Policy Procedure Guideline - Bristol Fire Department		
Subject: Motor Vehicle Crash		00.000
Section: Deployment and Safety		
Date Authorized: 01/01/2021	Authorized by: Chief J. Brett LaRose	
Date Reviewed/Updated: 03/17/2021		

1.0 PURPOSE:

To establish a procedure for maximizing firefighter safety and firefighter efficiency and effectiveness when operating at the scene of a Motor Vehicle Crash (MVC).

2.0 SCOPE:

It is the responsibility of all Bristol Fire Department (BFD) personnel to know and implement as appropriate this operational guideline. Authority to deviate rests solely with the Incident Commander (IC), who bears full responsibility for any deviation.

2.1 Should a vehicle fire exist on arrival, the incident will be handled as a vehicle fire (see *Vehicle Fires* PPG) until the fire is extinguished, and the fire/explosion hazards rendered safe.

3.0 DEFINITIONS/ACRONYMS:

3.1 Extrication Group Supervisor - the person, regardless of rank, who oversees the actual disentanglement activities. Usually a chief or company officer.

3.2 HV - High Voltage

3.3 IC - Incident Commander

3.4 MVC - Motor Vehicle Crash

3.5 PPG - Policy Procedure Guideline

3.6 D/G - Division/Group.

3.7 SCC - Shelburne Communications Center

3.8 TIMA - Traffic Incident Management Area

4.0 REFERENCES:

4.1 Electrical Safety Handbook for Emergency Responders.

5.0 POLICY

5.1 All department personnel are responsible for ensuring that all equipment carried on BFD apparatus (e.g. Heavy Rescue, Engine 1, Engine 2) is in working order and ready for use at the scene of a MVC. To this end, all department personnel have a responsibility to ensure that they complete their assigned monthly and as needed equipment inspections as part of their regular duties.

5.1.1 All fire department personnel entering the Traffic Incident Management Area (TIMA) shall wear a complete form of personal protective equipment for their assigned function as required and outlined in the *Personal Protective Equipment* PPG.

5.1.2 Implement *Traffic and Roadway Safety* PPG.

6.0 PROCEDURE

6.1 **Size-up:**

6.1.1 On arrival at the scene of a motor vehicle crash, the first arriving unit shall determine the best placement for the responding emergency vehicles (e.g. FD apparatus, EMS units, Law Enforcement Units, etc.) to ensure the safety of all personnel operating on the scene. **See *Traffic and Roadway Safety* PPG for emergency vehicle placement and other TIMA considerations.**

The first arriving unit shall size-up the situation, establish IC and provide a brief initial report to SCC that includes:

- Number of vehicles involved and the general condition of vehicle(s),
- Number of persons involved in the crash,
- Type(s) of vehicles involved (e.g. passenger car, SUV, pick-up truck, box truck, hybrid vehicle, etc.)
- Fire present
- Leaking fluids
- Stability of vehicle(s) involved,
- Presence of vehicle safety systems such as air bag deployment,
- Involvement of electrical power lines or other electrocution hazards,
- Involvement of any actual or suspected hazardous materials,
- Low angle slopes, buildings, submerged in water, etc.,
- Extent of entrapment,
- Request additional resources as appropriate

6.1.2 Using the size-up, the IC should delegate responsibilities through designating Division/Group Supervisors and assigning tasks, stage, or request resources, and develop an incident action plan to affect a successful rescue.

7.0 GUIDELINE

7.1 **Arrival:**

7.1.1 Apparatus placement
(See *Traffic and Roadway Safety* PPG)

7.2 **Safety:**

7.2.1 Establish Traffic Incident Management Area
(See *Traffic and Roadway Safety* PPG)

7.2.2 Fire personnel should anticipate:

- Compromised fuel tanks.
- Multiple fuel tanks each in separate locations on the vehicle.
- LPG or LNG fuel cylinders.
- Pneumatic or hydraulic pressurized lifting cylinders for the hood, hatchback, tailgate,
- Compromised bumpers that may explode or become airborne.
- Compromised metal drive shaft that may fail, explode or become airborne.
- Compromised tires that may fail, explode or become airborne.
- Airbags
- Seatbelt pretensioners: If the vehicle is struck in the side or rear, these items may not fire and remain live, possibly in your cutting zone.
- Vehicle battery shorting, leaking acid, or exploding.
- Hazardous materials.
- Downed or damaged utility poles and electrical wires.
- Instability of the crashed vehicle(s).
- Traffic as a personal hazard.

7.2.3 Air bag safety:

- Consider the 5 - 10 - 20 guideline: Keep back from undeployed air bags: 5 inches from side curtain air bags, 10 inches from driver (steering wheel) air bags, 20 inches from passenger air bags
- Do not delay medical treatment.
- Deactivate the air bag system: On most vehicles, undeployed air bag systems deactivate in 10 minutes or less once the battery is disconnected. Verify deactivation by activating hazard flashers.

