

The Planning, Conduct and Evaluation of Emergency Exercises in Rail Transport

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Introduction

- This presentation will draw on the author's own experience in the planning, design and conduct of major emergency exercises to guide delegates through the process of determining the most probable incidents for which exercises would be useful, the frequency of carrying out exercises and a route map for establishing a plan and evaluation of the exercise.
- Examples will be provided of exercises done to prepare for passenger train derailments, tunnel collapses, terrorist attack and multi-modal events.
- Delegates will learn important lessons regarding interoperability and the importance of effective command & control to bring incidents and accidents to a timely conclusion.

I showed this slide in 2018 – It shows an incident from 2007 - What relevance does it have now, nearly 15 years on?



Derailments remain a common occurrence

London's first underground railway was built using the 'cut and cover' method in 1863 – What relevance does this have nearly 160 years later?



The process will be used to construct so-called “green tunnels” for UK HS2

What should be planned for?

What size and duration of exercise do you want?

How often?



What should be planned for?

One unidentified witness said the man had been carrying a petrol container "and sprayed liquid across the seats and then all over himself and then set himself on fire".

"The fire spread all over the place immediately," he told Reuters.



The disaster left 47 people dead



An aerial on a lorry that was above Eurotunnel's height limit "almost certainly" started a fire that shut the tunnel, investigators have said.

What about this?



At least 11 people were killed when a Hawker Hunter jet crashed on to the A27 during a display at the Shoreham Airshow.

Exercise Georgiana tests Lincolnshire's emergency services

Coping strategy: Local services and organisations are practicing what they would do in the event of a major incident in the south of Lincoln this week.



Rail Accident Report



Derailment and fire involving a tanker train at Llangennech, Carmarthenshire
26 August 2020



Passenger: "You couldn't see from one end of the train to the other - people were panicking and throwing up"

A woman has died and 83 people have been hospitalised in Washington DC after a Metro tunnel filled with smoke.

Ways to choose...

'Risk' means the frequency of occurrence of accidents and incidents resulting in harm (caused by a hazard) and the degree of severity of that harm;

- “Safety” means freedom from unacceptable risk of harm;
- “Zero risk” is unattainable
- Consider “Likelihood”, “Impact” and Consequences
- Which of these are the most likely and have the greatest consequences?

Chancery Lane Tube commuters panic after smoke pours from bag

0 19 June 2014



police are not treating the incident as suspicious

Passengers ran "screaming" from a Tube station after a passenger's electrical device overheated, causing sparks and smoke to come out of his bag.



Risk and Consequences

- While rail transport is officially the second safest mode of transport behind aviation (measured as fatalities per billion passenger kilometres), there is evidence to suggest that when accidents occur they have the potential to result in very large numbers of fatalities and severely injured passengers
- These are, quite often, “once in a generation”
- That’s why it is essential to plan, prepare and rehearse
- High levels of command and control are required to quickly bring order and safely resolve the incident
- Without practice, lessons learned are not passed on

EU Regulation 402/2013/EU

- Common Safety Method - anticipate the hazards and risks - and design them out
- Four layers of defence mentioned:
 - Prevention;
 - Mitigation;
 - Evacuation; and,
 - Rescue.

For what scenario(s)?

From the TSI RST - The Role of the Rescue Services:

The definition of the role of the rescue services is a matter for the Relevant National Authority.

- Incidents are classified as either 'hot' or 'cold'

In a 'hot' incident type

- Try to rescue people unable to reach a safe area
- Provide initial medical support to evacuees
- Fight a fire insofar as required to protect themselves and people caught in the accident
- Conduct evacuation from safe areas inside the tunnel to open air

In a 'cold' incident type

- Provide initial help to people with critical injuries
- Free trapped people
- Evacuate people



- EUR took two years to plan and a period of nine months to analyse in order to ensure that its evaluation was comprehensive and fully evidence-based. The initial bid for EU funding was made in June 2014 and the bid's success was confirmed later that year. A project 'kick off' meeting was held in Brussels in early 2015 involving EU officials and representatives from each of the exercise beneficiaries.



