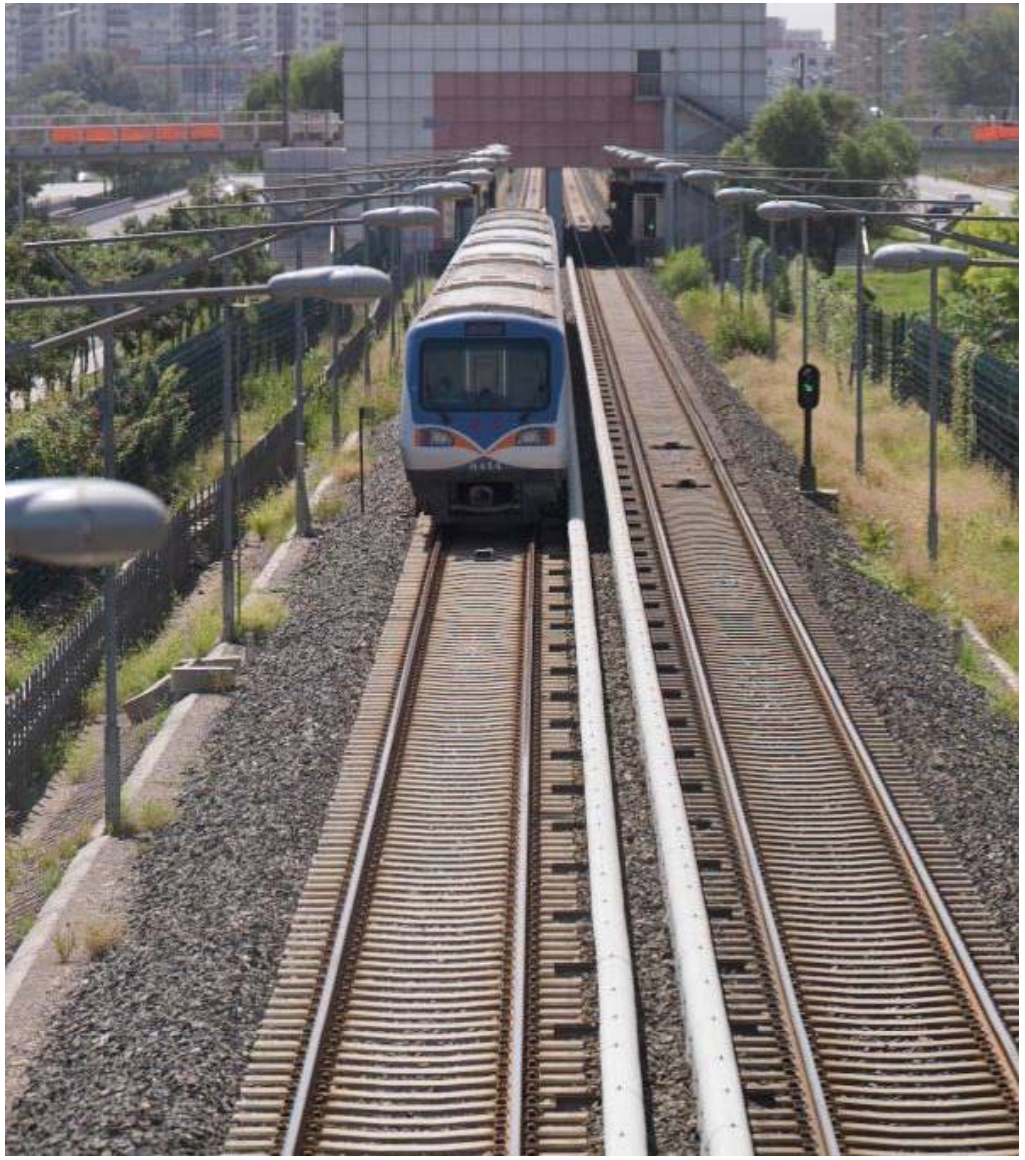
Lloyd's Register: Transportation

Competence Management for Safety Critical Roles



Andrea Har
Senior Consultant

Lloyd's Register Rail (Asia) Ltd.
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250 YEARS

Lloyd's Register
LIFE MATTERS

Agenda

- Major accidents in high reliability industries
- Why we need to manage competence?
- What is competence and competence management?
- Managing competence – Where to start?
- Who will be involved?
- Case Studies
- Conclusion

Kid controller: Boy directs JFK air traffic

Kid: "Jet Blue 171, clear for takeoff….."

