Uncovering the Truth: Bus Accident Investigation

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This session is hosted by the Florida Department of Transportation's Rural Transit Assistance Program (RTAP) in partnership with Center for Urban Transportation Research (CUTR) at the University of South Florida (USF).

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Session Overview

- Documentation is mandatory in the process of conducting a bus collision investigation. Accident reports are required by Federal and state laws and are crucial in lawsuit preparations. This session will address three main topics when conducting investigations including: the documentation of on-scene evidence, report writing, and witness statements.

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Purpose

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Introduction

- **Accident investigations should be conducted:**
  - To be in compliance with Federal and state laws
  - To adhere to the safety assurance processes mandated in the PTASP
  - To defend your case in the event of a lawsuit
  - To identify systemic areas of risk
  - To reduce the likelihood of future accidents
  - To improve the overall agency's safety
- **FTA released Guidelines for Performing Transit Bus Accident Investigations to:**
  - Provide bus transit agencies with leading transit industry practices for performing investigations

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Background

- **Federal Transit Administration (FTA) adopted the Safety Management System (SMS) framework for public transit safety**
- **SMS is a formal, organization-wide approach to managing safety risk and ensuring the effectiveness of risk mitigation**
- **Event investigation is a key component of SMS, falling under Safety Assurance (SA)**
- **Investigations aim to identify causal or contributing factors in accidents, detect hazards early, and address safety concerns effectively**

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Background (cont'd)

- 49 CFR § 673.27 requires transit agencies to include event investigations in their PTASP
- Investigations evaluate the effectiveness of safety risk control methods and result in corrective actions to improve identified gaps
- Safety investigations should be independent, focused on facts, determining probable cause, and identifying preventative actions

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FTA System Management Systems (SMS)

1. What are our most serious safety concerns?
2. How do we know this?
3. What are we doing about it?
4. Is what we are doing working?
5. How do we know what we are doing is working?

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Rule 14-90.004(5-7), FAC Requirement

- Each bus transit system shall investigate, or cause to be investigated, any event involving a bus or taking place on bus transit system controlled property resulting in a fatality, injury, or property damage
- Each investigation shall be documented in a final report that includes a description of investigation activities, identified causal factors, and any identified corrective action plan
- Investigation reports, corrective action plans, and related supporting documentation shall be maintained by the bus transit system for a minimum of four years from the date of completion of the investigation

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Purpose of Safety Investigations

- Minimize injury and damage/life safety
- Determine the sequence of events leading to failure
- Identify the probable cause(s) and contributing factors
- Establish lessons learned
- Trending and analysis for prevention
  - Root cause analysis
  - Prevent from recurring
- Compliance with regulations
- Defense posture (litigation)

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Investigations

- **Accident investigation is not intended to:**
  - Affix blame
  - Subject people to liability for their actions
  - Recommend disciplinary actions
- **Safety investigation should be independent of:**
  - Disciplinary actions
  - Claims management
  - Litigation defense

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Roles and Requirements of Regulators and Stakeholders

- **Federal Transit Administration (FTA)**
- **Federal Railroad Administration (FRA)**
- **State regulations**
- **National Transportation Safety Board (NTSB)***
- **Notifications – Internal and external**
- **Incident Command/NIMS**
- **Working with other agencies**

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What Is An Accident? (49 CFR § 673.5)

For the purpose of this training, the terms "event" and "accident" are defined in accordance with 49 CFR § 673.5:

- Event – an accident, incident, or occurrence
- Accident – an event that involves any of the following: a loss of life; a report of a serious injury to a person; a collision of public transportation vehicles; a runaway train; an evacuation for life safety reasons; or any derailment of a rail transit vehicle, at any location, at any time, whatever the cause.

- **A transit agency can use accident investigation outcomes to inform its Safety Management System (SMS) processes**
- **FTA's National Transit Database does not use "accidents" – they are safety events which are collisions**

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On Scene Investigation

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On Scene Priorities

- Protect the scene – to avoid further injury
- Request emergency resources
- Attend to the injured
- Collect evidence before it vanishes
- Determine the facts of the incident
- Obtain names and contact information of injured and witnesses
  - Police and fire may have completed

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Transit Role

- Respond to the collision scene
- Complete and support on scene priorities and organization
- Assist law enforcement and public safety with investigation
- Conduct transit agency investigation
- Request copy of any factual information
- Provide transit agency contact information

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Evidence Definition

- Evidence is anything that you see, experience, read, or are told that causes you to believe that something is true or has really happened. Evidence is the information that is used in a court of law to try to prove something. Evidence is obtained from documents, objects, or witnesses.

