



**26th October
2012**

**Cosuf annual
workshop Madrid
2012**

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Groupe Eurotunnel, a new dimension in European transport

Agenda

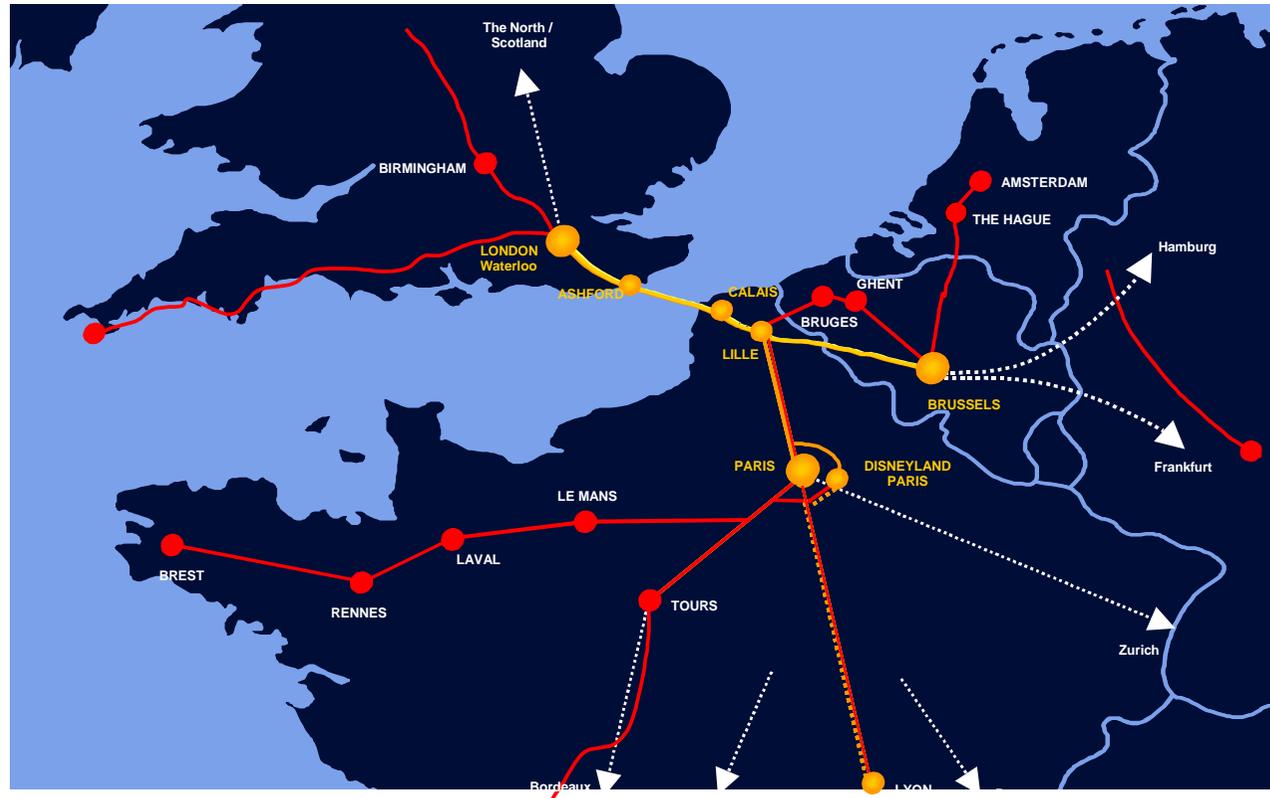
- **Overview of the activities**
- **Risk Management**
- **Safety**
- **Project Salamander – SAFE stations**
- **Tunnel Interoperability**
- **Questions**



● Overview of the activities

- Core Business activities
- Traffic figures

The Channel Tunnel: a vital link of the European network



- **Eurotunnel**, private binational company (UK/FR), **manages a public service concession:**

- Concession of the Channel Tunnel, its terminals and related installations, and Shuttle transport system