Pilot: "Clear for takeoff, 171"

Adult: "This is what you get, guys, when the kids are out of school"

Pilot: "Wish I could bring my kid to work"

Major accidents (1) Esso Longford Gas Explosion

- Esso Gas Plant, Longford, Australia, 1998
- Explosion, 2 fatalities, 8 injuries

"This is probably due to the lack of knowledge to operate a hazardous process…"

Major accidents (2) Daegu Subway Fire

- Daegu Metro station, South Korea, 2003
- Arson fire, >198 fatalities, >147 injuries

"Apart from the ineffective fire safety design, there was a lack of emergency and contingency planning, Control Centre Operator and Train Driver failed to address the emergency situation as required in their roles….."

Why do we need to manage competence?

- At organization level
  - Reduce risks
  - Satisfy legal and regulatory requirements
  - Meet the organization's business objectives

- At staff level
  - Know what competence is expected of them
  - Receive appropriate training, development and assessment
  - Have appropriate experience
  - Maintain or improve their competence over time

What is competence?

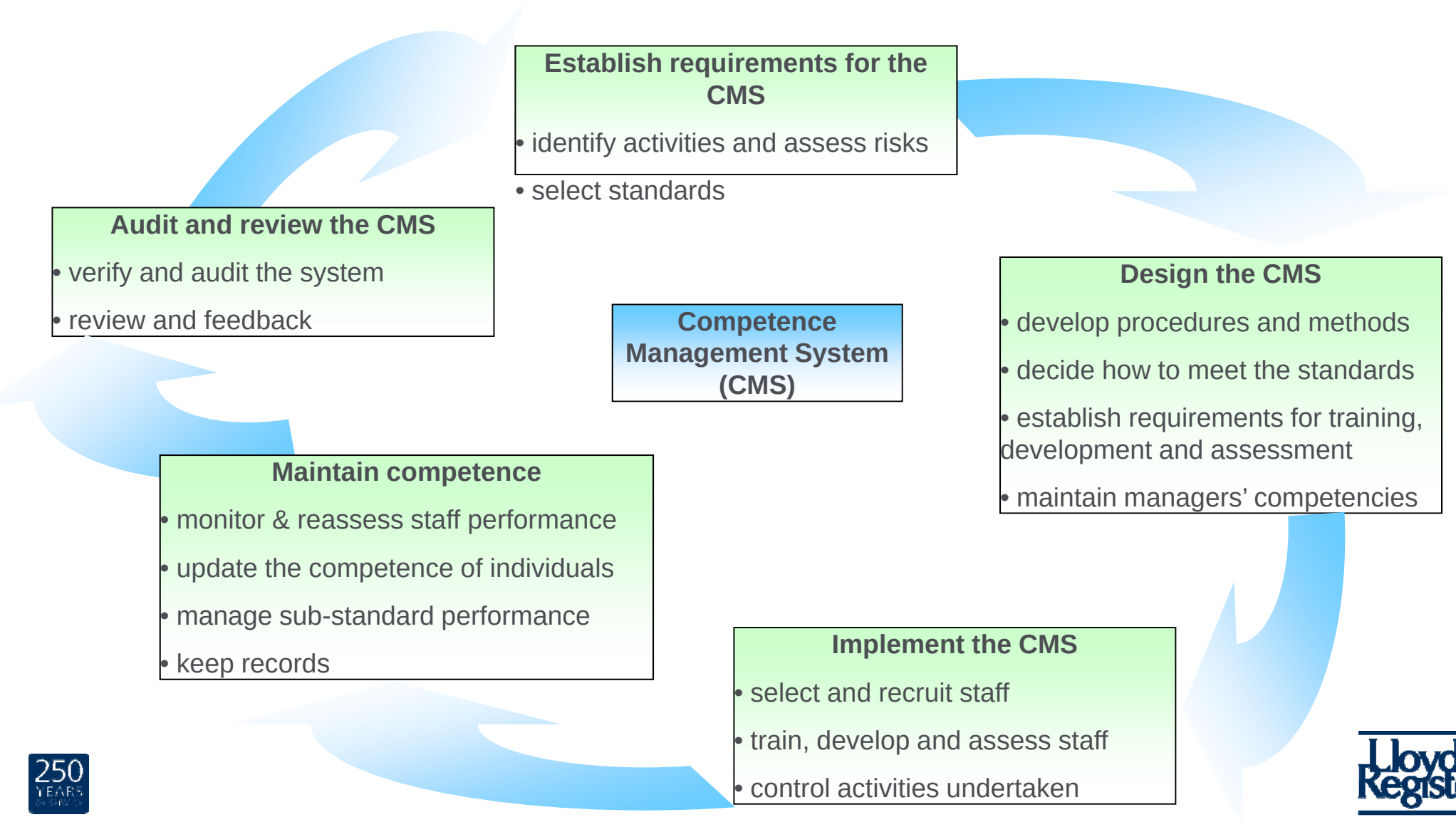
- Competence is the ability to undertake responsibilities and to perform activities to a recognized standard on a regular basis. Competence is a combination of practical and thinking skills, experience and knowledge.