What was the scenario?

- **Key deliverables**
- EUR's centrepiece was the rescue scene. The scenario was based on a building collapse in a central London main line train station and to enhance the realism of the strategic (command post) element Waterloo was chosen as the incident location. The strategic (command post) element interacted with the live site in real time and was further developed via 1,700 'injects'. These depicted the wider effects of the emergency, such as those impacting on transport, health and the community.



Who took part?

- EUR involved 2,500 volunteer casualties over four days; each had an individual profile and was ‘tracked’ during the exercise through ‘the journey’ that affected persons will take following a major incident.
- The exercise was facilitated by 300 staff representing all the organisations that had been involved in EUR’s planning. Each of the four days was run in accordance with a structured ‘daily rhythm’, with exercise activity taking place between 1000–2000hrs.
- To ensure continuity, situation reports were devised overnight by facilitation staff in relation to past and predicted events and these were used to brief oncoming participants the following day.



Sponsors

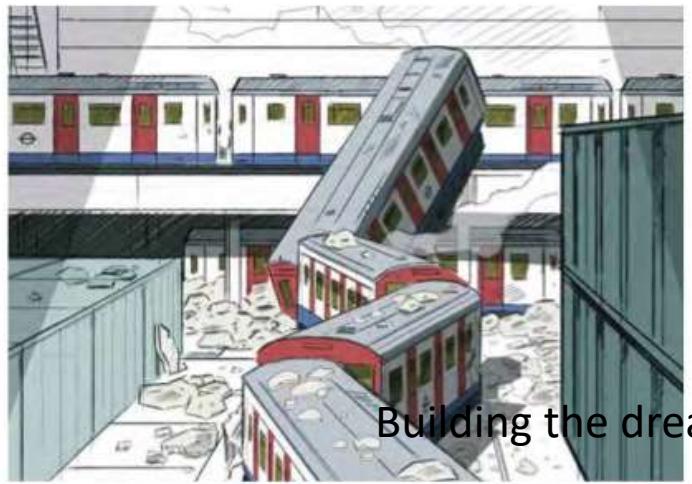
- EUR was organised by London Fire Brigade (LFB) on behalf of the London Resilience Partnership (LRP) and benefited from a significant European Union (EU) grant under the calls for funding for EU Civil Protection Exercises 2014.



Scenario

- The exercise was based on a major building collapse at ‘Waterloo station’, key parts of which were re-created in a disused power station.
- Waterloo was chosen because it is a central London mainline and underground train station. The scenario was focused on eight underground carriages which had been covered in thousands of tonnes of rubble following a building collapse
- Responders accessed the scene through a highly realistic station entrance which led them to the train carriages via a labyrinth of tunnels, concourses, staircases platforms. These had been specially constructed on site, mainly using timber and scaffolding.
- The scenario provided a very dynamic and authentic incident for responders at the scene and also generated a myriad of consequential strategic London and UK impacts, such as those affecting transport, health, businesses and the wider community.

Building the dream



Building the dream



Top: An artist's impression of the rescue scene

Bottom: The rescue scene under construction in November 2015



Members of a national USAR team building one of the station tunnels

Welfare, briefing and realism



Top: The Salvation Army feeding responders.
Bottom: Casualty volunteers being made up by students from Rotherham College.