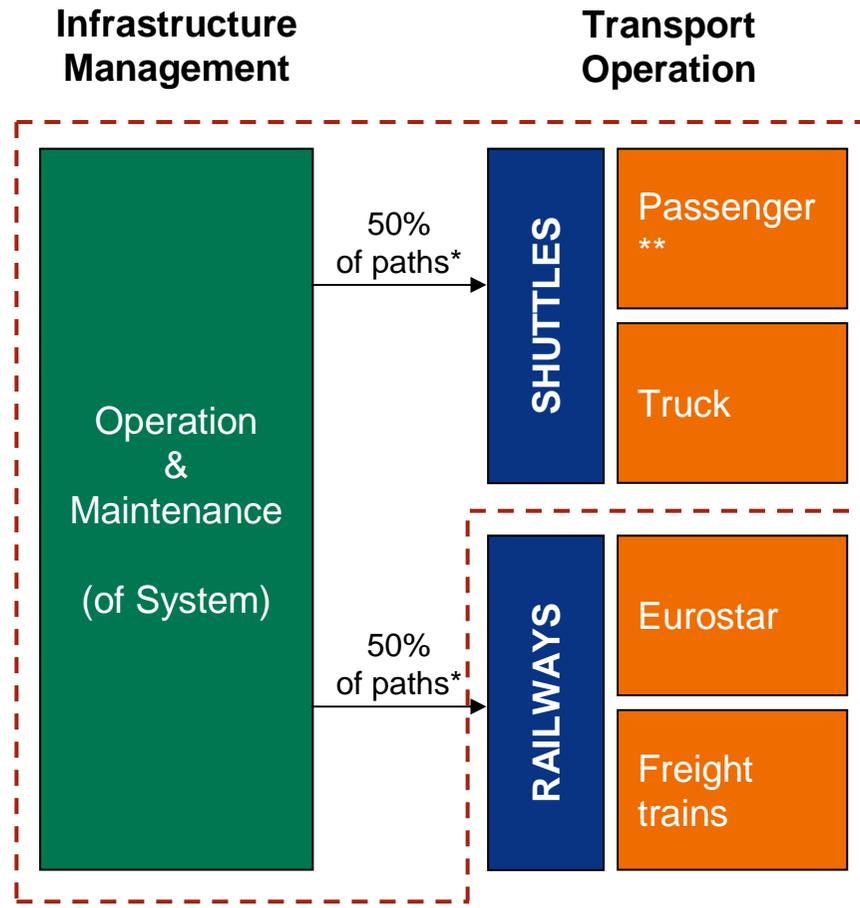
Eurotunnel

Core business activities

- **Concessionaire of the cross-Channel Fixed Link**
 - » **Passenger Shuttles (cars, coaches, motorcycles,...) and Truck Shuttles**
 - » **Grants access to passenger trains (Eurostar) and rail freight trains**
- **Every day in the Tunnel, around 300 trains, i.e. on average:**
 - » **46,000 passengers**
 - » **5,820 cars and 155 coaches**
 - » **3300 trucks**
 - » **42,000 tonnes of freight**



Eurotunnel manages Tunnel infrastructure & provides access for 4 types of transport operations



- Infrastructure Management:
 - » **Eurotunnel operates & maintains System to make Tunnel available for trains:**
 - Shuttles, for carriage of trucks and passenger vehicles**
 - Eurostar and railfreight trains

- Transport Operation:
 - » **Shuttle services directly managed by Eurotunnel**
 - » **Railways business managed by licensed operators (currently Eurostar, Europorte and DB Schenker)**



Note: Directly managed by Eurotunnel; *As defined in the Registration Document, a path is the time it takes to cross the Tunnel for a train operating at a standard speed, i.e. 140kph for the Channel Tunnel; **Cars, caravans, coaches, motorcycles and trailers

Truck Shuttles

- **1,263,327 trucks** carried **in 2011 (+ 16% / 2010)**
- A fleet of **15 Shuttles**
- Up to **7 departures** per hour in each direction
- **World leader** in piggy-back transport



Passenger Shuttles Cars and coaches

- **2.26 million cars*** transported **in 2011 (+6% / 2010)**
- **56,000 coaches,**
- A fleet of **9 Navettes**
- Up to **4 departures** per hour in each direction
- **35 mn** crossing time
- **Leader** on the Short Straits market



**12 wagons
single deck**

**12 wagons
double deck**



* Including motorcycles, vehicles with trailers, caravans and campervans

Railways

- **Eurostar** passenger trains use the Tunnel to **connect London to Paris and Brussels**
- **9.68 million*** passengers in 2011 (+ 2% / 2010)
- **Railfreight trains :**
1.32 million tonnes of freight carried on **2388 trains** in 2011 through the Tunnel (+17% / 2010)



* Number of Eurostar passengers travelling through the Channel Tunnel

● Risk Management

- Objective
- Approach

Risk Management in Eurotunnel

Objective to provide **Management, Audit Committee and Board** with:

- Complete, consistent and structured view of **major risks**, of all types, to which Company is exposed; and
- An appreciation of the appropriateness of the mitigating measures put in place by those responsible for managing each risk in light of their potential impact on the Company's strategic objectives

Co-ordinated by Corporate Risk Manager with **risk review** consisting of 2 parallel approaches:

- Top-down approach identifying key strategic risks both in core business and in new initiatives undertaken and changes in company's business and economic environment; and
- Traditional "bottom-up" approach which seeks to identify risks in each of the main business areas

- **Safety**

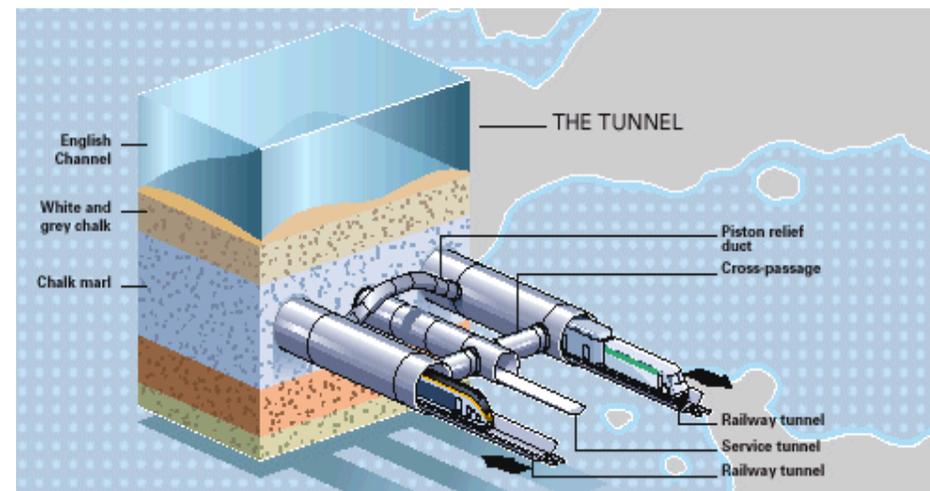
- Design principles

Safety of the Channel Tunnel

Design Principles

Safety high focus in the design of the Tunnel

- 2 separate single track railway tunnels
- 1 central service tunnel permanently pressurized as safe haven for emergency situations and used also for maintenance access
- Connections between the railway tunnels and the service tunnel every 375m