Source: Developing and Maintaining Staff Competence, HSE (2002), ISBN 0 7176 17327

What is competence management?

- Competence management is a proactive and systematic process, which integrates a number of activities including: recruitment & selection, training & development, qualification, continuous assessment and performance monitoring.

Managing competence - where to start?



Who will be involved?

Key Steps in CMS	CMS specialist	Safety	O&M	Training	HR
Establish requirements	L	S	S	S	S
Design	L	S	S	S	S
Implement and maintain					
•Recruit & select	A	S	S	A	L
•Train & develop, qualification	A	S	S	L	S
•Control & on-going assessment	A	S	L	S	S
Audit and Review					
•Internal	A	L	S	S	S
•Independent	L	S	S	S	S

Index:

L – Lead, **S** – Support, **A** – As needed

Case study (1)

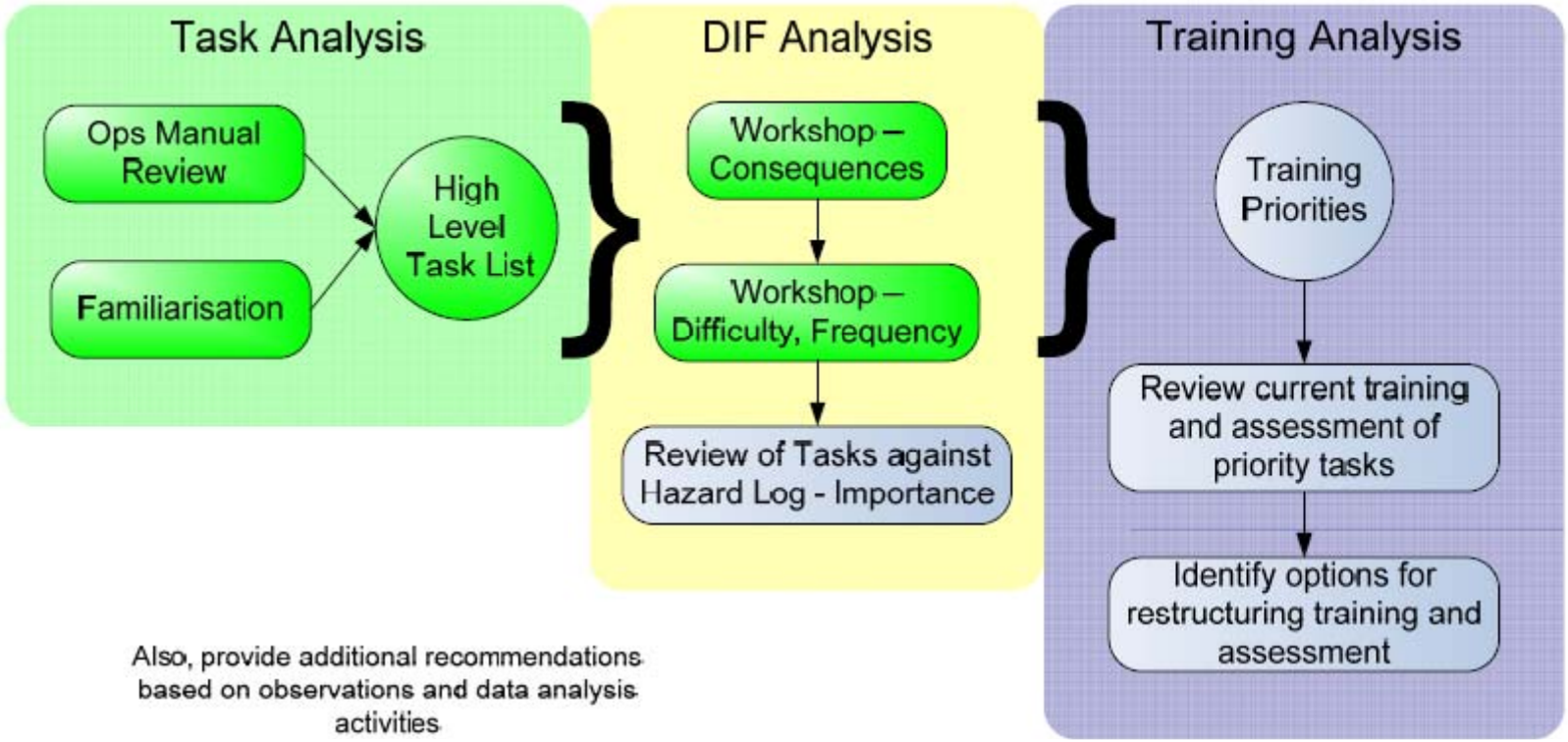
- **Practical example to look at one of the steps in "Design the CMS"**