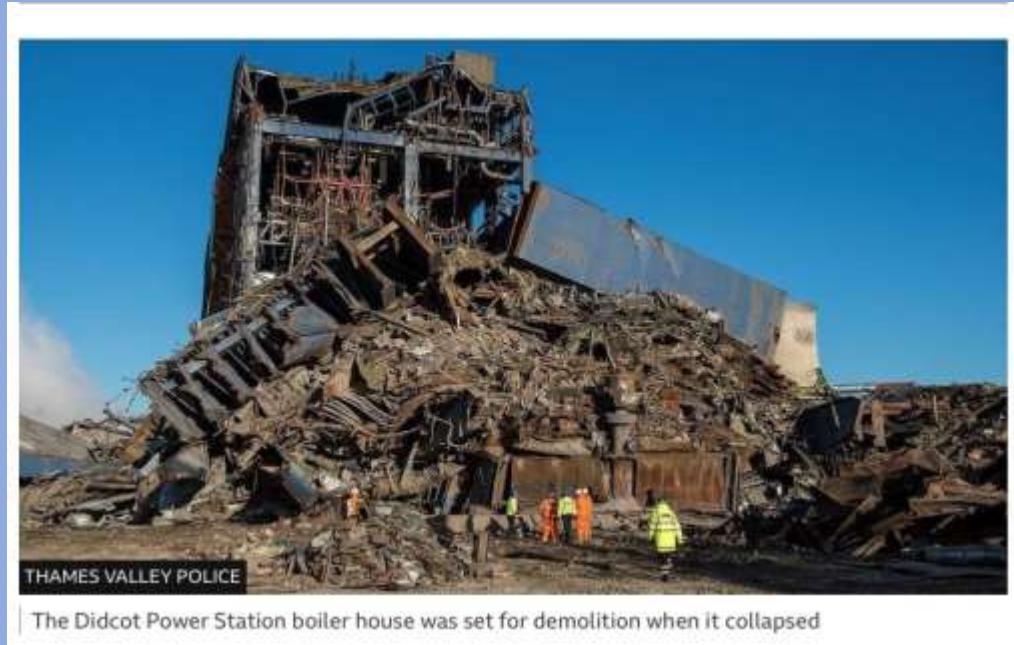


Top: Briefing casualty volunteers.
Bottom: Volunteer feeding area.

The venue and its consequences

- The live element of EUR was staged in a former turbine hall at a recently de-commissioned power station in Dartford and within the London M25 orbital motorway.

Very sadly, there was a major incident with fatalities at an actual turbine hall of a similar design that was being decommissioned. That incident occurred on 23 Feb 2016, under one week before EUR began and one day before the full dress rehearsal.



The decision had to be made to go/no-go

Exercise timescales

- The exercise was run over 4 days, from 29 February–3 March 2016. The live play elements of the exercise took place between 1000 and 2000hrs daily with simulated play outside of these hours.



Lessons Learned

EUR's evaluation has shown that the exercise objectives were met and that, overall, arrangements are in place to deliver an effective response to a complex and protracted large-scale emergency.

In emergency situations large volumes of people need to be evacuated quickly and safely.

The main findings and lessons identified for this objective are presented here in relation to a set of national emergency response standards. Although these standards are UK-based, they are sufficiently generic to promote national and transnational learning.

How were lessons learned shared?

- **A Visitor programme and conferences**
- The visitor programme enabled 545 people to observe the exercise including the UK Home Office Permanent Secretary, London's current mayor and the EU Director-General responsible for humanitarian aid and civil protection
- **Conferences**
- Two conferences were organised to promote and reflect on the outcomes of EUR.

A quote from Dany Cotton
London Fire Commissioner April.2017

- *EUR was the most complex and challenging exercise that I have witnessed in my 28 year career, and is to my knowledge the largest exercise ever held in London Fire Brigade's 150 year history. It took almost two years to plan and deliver and was co-funded by the European Union.*

A quote from Ron Dobson
London Fire Commissioner at the time the exercise was held:

- *Without a doubt, EUR was the most complex exercise I have witnessed in my 37 years in the fire and rescue service. The level of complexity, attention to detail and the reality of the exercise makes me believe it was the most professional exercise I have seen run.*

The End...



Survivors exiting the incident on Day 1

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