7.3 **Hazard control:**

7.3.1 There are many hazards which face personnel operating at the scene of a MVC. Personnel should evaluate the following hazards and implement the suggested actions should the hazard be present.

7.3.2 Implement *Traffic and Roadway Safety* PPG.

7.3.3 Standard Task Assignments

7.3.3.1 The Heavy Rescue crew should bring the following tools:

- Halligan Bar
- Wheel chocks
- Entry Tool Pail
- Dry Chemical extinguisher

7.3.3.2 The Heavy Rescue crew should:

- Chock wheels of all vehicles
- Ensure transmission of each vehicle is in park or neutral
- Turn off and remove keys from ignition and place on the dashboard.

Note: If the vehicle is equipped with a "proximity key" or "key fob", move these devices 100' feet or more away from the vehicle.

7.3.4 Unstable vehicle:

7.3.4.1 On all calls where a patient is to be removed from a vehicle, that vehicle should be stabilized using some form of cribbing. Cribbing should be placed to prevent the front to back or side to side motion of the vehicle. The extent of cribbing needed can range from simple wheel chocking, the use of step chocks, RES-Q-JACK's, boxed cribs; the degree necessary should be based on the rescuers training and experience.

7.3.5 Battery:

7.3.5.1 When access to the battery is readily possible the battery should be disconnected to prevent any unwanted electrical activity such as a spark, arc, accidental starting of the motor, or seat movement, for example. When access to the battery is not readily available do not delay other actions trying to access it.

7.3.5.2 **Disconnecting the terminal versus cutting the cable is advised** as some power seats, windows, and door locks may require electricity, later during the disentanglement, to complete the rescue; it is easier to reconnect a terminal than resplice a wire.

- Disconnect both battery cables
- Assess battery case for penetration and contact with metal body parts
- **Use the electrical system to your advantage before disconnecting it: Unlock doors, move seats out of air-bag deployment zones, and roll windows down.**

7.3.5.3 Hybrid batteries

- HV system shutdowns automatically occur when:
  - ✓ Ignition is off
  - ✓ Battery is disconnected
  - ✓ Supplemental restraint activates
- With key off or 12-volt batteries disconnected there is no high voltage in the system anywhere except the high voltage batteries themselves.
- **Cutting battery cable alone will not ensure that the vehicle is safe from high voltage.**
- Accessories plugged into the cigarette lighter will not activate the high voltage system but may have enough current to deploy airbag.
- Check the ready light on the dash to ensure high voltage is shut down.
- Typical battery location is behind rear seat.
- Voltage 144 to 330 volts DC
- Hybrid battery cable colors:
  - ✓ No color = Less than 30 volts
  - ✓ Blue = 30 to 60 volts
  - ✓ Orange = More than 60 volts
- Hybrid cables may be wrapped together with a third wire.
  - ✓ Positive wire insulated
  - ✓ Negative wire insulated
  - ✓ Bare wire
- Consider location of HV components or cables
- Capacitors hold high voltage for 5-10 minutes after electrical system shut down
- Damaged batteries may still contain HV/be energized and contain electrolyte that can cause skin/eye injury/burns
- Never disconnect any non-12V connection
- Water applied to HV system is not a hazard and will not electrocute a Firefighter (see *Vehicle Fires* PPG for additional information).

7.3.6 Rescuing Persons from Vehicles Contacting Power Lines:

Situation: A fallen wire lies on top or under a vehicle with one or more people inside.

7.3.6.1 Assess the situation from 35’ feet or more away. Assessing from inside your vehicle increases your safety margin.

7.3.6.2 Determine the safe zone and secure the area.

7.3.6.3 Keep yourself and others out of the line of fire of a vehicle's tires. They can explode.

7.3.6.4 Request Green Mountain Power to respond through SCC.

7.3.6.5 Keep feet close together, shuffle step as you approach 35' feet from the vehicle or energized item. If you have come too close, shuffle step away to maintain the safe distance.

Situation: The driver can move the vehicle.

7.3.6.6 Make sure you and others are not in a position to be injured in case the wire springs up after being released or moves suddenly when the vehicle moves.

7.3.6.7 Instruct the driver to move the car very slowly off or away from the wire, and clear of any pools of water which may be energized by the live wire.
If the power lines get pulled by the vehicle then instruct the driver to stop and to "Stay in the vehicle…" until Green Mountain Power arrives.

Situation: The driver is unable to move the vehicle or the vehicle will not move.

7.3.6.8 Instruct the driver to "Stay in the vehicle…" until Green Mountain Power arrives.

7.3.6.9 Continually monitor the safe zone, secure the area, and keep people away.

7.3.6.10 A vehicle's tires may smoke or explode from heating up, but do not advise leaving the vehicle except in the event of a fire.

