SHROPSHIRE
Fire and Rescue Service

Contents

Brigade Order Operations 13

Part 1

Incidents involving transportation by road

Reference	Author	Status	Date
OPS13PT1	K Holder	New	01/07

Part 1 – Incidents involving transportation by road

Purpose

The purpose of this order is to outline the operational procedures for crews operating at incidents involving transportation by road.

Strategic aims and objectives

This Brigade Order supports the following strategic aims :

Strategic aim 1 "Reduce the risk to life and material loss from fire, road traffic collisions and other emergencies in the community"

Strategic aim 2 "Protect life, property and the environment from fire and other emergencies"

Strategic aim 3 " Secure the highest level of safety and welfare for all staff and Authority members by providing effective leadership, training, equipment and systems of work"

Roles, responsibilities and review

The **Head of Operations** is responsible for ensuring this Order is implemented across the Brigade.

Incident Commanders will be responsible for the day to day operation of the Order.

The **Head of Operations** will review this Order biennially in March and when organisational changes take place.

Introduction

The road network within Shropshire and surrounding counties consists of all classes of road, ranging from minor roads to major motorway carriageways and interchanges.

The volume of road traffic is increasing steadily, with a variety of passenger carrying vehicles of varying design, to large goods vehicles carrying a range of products. The continuing advances in vehicle design and technology now present fire fighters with an increasing challenge when dealing with incidents involving entrapment in road vehicles.

Road Traffic Collisions, where people are trapped or injured are now the most likely type of incident, where fire fighters will be required to administer life saving first aid to casualties. It is imperative that liaison between all services in attendance, at such incidents is established at an early stage, to ensure a successful outcome.

Incident Commanders must establish early liaison with medical services to ascertain the 'time windows' for casualty release, on which the method for extrication should be based.

Significant hazards will be present at all road traffic incidents, therefore Station/Watch Commanders should ensure that personnel under their command, receive adequate practical training, and are well briefed in Brigade procedures for dealing with such incidents.

Types and causes of road traffic accidents

Road traffic incidents come in various forms these can include one or a collection of the following:

Collision, no persons trapped
Collision, persons trapped
Vehicle fire
Environmental, chemical release
Shifted loads LGV
Pedestrian
Motorcyclist and cyclist

There can be many causes for these accidents happening examples are:

Driver error
Mechanical failure
Weather conditions; wind, flooding, snow and ice.
Animals
Topography of the road

Mobilisation

On receipt of a call reporting a road traffic collision the Fire Control Operator will make a decision on how many appliances to mobilise, this decision will be dependant on the information obtained from the caller and the location of the incident.

For an incident requiring services only, no persons trapped, where crews are only required to make vehicles safe:

1 x Fire Appliance

For an incident reporting persons trapped in a vehicle

2 x Fire Appliances including 1 x Rescue Pump
Rescue Tender
Level 2 Incident Commander

Incidents involving a vehicle fire will require a minimum mobilisation of:

1 x Fire Appliance, this will be dependent of if the road is single or double carriageway

Incidents on duel carriageways and motorways will require an extra fire appliance to be mobilised to the unaffected carriageway. Refer to Brigade Order Operations 13 Part 1 Section 3 Motorway Procedures for more details.

Initial attendance

The initial actions by the Level 1 Commander and the crew are of paramount importance in order to secure both crew and scene safety, therefore the following actions must take place:

- Appliance must slow down on the final approach to the incident.
- Driver should position appliance correctly to fend off affected lanes, no less than 20m (50m motorways) before the incident. Also consider access of other emergency vehicles.
- Personnel should always dismount appliances with caution, on the safe side where practicable.
- All personnel should always make sure that they are wearing the correct level of PPE including high visibility jackets, medical gloves, and helmets and have sufficient eye protection and breathing apparatus for fire fighting crews.
- Secure the working area – position cones, signage and lights.
- Appoint safety officer if necessary.
- Extinguish fires where persons are trapped.

- Extinguish any other fires, or ensure that extinguishing equipment is laid out and immediately available to cover the affected area.
- Secure additional water supplies if necessary.
- Establish an equipment pooling area – if necessary.
- Carry out rescue and extrication, remove casualty to safe area.
- Where necessary the rear of appliances should be well lit by the use of lights in darkness or inclement weather. Care must be taken not to dazzle drivers of oncoming traffic with appliance headlights/lighting.