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Evidence

- For the purpose of a Bus Collision Investigation, "evidence" is noted to support the "facts"
- Police/law enforcement collects any physical evidence in a criminal case
- Transit staff documents through the use of photography or video recordings, evidence such as: "the scene, interior and exterior of vehicles, skid marks, yaw marks, transit vehicles, transit owned vehicle parts and components other transit property"

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Evidence (cont'd)

- **Document evidence as quickly as possible. It is important to capture things that may change.**
  - Debris location
  - Tire marks
  - Road scars
  - Fluid spills
- **Photos and video (if possible)**
  - Overall scene
  - People in the area
  - Signage – street signs
  - Street markings
  - Traffic control devices
  - Surrounding area

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Evidence Document

- **Document/photo log**
  - Day and date
  - Time
  - Location
  - Description
  - Who drafted/photographed
  - In the presence of – whom
  - Where stored

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Have a Plan

- What to photograph and what to show
- Show relationships of objects to each other
- Identify vehicles and location
- Avoid angles that show distortions
- When possible, shoot with the sun behind you to illuminate what is being photographed – avoid glares

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On Scene Photographs

- Start from farthest away and move in – nothing is too small to include
- Take pictures of fixed object such as buildings, telephone polls, traffic signals and signs
- Photograph debris as soon as possible, it may be moved

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What should we take pictures of?

- **Occupant compartment**
  - May provide evidence of injuries
  - May document evidence of improper child restraints
- **Instrument panel/dashboard**
  - Evidence of food, beverages, cell phone use, tobacco products
  - Position of switches, levers, and buttons
- **Restraint devices**
  - Seatbelts (worn, frayed, broken, cut)
  - Air bags (deployed, imprints or blood)
  - Infant/child seats
  - Wheelchair restraint systems or other assistive devices (bent, broken, cut, mechanical failure)
- **Skid marks/debris**

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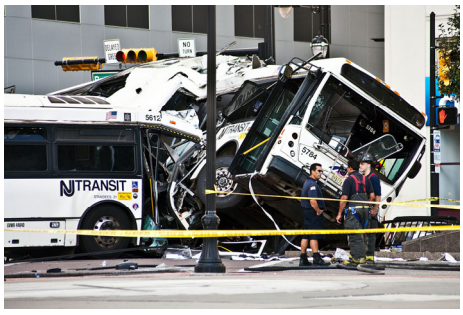
On Scene Evidence – Photos

The saying that a picture is worth a thousand words is never truer than when trying to document an accident.



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Accident Exercise

Use the chat feature:

- **What areas of this accident would you photograph?**

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Witness Statements

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Fact vs. Hearsay

- A fact is that information or event known to be true because the investigator personally learned of it through his/her senses from the original source
- It follows that an unverified statement of a third person regarding another should be regarded as hearsay and never be submitted as a fact

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Fact vs. Opinion

- Opinions regarding the credibility of the information must not be expressed
- If it cannot be verified, it must be identified as such
- The investigator's responsibility is to report only the facts, not unsubstantiated opinion regarding the honesty, judgement and reliability of a subject
  - Such statements could prejudice the reader and affect the accuracy of the report
- Personal opinions or those of others must not be adopted as fact

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Who Do You Interview?

- **Anyone who may have information relating to the collision, including children**
- **Potential interviewees includes:**
  - Operational and maintenance personnel
  - Supervisors/managers
  - Transit passengers
  - Victims
  - Bystanders
  - Residents
  - Coworkers
  - Emergency crews such as fire and EMS
  - Hospital staff
  - Law enforcement
  - News media

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Factors of Effective Interviews

- **Best done at the scene when possible**
- **Identify yourself and state your purpose**
- **Put the interviewee at ease as much as possible**
- **Avoid group interviews**
- **Always display courtesy and patience**
- **Take notes when possible**
- **Do not insist on “yes” or “no” answers**

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Factors of Effective Interviews (cont'd)

- If using a recording device, be prepared for malfunctions and always let them know that you are recording
- For written statements, assist the witness but do not provide technical information or use transit jargon
- Formulate the questions in a manner that does not suggest the answer
- Ask the witness to draw a sketch, if necessary

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Witness Assessment

- Personality conflicts
- Credibility assessment
  - General demeanor
  - Prejudicial statements or open hostility
  - Tendency toward drama
  - Easily swayed

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Factors that Affect Witness Reporting

- Perception vs. reality
- Emotion/exaggeration
- Intelligence or personal appearance
- Quantitative statements
- Transposition – chain of events out of order

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Factors that Affect Witness Reporting (cont'd)

- Environment
  - Vision obstructions
  - Noise
  - Weather conditions
- Physiological factors
  - Hearing or vision
  - Drugs or alcohol
  - Health – fatigue, stress, or illness

