driving environment –
  - a. Establish the conditions that existed at the time of the accident.
  - b. Roadway surface:
    - (1) Dry, or wet,
    - (2) Snow, or ice,
    - (3) Gravel, or sand, on road surface,
    - (4) Oily surface or other slick condition,
    - (5) Ruts, or potholes,
    - (6) Drop off at edge of pavement,
  - c. Good or bad visibility (e.g., blind corners, foliage obscuring visibility, fog, rain, etc.).

- d. Natural or man-made obstructions preventing driver(s) from seeing oncoming traffic including:
  - (1) Parked vehicles,
  - (2) Buildings,
  - (3) Signs,
  - (4) Topography,
  - (5) Vegetation.
- e. Glare (e.g., headlights, sun, or fixed lighting).
- f. Traffic control devices present and working properly.
- g. Railroad crossing signals present and working properly.
- h. Roadway markings present and legible.
- i. Control and warning signs –
  - (1) Accurately record all traffic signs and control devices on field sketch and diagram of the accident scene.
  - (2) Note the condition of signs and traffic control devices.
  - (3) Record the height of signs and traffic control devices.

**NOTE:** If the accident destroyed a traffic sign or traffic control device, an officer should remain at the scene to direct traffic, until highway crews repair the damage. If this is not feasible take other reasonable measures such as placing temporary signs until the damage is repaired.

- C. EPO #3: Identify what physical evidence to note and record at the scene of a vehicular accident.
  - 1. The accident investigator must look for marks on the vehicle, roadway, and surrounding area for indications of what happened during the accident.
  - 2. Flips and vaults involve the vehicle contacting an obstacle, usually the curb, in a way that produces an upward lift as the vehicle pivots around the obstacle.
    - a. Flips are sideways somersaults.

- b. Vaults are end-over-end somersaults.
  - c. Record skid marks, gouges in ground or road surface, and areas of impact.
  - d. If the accident causes ejection of the occupants from the vehicle, record their positions.
  - e. Make over-all photographs of the scene.
3. Rollovers occur during centrifugal skids or during a yaw.
- a. The higher the center of mass and the greater the drag from “sticky” tires the greater the likelihood that weight shift will result in a rollover situation.
  - b. Rollover is more likely to occur in vehicles like vans, campers, or special utility vehicles (SUVs).
  - c. Record skid marks and areas of impact.
  - d. If the accident causes ejection of the occupants from the vehicle, record their positions.
  - e. Make over-all photographs of the scene.
4. Record any evidence that a tire blowout or loss of a wheel contributed to the accident.
- a. Debris from tire on roadway.
  - b. Marks from roadway on metal rim.
  - c. Irregular width tire marks before point of impact.
5. Record any evidence that a steering problem contributed to the accident.
- a. Any marks indicating swerving before the collision.

<p><b>NOTE:</b> This in itself might not be conclusive since the marks could be from avoidance or a loss of control from other means.</p>
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- b. Statements of drivers, witnesses, etc.

6. Record any evidence that malfunctioning lights contributed to the accident.
  - a. One or more headlights burned out.
  - b. Operating without headlights at night or during periods of low visibility.
  - c. One or more taillights burned out or taillights not turned on.
  - d. Brake lights not working.
  - e. Turn signals not working or the driver failing to use turn signals.

**NOTE:** Newer model vehicles have headlights that come on automatically when the driver turns on the ignition switch. Some models also display a warning when there is a light malfunction.

- f. If possible, check the condition of the filament in light bulbs.
  - (1) If the light is on at the time of the impact, the filament **may** become deformed and stretch because the filament is hot and therefore malleable. This is called hot shock.
    - (a) If a vehicle is struck from the rear, the filament **may** stretch toward the rear.
    - (b) If the vehicle strikes something with its front end, the filaments in its lights **may** stretch toward the front of the vehicle.
  - (2) If the lights are off at the time of impact and the impact is severe enough, the filament **may** break. This is called cold shock.
  - (3) If a sealed beam headlight is on at the time of impact and the glass breaks, oxidation of the filament will leave evidence of burning.

**NOTE:** According to Northwestern University, there can be other causes for the stretching and breaking of filaments in bulbs including sudden starts or stops or the action of gravity on an old bulb. Therefore, the accident investigator should not place total confidence in this evidence.



7. Make every attempt to collect all the evidence pertinent to your investigation.

### **III. SUMMARY**

#### **A. Review the performance objectives.**

1. EPO #1: Identify how to gather all the facts as accurately as possible and record them in a logical sequence.
2. EPO #2: Identify the three general areas in which an accident investigator will obtain facts and evidence relevant to the investigation.
3. EPO #3: Identify what physical evidence to note and record at the scene of a vehicular accident.

#### **B. Review teaching points.**

1. The object in responding to an accident scene is to get there safely and quickly.
2. If there are hazards like downed power lines or hazardous materials, you may have to evacuate the surrounding areas
3. You must secure the scene to preserve the evidence and insure the safety of those at the scene.
4. Your investigation should focus on three areas, the driver(s), the vehicle(s), and the roadway.

### **IV. APPLICATION**

#### **A. Laboratory.**

NONE

#### **B. Practical exercise.**

NONE

## REFERENCES

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