Safety of the Channel Tunnel

The Service Tunnel



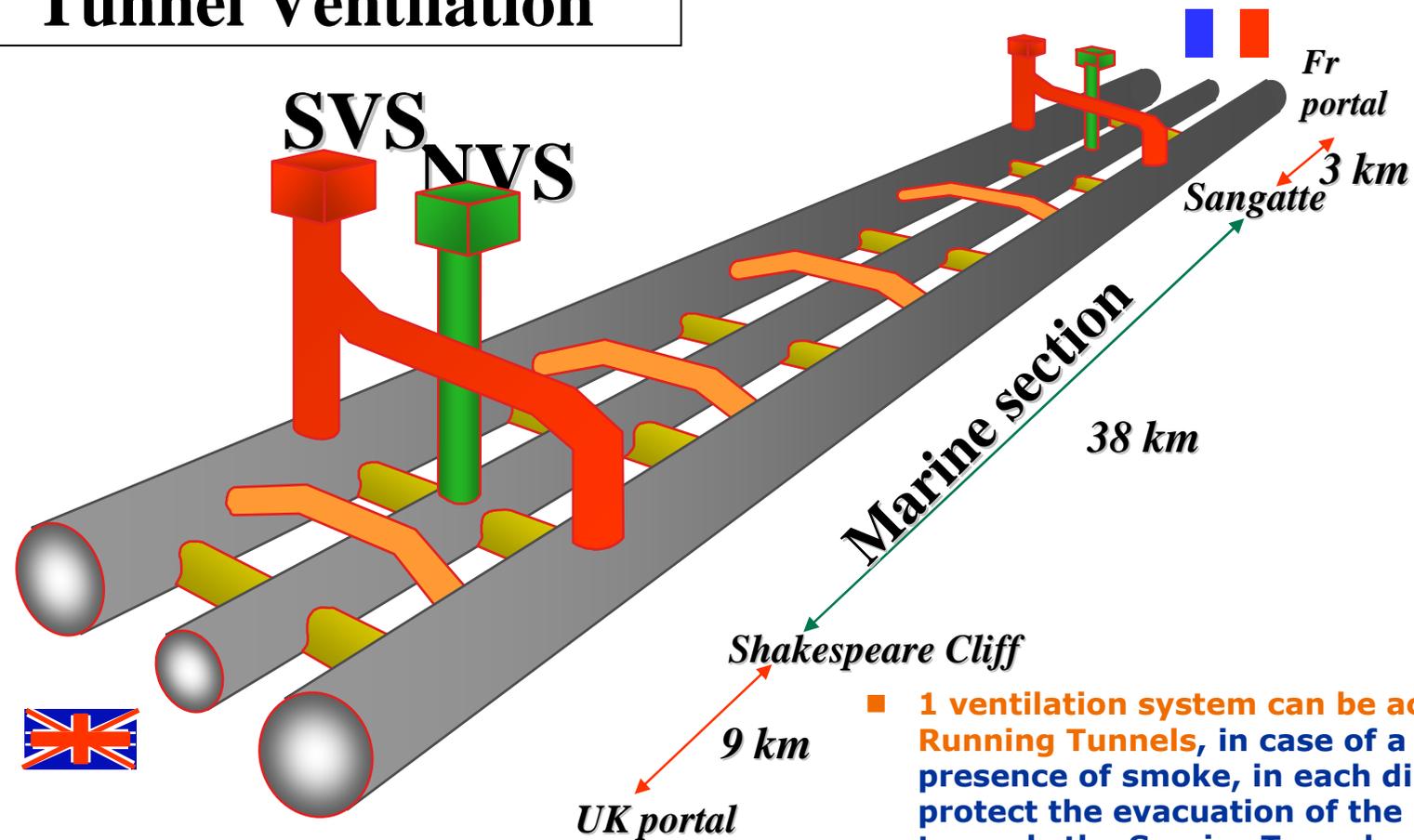
- Service Tunnel provides access for **evacuation, maintenance or emergency** operations
- Two cross-overs enable service continuity when access to a section of the Tunnel is restricted (passage of trains from one rail tunnel to the other)
- A transport system designed to the **highest safety standard** with supervision by the **Inter-Governmental Commission (IGC)**



Safety of the Channel Tunnel

Design Principles

Tunnel Ventilation



- 1 ventilation system can be activated in the Running Tunnels, in case of a fire or in presence of smoke, in each direction to protect the evacuation of the passengers towards the Service Tunnel.