Command and control

- The continued safety of crew members must remain paramount - Appoint Safety Officer (s).
- Liaison and communication with other services must be established early, and maintained throughout the incident.
- An order of precedence must be determined for the rescue/extrication of casualties and casualty care.
- The incident should be sectored if necessary at an early stage, with Sector Commanders responsible for single or groups of vehicles.
- A clear zone of 2m minimum should be established where possible and maintained around the affected vehicles (s). Only personnel directly involved with extrication work should be allowed in the 2m zone.
- Incident Commanders must ensure that procedures for the release of trapped casualties are complied with, as far as reasonably practicable.

Incident/Sector Commanders must plan ahead and brief all crew members, and tool operators, frequently throughout the release operation, to ensure that all personnel involved are aware of the overall objectives.

Significant hazards and risks

The hazards to which fire service personnel and other emergency staff are exposed at incidents on roadways, fall into the following categories:

Moving traffic
Vehicle hazards
The occupants
Site conditions
Use of specialist rescue equipment

Moving traffic

Fire service vehicles and personnel are in obvious danger of being struck by other road users whilst attending incidents. The speed and weight of vehicles will vary depending upon the type of road and time of day. However, on most occasions the likelihood of being struck by a vehicle travelling at speed is high. In addition to being struck by moving traffic, the presence of stationary fire service vehicles on the

roadway increases the risk of accidents caused by road users taking avoiding action. These problems are increased when incidents happen at night and when visibility is poor or when there is ice on the road.

Vehicle hazards are detailed in four main areas

- Vehicle construction materials
- Vehicle suspension/energy absorbing systems
- Vehicle fuel, power and conditioning systems
- Vehicle safety systems

For further details on vehicle hazards see Brigade Order Operations 13 Part 1 Section 1 **Vehicle Hazards** and Brigade Order Operations 13 Part 1 Section 2 **Vehicle Restraint Systems.**

The occupants

The occupants of vehicles present a number of differing hazards in particular:

Medical equipment and associated body fluid spills
Manual handling of equipment and casualties
Physical assault
Potential for psychological stress

Site conditions

In addition to the hazards that arise from the vehicles involved (either in fire or accident) and their occupants, the site of the incident also presents serious risk of injury to operational personnel from:

- Poor lighting
- Slippery, uneven ground conditions
- Wreckage and equipment
- Poor weather conditions
- The movement of emergency service vehicles

Use of specialist rescue equipment

The Brigade maintains equipment specifically carried on appliances to deal with the extrication of persons from crashed vehicles. This equipment requires training to operate. Experiential evidence indicates that the hazards associated with the use of such equipment include:

- The weight of the equipment and the circumstances in which it may have to operate.
- The high-pressure hydraulic and pneumatic operating systems of cutting/spreading tools, possibility of injection injuries from hydraulic oils.

- The design of the cutting elements of such tools, which can cause serious injury in terms of cuts and entrapments.
- Inhalation of glass and carbon fibre shards caused by cutting (dust masks should be worn when cutting glass or carbon fibres).

Whilst personnel are operating power tools, the power unit should remain under the control of a qualified operator.

Casualty rescue/extrication procedures

The following general sequence of events should be followed to achieve the objective of safe casualty release. Controlled simultaneous activity is essential to achieve the objective of delivering a casualty to definitive medical care.

- Scene safety
- Vehicle stabilization
- Glass management
- Casualty access
- Space creation
- Casualty extrication
- Casualty care

Scene safety

The working area must be secured – to include correct positioning of appliances, cones, lights and signage.

Brigade radios must not be used within 10m of affected vehicles with un-deployed Supplementary Restraint Systems (SRS).

Wreckage and debris should be cleared to establish a safe route to, and a 2m clear zone around the affected vehicle. This must be maintained throughout the extrication process.

Where police investigation is likely to be required, the position of wreckage should be noted.

Vehicle stabilization

Using the appropriate equipment, vehicles should be stabilized in order to:

- Prevent vehicle movement in all directions.
- Provide a solid base upon which ambulance staff and fire fighters can work.

The stability of the vehicle should be frequently checked throughout the operation.