- **Scope of work:**
  - Establish requirements for training of key roles in high reliability industry
  - Tools: Risk Based Training Needs Analysis (RBTNA)

- **The need for the work:**
  - Potential to lose key operational staff
  - Modify existing training programs to fast track training for key roles

Case study (1)

- **RBTNA Process**



Case study (1)

Outcome and benefits:

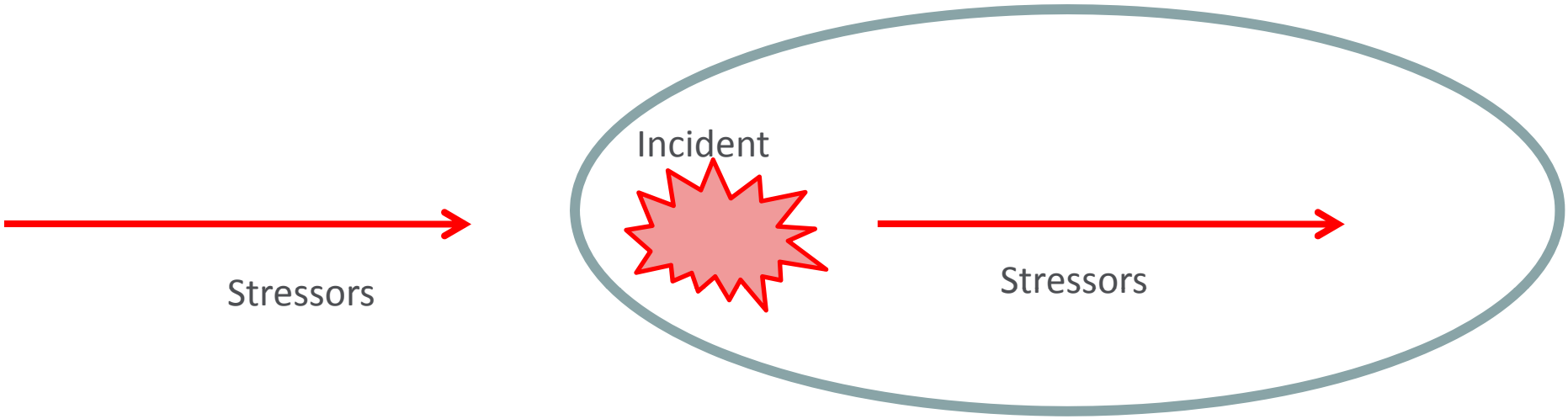
- Assist in making risk-based decision to review training programs & allocate training resources
  - Reduce training time associated with modules that do not contain high priority tasks
  - Optimize training approaches used for high priority tasks (e.g. practical training)