Situation: Victim(s) are unconscious and there are fallen wires under or on the vehicle or hanging very close to the vehicle.

7.3.6.11 Determine and continually monitor the safe zone, secure the area, and keep people away.

7.3.6.12 Monitor closely for any change in the situation (fire starts, etc.). Instruct any victim who might regain consciousness to "Stay in the vehicle…" until the power line is deenergized (made safe).
DO NOT take action which would endanger your own life or the lives of others.

Situation: Occupants are not injured, and the vehicle has a fire which cannot readily be extinguished, and the vehicle cannot be moved.

7.3.6.13 Explain to the occupants that contacting the vehicle and ground at the same time could kill them.

7.3.6.14 Instruct the occupants on how to jump out of the vehicle and move away. Tell them: "*Keep both feet together and jump clear of the vehicle. Avoid touching the car as your feet come into contact with the ground. Take short shuffle steps keeping both feet as close together as possible. They must avoid contacting each other. Move in this manner away from the car for at least 35' feet.*"

7.3.6.15 Instruct the occupants to jump when they are ready.

Situation: Occupants are injured or unconscious and the vehicle has a fire which cannot be extinguished, and the vehicle cannot be moved. [This is worst case situation]

7.3.6.16 The only practical and safe actions require the assistance of trained, qualified, and equipped electrical utility personnel.

7.3.7 Electrical utilities:

7.3.7.1 When electrical hazards or damage to the electrical utility system exist:

- **ASSUME WIRE LIVE!**
- Request Green Mountain Power through SCC
- Prior to dismounting apparatus, examine the surroundings and ensure the apparatus is parked at least 35' feet or more from the down wire or conductive object it is in contact with.
- Following dismount from apparatus, maintain a safe zone at a minimum of 35' feet or more from the down wire or conductive object it is in contact with.
- **Do not attempt to move any fallen wires, wait for arrival of utility personnel.**
- Instruct vehicle occupant(s) to *"Stay in the vehicle, we are contacting the electrical utility."*

7.3.7.2 When a utility pole has been compromised, the hazard zone should extend from the damaged pole to the second intact pole in each direction.

7.3.8 Hazardous Materials: Base further action on the degree, type, and condition of the materials involved. All accidents which involve any hazardous materials should also be covered by the *Hazardous Materials Response* PPG.

7.3.9 Structural (building) damage: Rescuers should stabilize the structure, like that of cribbing an auto, to prevent further collapse thereby preventing further injury to the patient and potential injury to the rescuers.

NOTE: If the scope of work is beyond BFD's capabilities and technical expertise, a request for support may be made to VT Task Force 1 Urban Search and Rescue (USAR) Team. To make this request call the VT Emergency Management – Watch Officer at (800) 347-0488.

7.4 **Support activities:**

7.4.1 Where there is either a fuel leak or rescuers will be performing extrication operations, a 1 ¾" hose line with a combination nozzle shall be deployed.

7.4.2 Lighting should be provided as soon as possible on all incidents as required.

7.5 **Gaining access to the victim:**

7.5.1 As soon as hazard control activities are accomplished access to the patient should be made using the route and point of entry which will place a rescuer with the patient(s) as soon as possible. **Gaining access should not be confused with disentanglement**. Gaining access allows patient care to begin.

7.5.2 In gaining access rescuers should consider the following order of attempts:

- First, try all doors regardless of how severely damage they may be.
- Second, break out a window and crawl through. Utilize the window which is most practical but furthest from the patient(s).
- Third, force open a door or go through a body panel.

7.5.3 Once a rescuer has gained access to the patient, perform the following when able:

- Unlock power door locks
- Remove smart keys at least 10 feet away from vehicle
- Set parking brake
- Place transmission in park or neutral
- Turn on 4-way/Hazard flashers. If continue to flash but battery is cut/disconnected the car has power from another source.

7.6 **Emergency medical care:**

7.6.1 Utilizing the accepted standard of care, the patient should be treated. The degree of care rendered to the patient who is entrapped is at the discretion of the EMS crew chief.

7.6.2 A risk/benefit analysis should be used to determine whether a procedure may result in a delay in disentangling and removing the patient versus performing the skills and care in the ambulance enroute to the hospital.

7.7 **Disentanglement:**

7.7.1 Disentanglement should be started once all hazards are stabilized, a charged line is staffed, and the patient(s) have been stabilized per the EMS Crew Chief.

7.7.2 Determining an exit route for the patient: The route of exit or removal for the patient should be decided by the extrication group supervisor with input from the EMS Crew Chief or their designate caring for the patient(s).

7.7.3 When possible, patients being disentangled should be protected with an appropriate cover during the disentanglement. A rescuer should stay with the patient and render psychological support to the patient and explain the extrication process (what's happening and why).