During the vehicle stabilization stage, the casualty assessment and care process should be initiated. It is imperative that full casualty protection is afforded before extrication operations begin.

For further details on the vehicle stabilization phase refer to the Shropshire Fire and Rescue Service **Road Traffic Accident Manual.**

Glass management

In some instances, immediate access into the vehicle passenger compartment may be required to carry out casualty care; this is not always possible without first breaking or removing the glass.

3 ways in which to manage the glass:

- Removal: taking the glass out whole after dealing with the fixings rubbers or bonding material.

- Control: Using an impact centre punch to shatter the glass, whilst ensuring adequate protection to the casualty and rescuers.

- Leaving in: the best option if the glass does not hinder the extrication techniques being carried out.

For further details on the glass management phase refer to the Shropshire Fire and Rescue Service **Road Traffic Accident Manual.**

Casualty access

This may include cutting and/or spreading, door/roof removal etc. The main objective being to facilitate the casualty carer with sufficient access to the casualty, this will enable possible life saving techniques, and/or a full proper casualty assessment to be carried out.

Whilst operatives are working on vehicles, protection must be provided for the casualty and other emergency personnel in the area. This will include “hard” protection shields, “soft” protection sheets, blankets, PPE etc.

Existing vehicle sharps, and those created by cutting operations must be covered immediately throughout operations using the sharp edge protection kit.

For further details on the casualty access and cutting procedures refer to the Shropshire Fire and Rescue Service **Road Traffic Accident Manual.**

Space creation

The main objective is to create space around the casualty by relocating crashed vehicle materials, to enable extrication with the minimum amount of twisting and turning of the casualty.

Common methods and techniques employed to achieve these objectives may include one, or a combination of the following.

- Door opening/removal
- Roof removal/partial roof removal
- Steering wheel removal/relocation
- Dashboard roll/relocation
- Full/partial vehicle side removal
- Seat and pedal relocation/removal

These methods and techniques may have to be applied to vehicles in various positions, i.e. vehicle on its roof, wheels, or side.

Casualty extrication

Casualties should be immobilised before extrication, to prevent the possibility of further injury during the extrication process. This is usually the stage of operations where a number of personnel will be required to ensure safe and secure handling of the casualty from the vehicle, to a safe area or awaiting ambulance.

The main objective is to achieve casualty removal involving the minimum of twisting, turning and bending of the casualty.

In normal circumstances, extrication should be carried out in liaison with, and under the guidance of, medical staff.

Rapid/emergency extrication

There may be occasions of exceptional circumstances when rapid emergency extrication is necessary. On such occasions it is acceptable for the vehicle not to be fully stabilised prior to pulling the casualty free. An example of when this practice can be adopted is when a casualty has stopped breathing and has no pulse, in this circumstance the casualty will need to be removed and placed on a flat horizontal surface in order to carry out resuscitation and pulmonary heart massage, as this is the only means of sustaining life.

Casualty care

At least one fire fighter should be nominated as a casualty carer, whilst en route to an incident, where persons are reported trapped. This ensures that the casualty assessment and care process is initiated immediately on arrival, should an ambulance not be in attendance.

The following assessment will need to be applied to semi/unconscious casualties, but may also be applied generally to conscious casualties.

Risk assessment

All personnel must wear full PPE, with hi-visibility surcoats (except for nominated BA wearers when BA is required). The use of Surgical Gloves which are carried on Appliances should be considered for general first aid use. Drivers must dress as soon as practicable on arrival.

The **Incident Commander** must ensure that the following is included in the initial Dynamic Risk Assessment, through liaison with responsible personnel, police, or by personal observation.

Identify

- The cause of the emergency/type of incident.
- Significant hazards/risks commensurate to the incident – (site, location, and weather conditions, traffic status, debris/wreckage, fuels and utilities involved).
- Fires where persons are trapped, and other fires/potential fires.
- The number of persons trapped, and their priority for release.
- Implications of un-deployed supplementary restraint systems (SRS).
- Vehicles carrying hazardous goods that present significant risk.
- Water supplies – needs and availability.

It is essential that the Incident Commander resources the incident adequately at an early stage, based on the results of the initial Dynamic Risk Assessment.