- Generate strategies to reduce the impact of potential loss of staff through the review of the linkages between tasks, risk and the existing programs
  - Streamline the current requirements for staff to convert from other roles
  - Offer opportunities for career progression
  - Develop graduate program

Case study (2)

- **Example to look at the step in "Implement the CMS"**
- **Training solutions for Train Crew in Train Evacuation**

Source: Kevin Lohan (Workshop on Training and assessing staff ability to cope with pressurised and dangerous situations, Asia 2010)


Incident
Stressors
Stressors

Learning Styles

Scenario 1

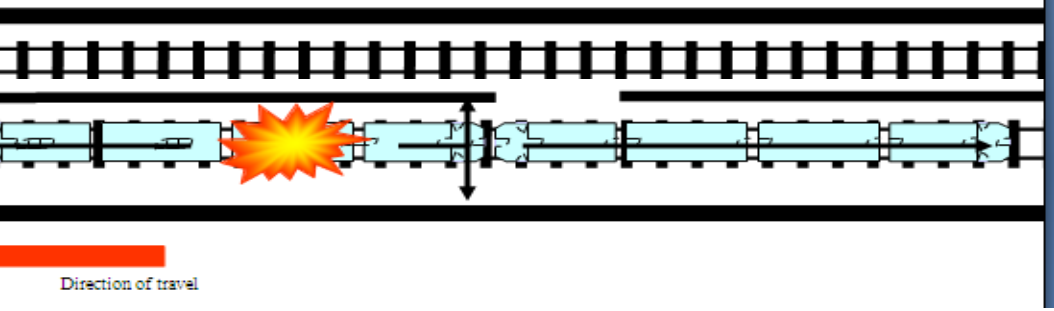
The 3rd car is disabled. An explosion has occurred between the guard and driver.

The black arrows indicate the possible routes of egress for passengers.

Considerations;

- The driver would control egress from car 1&2 through the terminal end doors and both side crew doors.
- The guard would control egress from cars 3&4 through the crew doors and the remainder of passengers in cars 5 to 8 through the terminal end door.

Note; When evacuating through the crew cab doors, an assessment would need to be made as to the ability of the passengers to negotiate the crew stairs. Volunteers could possibly assist others at the base of these stairs. Crew should make an announcement where possible indicating the correct method of negotiating these steps and the hazards. (i.e. climb down backwards like a ladder and awareness of the fact they are slightly recessed from the body of the train).