● Project Salamander

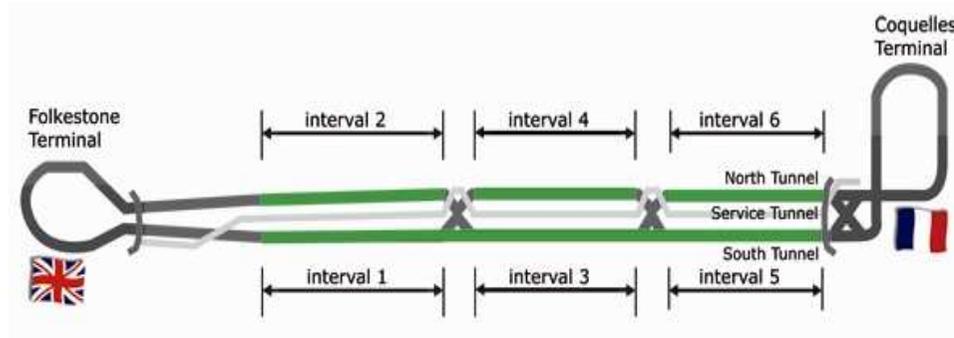
- Prevention
- Intervention
- Fire Fighting Stations

Channel Tunnel Fire Protection Fire Fighting Stations - “Stations d’Attaque du Feu”

- Following the fire of September 2008, the re-evaluation of the risk in regard to the Truck Shuttle (our largest activity) led Eurotunnel to take a set of actions targeted to enhance the tunnel fire fighting processes.
- In addition to comprehensive checks on lorries during loading operations, the following topics were addressed :

1. Intervention procedures of First Line of Response (FLOR)

2. Fixed fire fighting



Comprehensive checks on lorries during loading operations

1/2

Prevention – *Human Resources*

- 24 new Platform Safety Controllers (CSPF) created
- CSPF in place for all Truck Shuttle departures from March 2009
- Includes random checking of driver cabs
- From April 2010 the percentage of cab checks raised to > 10% of the number of lorries carried



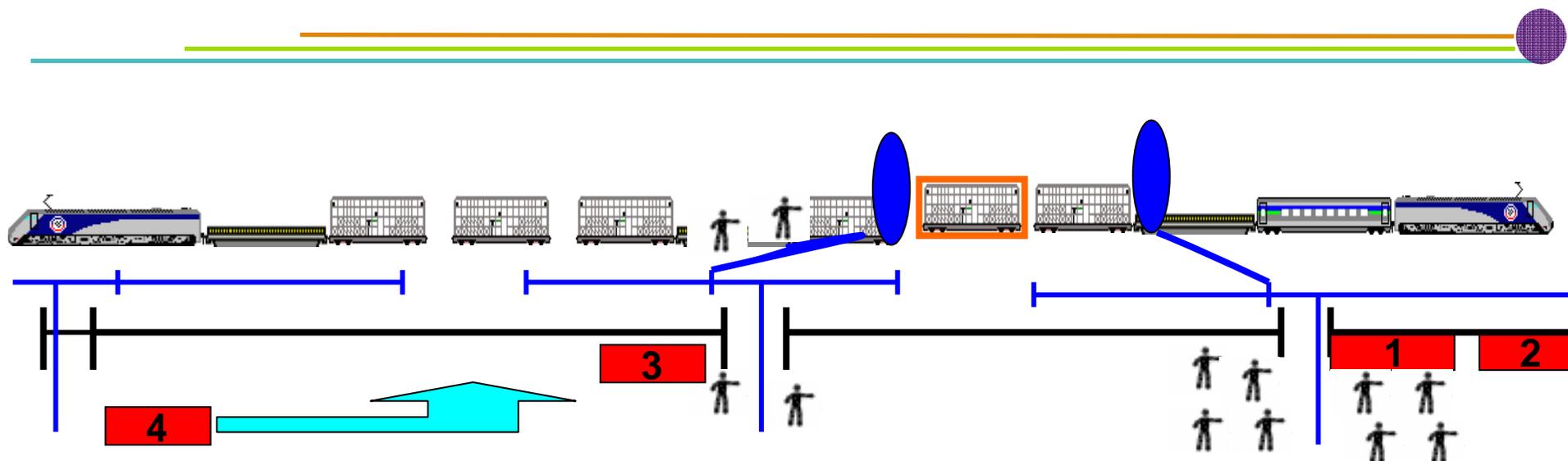
Prevention – *Communications*

- Communication / education of lorry drivers (distribution of leaflets)
- Explanation given to drivers when a deviation is noticed
- Recorded non-compliance dealt with the haulier by Eurotunnel Freight Commercial Services

Prevention – *Automation of checking*

- Plan to implement a prototype on our Terminal in the coming months
- Based on detection of abnormal temperature evolution between check-in and loading
- Results on prototype will decide the way forward
- Work done in cooperation with German Institute BAST
- Taking into account the latest technology evolutions, it has been decided to extend the specification to the detection of :
 - Lorries dimensions exceeding the rules
 - antennae
 - loads out of gauge
 - dangerous goods identification plates

Intervention of fire services – new FLOR procedure



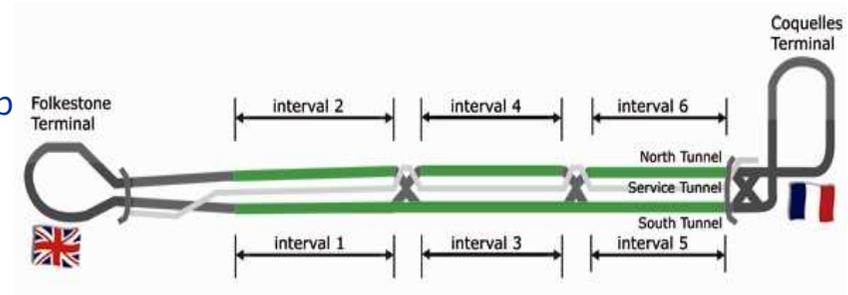
- **New First Line of Response procedure is in place and regularly practised**
- **Objective : limit fire propagation in the Tunnel by setting up water walls from 2 cross passage doors**
- **Procedure was put in place before SAFE stations were operational**