7.7.4 Disentanglement should focus on creating an exit path for the victim which is uninhibited and allows for the patient to be removed, as a unit, with minimal if any manipulation.

- Consider the removal of interior trim to expose hazards or challenges.
- Rescuers should focus on those techniques on which they have trained and are within the expectations of the manufacturer of the tool(s) being used.

- Rescuers should be aware of the hazard which tilt and telescoping steering columns, as well as front wheel drive cars, present when attempts are made to displace or severe the steering column.
- Rescuers should be cognizant of the hazards which devices such as a rescue saw, reciprocating saw, and like heat and spark producing devices present regarding fire and explosion potential. Whenever these devices are used additional fire protection measures should be used and an additional hose line to cool the area of cutting.

7.8 **Removal of patient(s):**

7.8.1 When possible, the most seriously injured patients should be removed first. When many minor or non-trapped patients are inside the auto, their removal prior to that of the more seriously injured, may be necessary to conduct disentanglement or patient care.

7.9 **Termination of incident:**

7.9.1 Upon the completion of all extrication activities and when all patients have a sufficient number of appropriate personnel attending to them, the extrication group supervisor will be responsible for ensuring all equipment has been returned to its appropriate apparatus and, upon arrival back at the fire station, will ensure that equipment is inspected, cleaned, and serviced.

7.9.2 Charged hose lines should remain in place and staffed until such time as the hazard(s) for which they were initially deployed is made safe or removed.

7.9.3 The sweeping of glass and debris: Unless instructed by the IC, the removal of glass and debris deposited upon the roadway by the damaged vehicles should be removed by the tow truck/wrecker driver (firefighters may perform this task).

7.9.4 Hazards made on the roadway by rescuers: The IC should request SCC to notify the appropriate agency (AOT or Public Works) should sand or salt be needed for any ice or oil hazard. Spilt gasoline or antifreeze should not be washed into the soil. Any hazardous materials product spilled that is 2 or more gallons must be reported to the State of Vermont [Appendix 8.1].

7.9.5 Upon return to the fire station, all apparatus shall be inspected, fueled, serviced, cleaned, and made ready for the next emergency.

8.0 APPENDIX:

8.1 Hazardous Substance Spill Response *(5 Steps for First Responders)*

9.0 FORMS: None

Approved: *J. Brett LaRose*, Fire Chief

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Appendix 8.1

Hazardous Substance Spill Response

5 Steps for First Responders

1 ASSESS THE SITUATION

What substance(s)? Liquid, vapor, solid?
What ground surface? Asphalt, gravel, soil?
Waterways impacted or threatened?

Is it a hazard to you or others?
Call the VT HazMat Hotline at **800-641-5005** for immediate onsite assistance if you need additional personnel or resources.

2 STOP THE RELEASE

If you can do so safely and are trained to the appropriate level, stop more material from being released.

Close the lid, shut off valve, right the drum, plug hole, etc. Eliminate ignition sources.

3 CONTAIN THE SPILL

Keep spill from spreading or entering storm drains, waterways, drainage ditches, etc.

Contain spill using: absorbent materials, temporary dike or trench, etc. *See page 2.*

4 CALL TO REPORT

Call 24-hr HazMat Hotline (800-641-5005) as soon as possible to report and/or request assistance if spill is:

- **2+gallons**
- **Less than 2 gallons and threatens human health or the environment** (e.g. 1-gal gasoline spilled in a wetland; small indoor fuel oil spill that impacts air quality)
- **High hazard substances**

Provide this information if available:

- Responsible Party name & insurance info
- Ground surface types impacted
- Waterways impacted or threatened
- Estimated & potential total release amount
- Road closure? State highway?
- Materials encountered (cargo or otherwise)
- Cause of release

Call even if you don't have all information

5 CLEAN UP

Materials used to contain and/or clean up hazardous substances (including oil) may also be hazardous waste & if so must be properly disposed of as such (not put in trash). First responders may perform limited cleanup to their training level & assistance will be provided for proper disposal.

Never use surfactants or dispersants in non-explosive environments
Do not leave clean up materials on roadway.

See Page 2 for recommended cleanup materials.

Note: While the requirement to report and clean up a spill lies with the Responsible Party, in an emergency, first responders are encouraged to gather information and report the spill to ensure timely action.

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RECOMMENDED CLEANUP MATERIALS

If the spill is...	...use this to clean up
Oil	Granular absorbent or oil-specific absorbent pads
Gasoline	Granular absorbent, sand, activated charcoal, or non-combustible absorbent materials
Antifreeze	Granular absorbent
Solvents	Non-combustible absorbent pads
Acids, bases, oxidizers, mercury, phosphorus, bromine	Contact state Emergency Management to request VT HazMat Team at **800-641-5005**

TECHNIQUES FOR SPILL RESPONSE