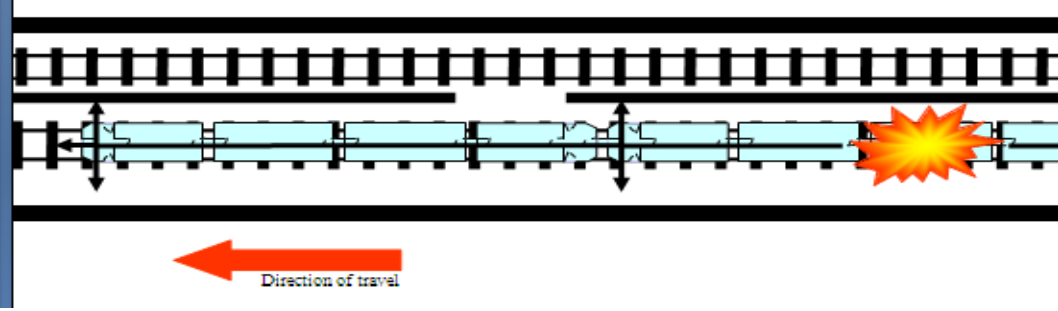
Direction of travel

Emergency evacuation of a train in a tunnel

Scenario 2

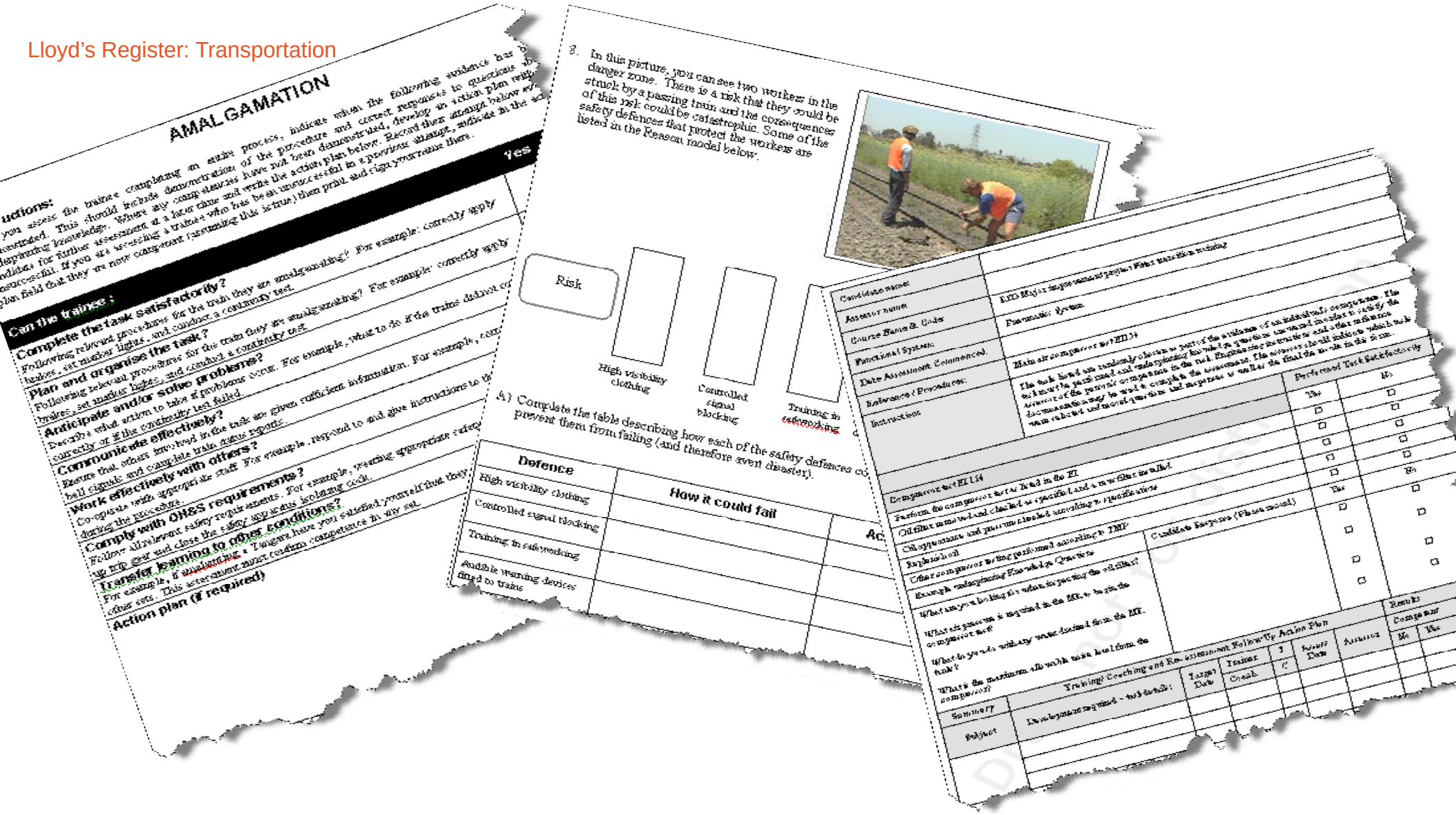
The 7th car is disabled. An explosion has occurred behind the guard.