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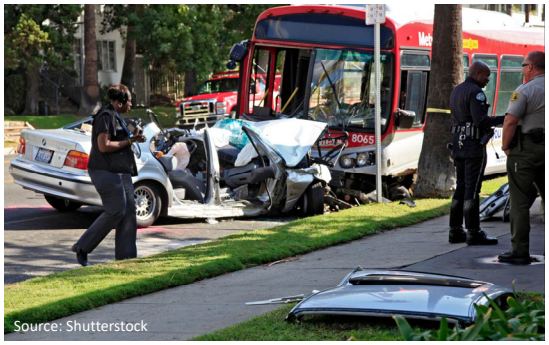
Factors that Affect Witness Reporting (cont'd)

- **Psychological factors**
  - Rationalization
  - Judgment
  - Revenge or retaliation
  - Incrimination
  - Self importance
- **Post accident loss of memory**
  - Frightening or traumatic
  - Subconscious response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Report Writing

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Report Definitions

- **Field Notes**
  - Descriptive information of factual data that is recorded
  - Factual data includes time and date, state of a physical setting, environment/weather condition, description of subjects, their roles and place, and the impact that they may have had on the events
  - Can include sketches, diagrams and other relevant data
- **Report**
  - An official or formal statement of fact or proceedings, which relays information in a manner so presented as to put the reader in the same position relative to the facts as is the one originating the information

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Importance of Note Taking

- **Note taking – important for report preparation**
- **Information committed to memory is soon forgotten**
- **Report is based upon the quantity and quality of the notes taken during the course of the investigation**
- **Notes help to recall additional facts**
- **Notes can counteract denials and statement changes (over time)**
- **Notes must be accurate and complete, as possible**

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Collision Report

- **Must be:**
  - Clear
  - Legible
  - Complete
  - Accurate
  - Thorough, but concise
  - Prompt
  - Contain all the signatures

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Report Form and Content

- **Presents a well organized and readable word picture of the investigation**
  - Cover Sheet/First Page – Contains administrative data to identify, control and accurately file/store (database)
    - *Date and time of event*
    - *Investigator(s)*
    - *Number of parties injured*
    - *Number of parties transported to hospital*
    - *Operator/employee tested for drugs and alcohol*
    - *Units on scene*
    - *Weather conditions*
    - *Pavement markings and conditions*

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Accident Report Narrative

- Complete narrative account of the investigation
- Principle of effective report writing
- Accurate
- Follow agency style guide (font, size, spacing, margins, etc.)
- Answers the essential questions of:
  - Who?
  - What?
  - When?
  - Why?
  - How?

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Sequence of Events

- Determine the sequence of events
  - Events leading up to the incident
  - Events involved in the incident
  - Events immediately following the incident
  - Review on-board video
  - Event recorders/data downloads

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Narrative – Contributing Factors

- Hours worked/work schedule/sleep
  - Fatigue analysis
- Use of medications (prescribed or OTC)
- Assigned route
- Vehicle condition (state-of-good-repair)
- Driver training
- Driver experience

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Narrative – contributing factors (cont'd)

- Operator – second job?
- Distracted driving
- Collision scene traffic signals (stop sign, stop light with controls for left/right turns)
- Road or intersection conditions (congestion, shrubbery blocking view, road construction, located on an incline/decline or curve)

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Field Sketch – Part of Your Report

- A freehand map of the collision scene showing certain features of the crash, road configuration, and recorded measurements, but not drawn to scale
- A diagram is a scale drawing based on information from the field sketch

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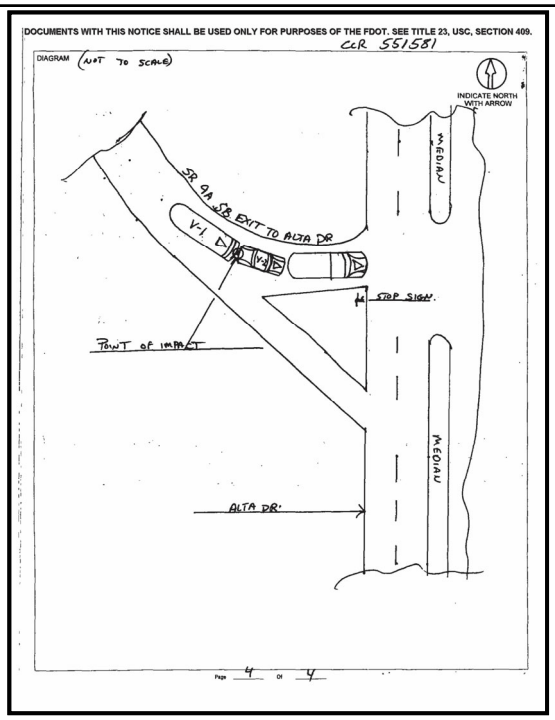