Fixed Fire Fighting “SAFE” stations



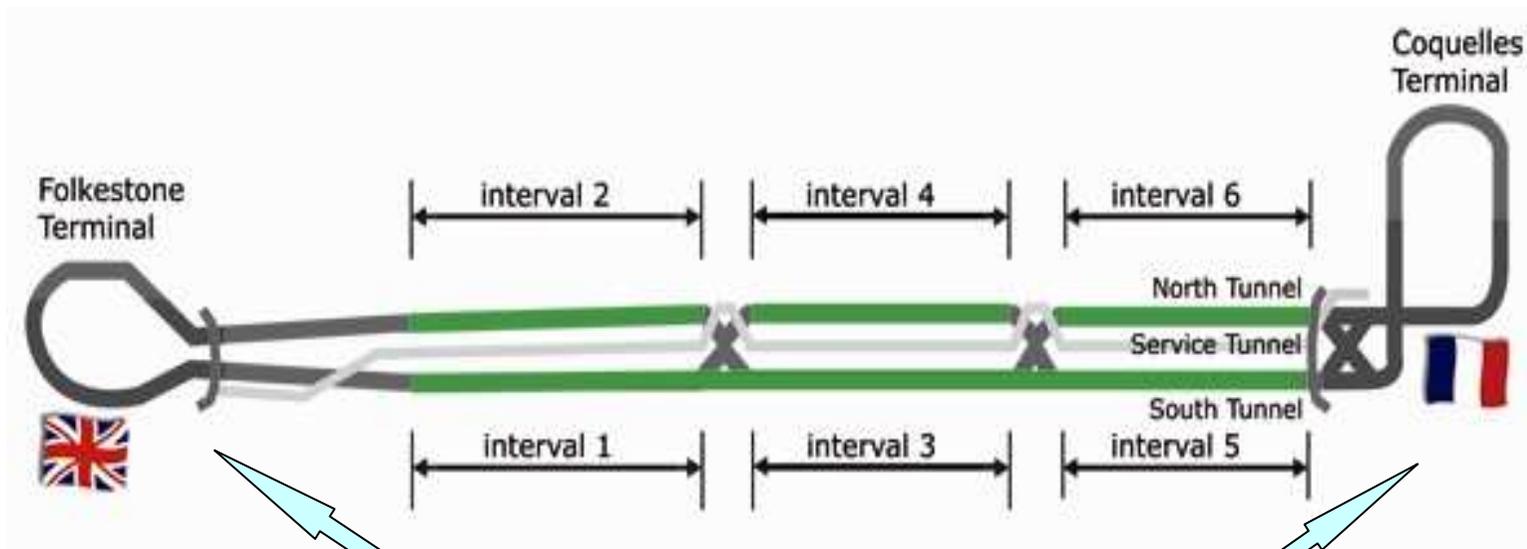
- Fire protection options considered :
 - » Enclosed wagons concept not compatible with business model because it would restrict the size and weight of lorries carried
 - » Fire fighting on board the trains is not the solution
 - previous project OBFSS abandoned on reliability, availability, performance issues
 - » Fixed fire fighting installations in the tunnel are the solution...
 - » **SAFE objective:**

If a fire is detected, the shuttle will reach the next station where a water mist aspersion will stop the fire propagation and reduce the fire size, protecting the tunnel infrastructure and easing the extinction by the Fire Services.



Fixed Fire Fighting "SAFE" stations

- The installation must be, amongst other things:
 - » Accessible in under 15 minutes, reversible, able to fight a fire which has been burning for 15 minutes.



A Copyright has been registered for :

**Fixed Fire Fighting
Installation in Railway
Tunnel**

**Fire Fighting Stations
already available
outside the FR & UK
portals**



Fixed Fire Fighting “SAFE” stations

- **Effects on the fire**
 - Rapid decrease in temperature
 - Fire efficiently confined
 - Important smoke scrubbing
 - Create environment favourable for emergency services intervention and evacuation of people
- **Implementation**
 - No necessity of keeping area fully enclosed
 - System starts at once
 - No danger to people or environment
 - Suitable for combustible materials and flammable liquids
- **Results**
 - Operational losses minimised
 - Minimum usage of water resource
 - Minimal contamination and **maximum success in fire fighting**

Fixed Fire Fighting "SAFE" stations

- » 4 stations 870m long
- » Detection systems
- » Video camera
- » RCC supervision