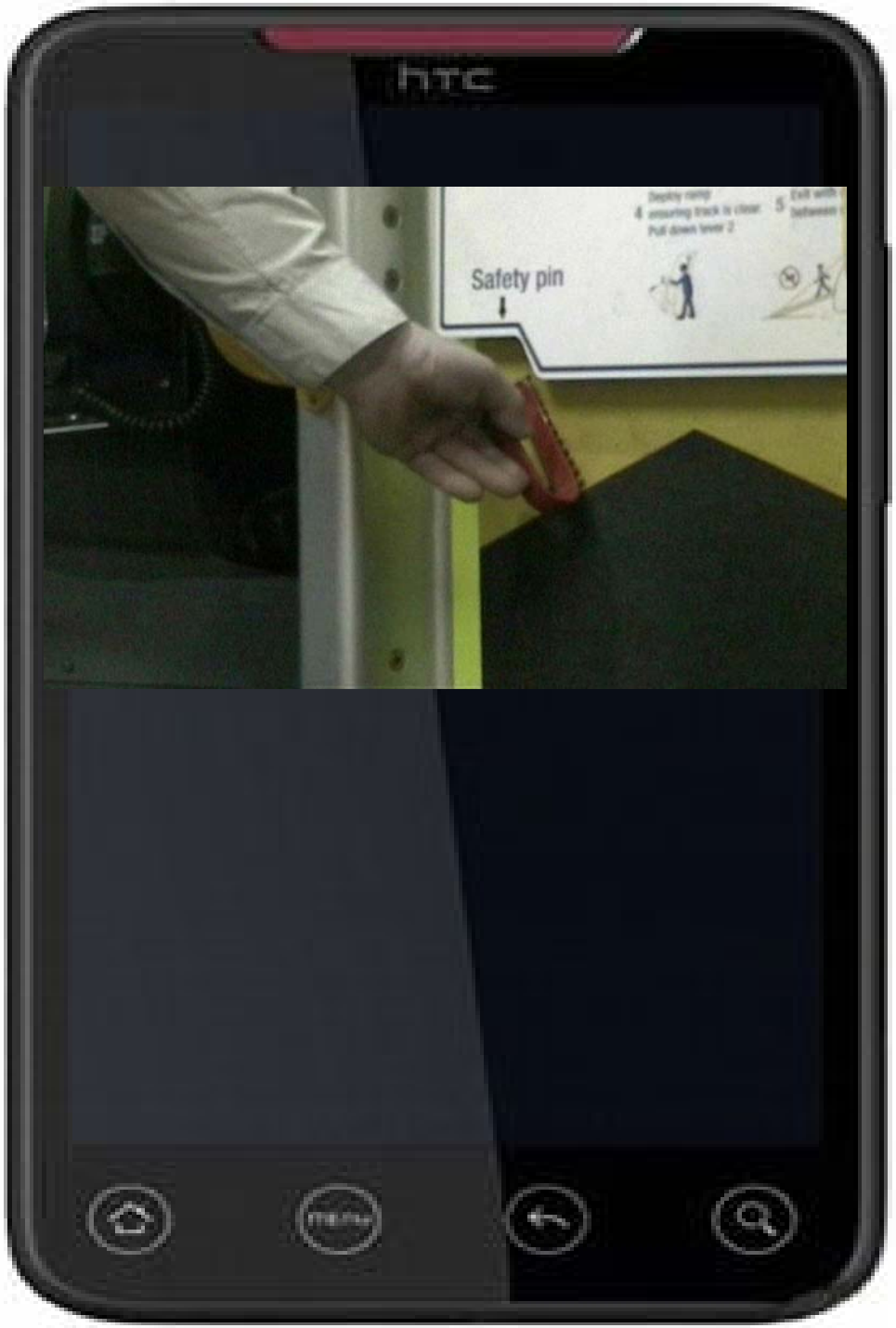
- Guard to open the crew door between car 4 and 5.
- Guard to evacuate passengers from cars 5 and 6 through crew doors. Passengers unable to exit via crew stairs to move towards the leading car.
- Driver and guard to evacuate cars 1 to 4 through the terminal end door in leading car and through the crew doors.
- There is a possibility the guard (or someone else) may be able to access the rear car and activate the EDR. If this is not possible, Emergency Services should be advised of the need to evacuate this car first.



Direction of travel


EXIT




htc
Safety pin


htc
Do you know your reporting location if you had to evacuate the station right now?

In summary….

- We need a proactive and systematic way to manage competence for safety critical roles
- Adopt risk-based approach to manage competence and allocate adequate resources to get the optimal outcome

- **First Step: Develop a framework for competence management**

Thank You for your attention!

Questions
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For more information, please contact:

Andrea Har

Senior Consultant, Transportation

Lloyd's Register Rail (Asia) Limited
Suite 3501 China Merchants Tower
Shun Tak Centre
168 - 200 Connaught Road
Central, Hong Kong

T +852 2287 9347
E andrea.har@lr.org
w www.lr.org/transportation