Vehicle safety

Before any access to the vehicle is attempted or cutting and spreading operations begin, the vehicle must be assessed to consider the potential implications of the following:

- Supplementary Restraint Systems (SRS) i.e., seatbelt pre-tensioners, airbags etc.
- Integrity of fuel systems – identity/isolate leaks.
- Location/actuation of emergency isolation switches – coaches, buses, LGVs.
- Isolation of batteries – is there a need/benefit to isolation.
- Pressurized components – i.e., gas struts, pneumatic brake/suspension systems.
- Goods in carriage.

It is imperative that SRS, that have not actuated, are identified before cutting/spreading operations begin, SRS restraints should be applied where necessary and crew awareness must be heightened.

For further details on SRS refer to Brigade Order Operations 13 part 1 section 2 **Vehicle restraint systems.**

Further considerations

Chemical contamination

Decontamination procedures will be required for a number of instances including, for example incidents involving:

- Hydrofluoric acid
- Carbon and other fibres
- Fuel spills
- Body fluids

Any person thought to have been contaminated - their affected clothing should be removed and the affected area of the body flushed with large volumes of running water. This process should continue for a minimum of 15 minutes. Contamination of the eyes is particularly dangerous and must be treated immediately by flushing with clean water or saline solution for at least 30 minutes. Any affected person should be taken to hospital for the appropriate treatment.

Certain chemical burns, e.g. from hydrofluoric acid, may require specialised treatments, therefore, and information relating to the type of contamination should always accompany the casualty.

General considerations

Wherever possible, avoid driving vehicles over incident debris. This will reduce the damage to Fire Brigade vehicles and avoid disturbance of the scene.

Remember, each scene is potentially a crime scene that the Police have a duty to investigate.

Operational crews should not take photographs of accident scenes unless specifically requested to do so by the Incident Commander. Photographs should only be taken by official Police or Brigade photographers as they may later be required as legal evidence.

- Ensure casualty protection throughout operations.
- Use of Breathing Apparatus where fire is involved.
- Consider the use of specialist non-service equipment – e.g. heavy lifting gear.
- Search surrounding area and sleeping compartments in LGVs and coaches for casualties.
- Use of Rescue Hydraulic Platform/Rescue Platform on carries on the Rescue Tender where LGVs/coaches are involved.
- Ensure adequate lighting in darkness/fog.
- Use of equipment on pumps and environmental pod to prevent/minimise environmental pollution.
- During cold weather, particularly when the Brigade has been engaged in cleaning the roadway of debris and/or spillage of fuels, the Incident

Commander should give consideration to requesting the attendance of the local authority for gritting or sanding the roadway.

- Possible contamination of drains, sewers, ditches and watercourses by fuels, oils or hazardous products must be notified via Brigade Control to the appropriate Water Authority and the Environment Agency.
- Press liaison.
- Assist medical staff with casualty care and clearance.
- Crews should always wear eye protection and surgical gloves.
- Consider the effects of hazardous vehicle construction materials,
- Decontamination of firefighting PPE.
- Consider adopting incident debriefing procedures.

Incident debriefing

Incident debriefing forms an important learning forum, however, “hot” debriefs should be held away from the incident scene, so as not to interfere with incident investigation by the Police.

For further details on carrying out incident debriefs refer to Brigade Order Operations 8 Part 1 **Task Debriefs** and Part 2 **Tactical /debriefs.**

Crew training

Training in the use of specialist equipment together with rescue techniques, safety and approach at road vehicle accidents and vehicle fires is essential. Training should allow crews to rehearse safe systems of work and should accord with the principles of operational training.

Station Commanders/Watch Commanders, should ensure all personnel are given updates and training on methods of rescue and specialist equipment at regular intervals, including the use of safe manual handling techniques. Joint exercises, involving other emergency services, should be arranged as part of the training programme.

Points of reference

Specific Incident Procedure (SIP)	Air Bags (Vehicle). Incidents Transportation By Road. Motorway/Duel Carriageway Incidents
Guide to Operational Risk Assessment	Section 4.1 Road
Shropshire Fire and Rescue Service	Road Traffic Accident Manual
Brigade Order Operations Section 13	Part 1 Section1 Vehicle Hazards Part 1 Section 2 Vehicle SRS Part 1 Section 3 Motorway Procedures
Brigade Order Operations Section 8	Part 1 Task Debriefs Part 2 Tactical Debriefs