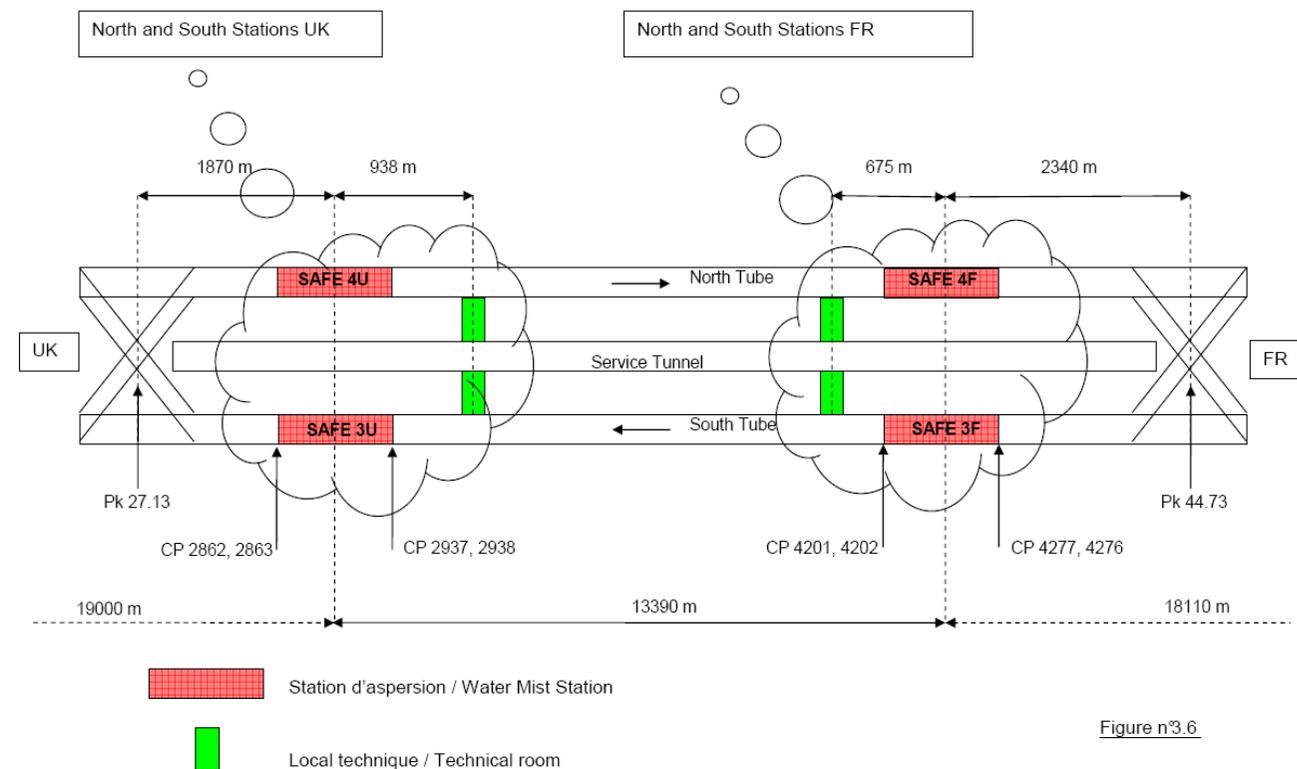
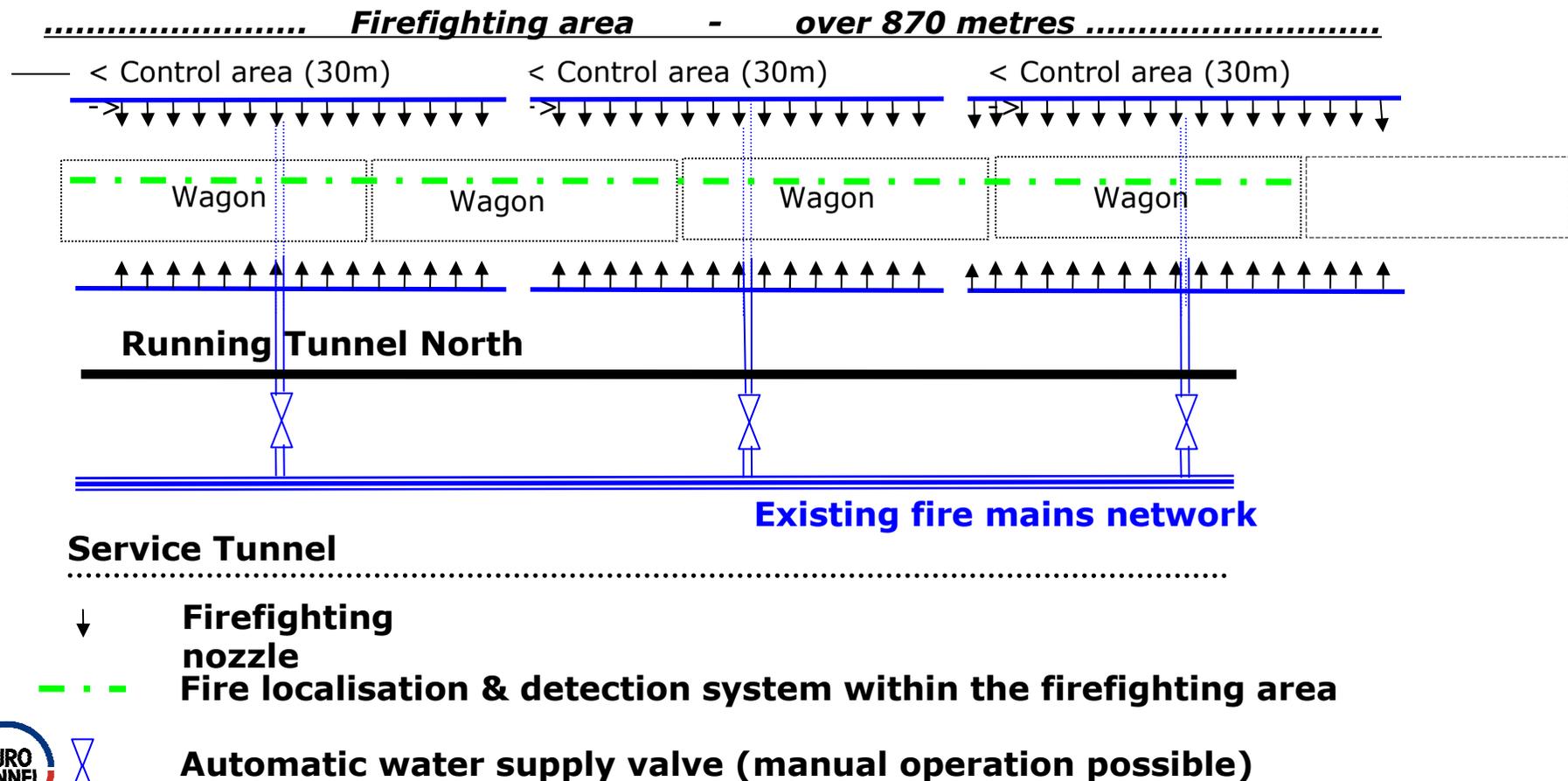