Field Sketch Example

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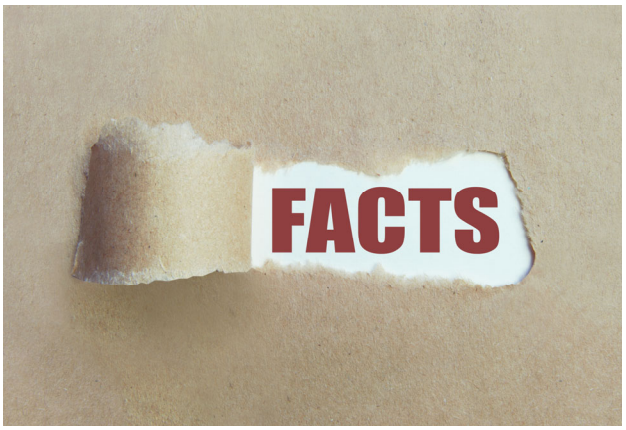
Report Summary

- Findings
- Conclusions BASED on FACTS



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Analyze

- Report should include an in-depth analysis of the root causes of the collision
  - Fatigue
  - Distraction
  - Maintenance resulting in a defect, brakes
  - Others?

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Corrective Action Plan

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Corrective Action Plan

- **You have conducted your investigation**
  - Have you determined a root cause?
  - If yes, you need to develop a Corrective Action Plan (CAP)
- **Benefits of Root Cause Analysis**
  - Continuous improvement
    - *Facilitates a progressive safety culture within your agency*
    - *Addresses systemic challenges within your agency or geographic area*
    - *Enhances safety and reliability through implementation of CAP's*

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Steps in a Root Cause Analysis

- **Develop corrective actions**
  - Consider short and long-term measures including procedural changes, training improvements, or system modifications
    - *Investigation and Understanding*
    - *Determine Failure*
    - *Document Evidence and Proof*
    - *Analysis and Identification*
    - *Documentation*
    - *Corrective Action*
    - *Implementation*
    - *Follow-up*
    - *Adjust as necessary*

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Determining Failure

- **Once you have determined what caused the event, what can you do to prevent it from happening again?**
  - Change stop
  - Re-training and/or coaching of the operator
  - Restructure route
  - Is there vegetation blocking the area which can be trimmed?

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Analysis and Identification

- Review previous events at this location
- What does the data and trends show?
- What is different?
  - Operator
  - Signage
  - Construction

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Documentation

- Once you have determined the cause, document with supporting evidence and proof
  - Accident Reports
  - Historical data and trend analysis
  - Photographs
  - Other items

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Documentation (cont'd)

- What occurred?
- What is being done to avoid the same issue in the future
- Revise training, if required
- Re-train

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Step in a Root Cause Analysis

- Corrective Action Plan
  - What are you going to do?
  - The corrective action plan should be detailed
  - Include all aspects of the process from the beginning to the end
  - Address any adjustments
  - It should be focused on preventing the occurrence of similar events

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Steps in a Corrective Action Plan (cont'd)

- **Implement any required changes**
  - Ensure that everyone has been involved
  - Ensure that everyone is aware
- **Follow-up**
  - Have the corrective actions that were implemented worked?
  - Have the events at this location been eliminated/mitigated?
- **Adjust as necessary**
  - If there are still events at this location, review all previous steps and revise as necessary

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Key Take Aways

- **State and Federal laws require agencies to investigate accidents**
- **Prioritize, protect, and document on-scene evidence**
- **Focus on identifying root causes and not to affix the blame**
- **Reports should contain a precise description and analysis of the accident in writing, so any third party can fully understand what has happened**
- **Focus on preventing similar events from recurring by tracking, analyzing, implementing, and follow up on corrective actions**

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Questions or Comments

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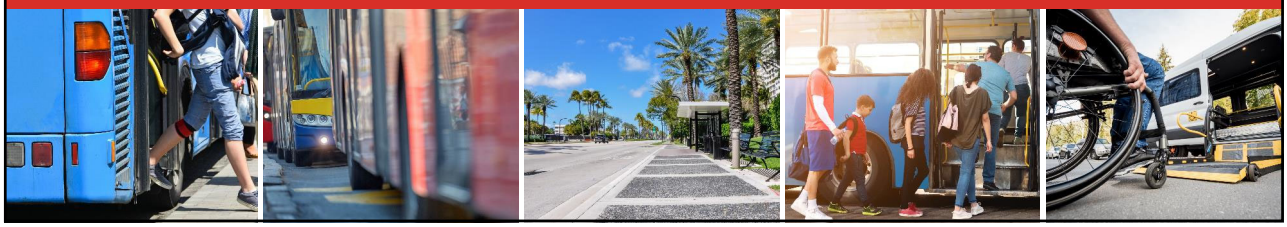

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