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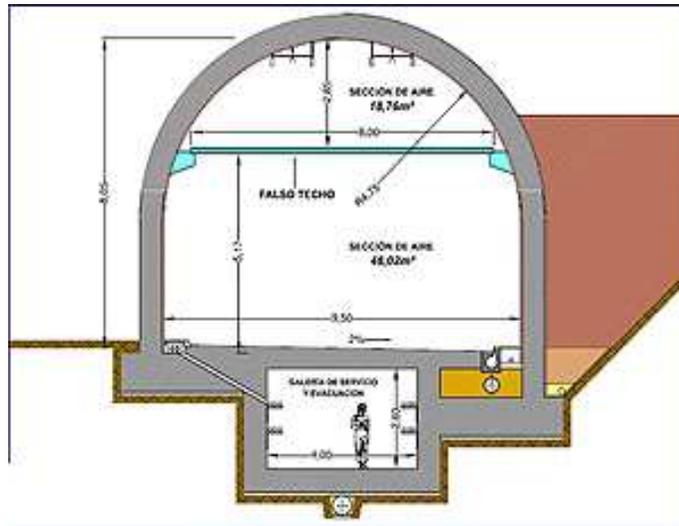
Fixed Fire Fighting "SAFE" stations

Outline diagram of the stations



Fixed Fire Fighting "SAFE" stations

- San Pedro de Anes test tunnel



- Measurement concept based on SOLIT project

- » Values measured: Temperatures; Concentration of gases; Radiation; HRR calculation; Thermal video

- Type of fire:

- » Combustible materials fire (Class A)

- Class A : ordinary combustibles (wood, paper, cardboard, fabrics, etc.)
- Class B : flammable liquids and solids (hydrocarbons, oils, alcohols, paints, plastics, etc.)
- Class C : gases (natural gas, butane, propane, etc.)
- Class D : metals (magnesium, aluminium, sodium, etc.)

- » Intensity at the time of activation: 100 MW and 150 MW

- » Representative of Eurotunnel risk (to scale)



Fixed Fire Fighting “SAFE” stations

■ CONTRACT DIVIDED INTO 2 TRANCHES

1 – Firm tranche

- System qualification trials off site - **Successfully completed in April 2010 with 4 tests**
- Design of water mist system / detection - **Completed in 2010**
- Installation of first station (120 metres) in the tunnel for final approval – **successfully completed and tested in November 2010**

2 – Conditional tranche

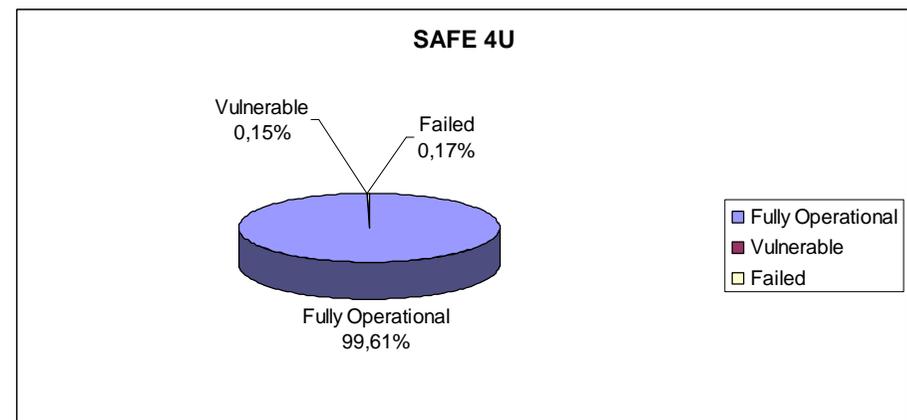
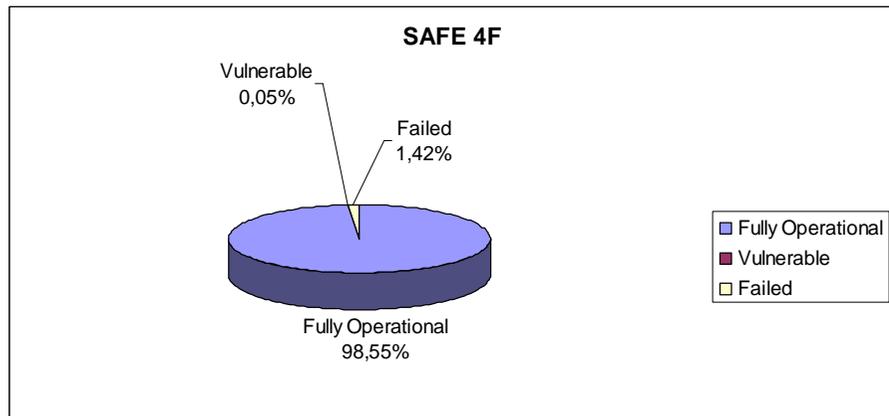
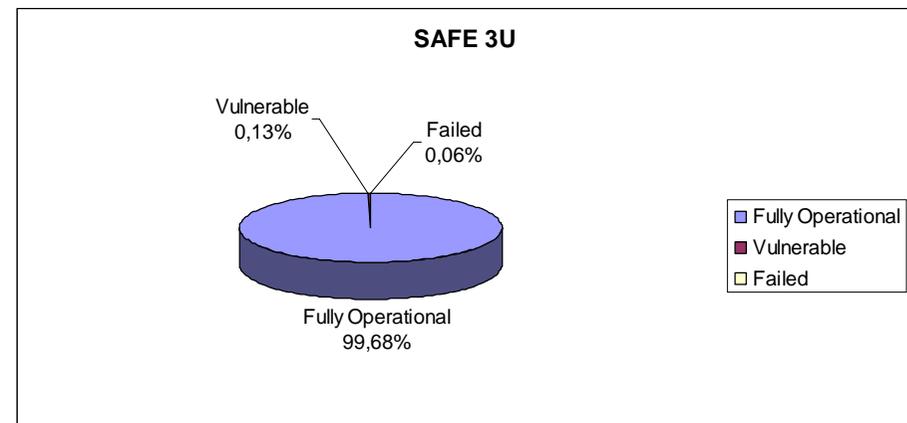
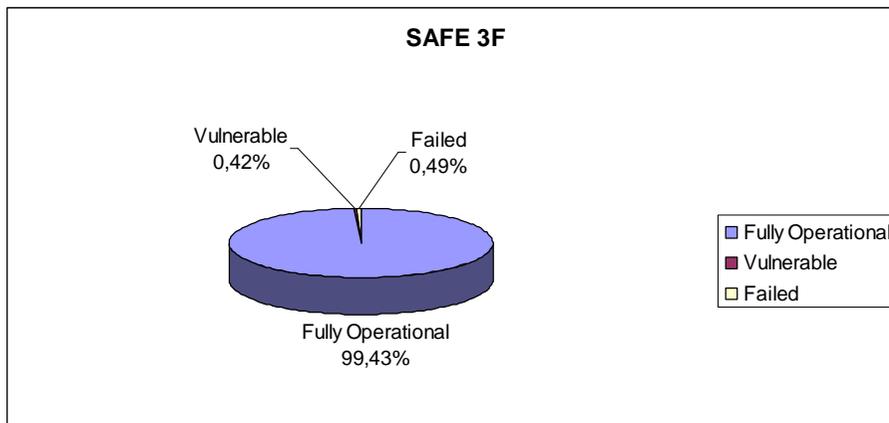
- Upgrade and completion of first station (to 870 metres)
- Installation and commissioning of 3 other SAFE Stations
- **Civil Engineering and Equipments Contracts were placed in 2010 – Full SAFE installation works have been completed in line with the programme and the stations have been put in operation in November 2011.**



Fixed Fire Fighting "SAFE" stations

- **SAFE stations operational for over 6 months**

- Initial results



Fixed Fire Fighting “SAFE” stations

- **The SAFE stations are periodically operated by our First Line Of Response as part of their programme of exercises.**
- **To date, the failures of the SAFE stations have been limited to necessary adjustments as described below :**
- **Power Supply- In the early stages of operation there were some failures of the UK stations caused by incoming power supply disruptions.**
 - Modifications were made to the system. This is now resolved.
- **Detection System- There have been problems with the heat detection system that have led to failures.**
 - Components have been replaced (LHD, DTS) and the system has been adjusted.
- **Heat Exchangers- The first version of the heat exchangers fitted to the pumps had several failures.**
 - These have now all been replaced with stainless steel version

Summary

- **Continual improvement to checking process during loading and ongoing review of technology**
- **New FLOR process (First Line of Fire Services) is in place**
- **SAFE programme has been achieved on target for completion in 2011**
- **C.T. Safety Authority and Lead Insurers accompany the project :**
 - » **Attended SAFE trials in Spain (April 2010)**
 - » **Site visits to Coquelles to view first SAFE zone construction**
 - » **Attended the first SAFE testing in the Tunnel (November 2010)**
 - » **Witness final Tests On Completion**



- **Tunnel Interoperability**

Channel Tunnel Interoperability



■ The Channel Tunnel infrastructure is making decisive steps toward the European Interoperability:

- » The Tunnel is now accessible to any Freight locomotive being compliant with the TSIs.
- » The conditions for giving access to new passenger train services are under review and should lead to opening the Tunnel access to new train configurations and new Services :
 - ➡ The access to shorter trains (200m) is envisaged.
 - ➡ With the active support of Eurotunnel, major train operators and train manufacturers are working on the preparation of new services.



QUESTIONS ?

