

Classification of Causes

Immediate cause

Immediate cause - To identify the immediate cause the following need to be established:

- (a) Did any individual involved do or fail to do anything that contributed to the accident? (**the unsafe or sub-standard acts**)
- (b) Did the job or surrounding physical conditions contribute to the accident? (**the unsafe or sub-standard conditions**)
- (c) Did factors under the control of others contribute to the accident? (**other contributory factors**)

Where the immediate cause is identified as an unsafe act then the act must be classified using the fair culture flowchart.

[The Guide to using the fair culture flowchart contains guidance on how to undertake this classification.](#)

Underlying causes

Underlying cause(s) - Having identified the immediate cause, to find the underlying causes the following need to be established:

- (a) Why did the unsafe or sub-standard act(s) occur?
- (b) Why did the unsafe or sub-standard condition(s) exist?
- (c) What failure in the supervisory/management system permitted the unsafe or sub-standard act(s) or condition(s) to exist?

[Further guidance on identifying the causes is provided in Part 4 of the Investigations Handbook which is available from Connect.](#)

10 Incident Factors - the following provides a brief overview of the factors that are relevant to the incident factors:

Communications - how information is communicated to others.

Practices and processes - refers to the rules, standards, processes and methods of working which guide and structure how certain activities are undertaken.

Information - concerned primarily with information that is written and used to support an activity.

Equipment - refers to any equipment, e.g. a motor vehicle, that is used to undertake or support an activity and can be a factor if it is not being used as intended, it is faulty, its design is not compatible with its use, or the layout is not in the order in which it is used.

Knowledge, skills and experience - can be a factor in an accident/incident if the individual(s) involved did not have the appropriate knowledge to perform safely or if they were not familiar with the circumstances in which they found themselves.

Workload - relates to the demand created by particular activities and by a combination of a number of factors, i.e. the task, its context and the individual's skill, experience, etc.

Supervision and management - Supervisors and managers can be an underlying reason because of the decisions they make about resources, budgets, work allocation and planning. May also have a more direct impact through the example they set and the processes and responsibilities they have for detecting and managing errors, or the potential for errors.

Work environment - refers to things such as lighting levels, noise, temperature and vibrations which can act as distractions, impacting on an individual's performance.

Teamwork - concerned with how we work together and coordinate to achieve safe performance.

Personal - refers to an individual's ability to maintain attention and focus whilst at work and is concerned with fatigue and physical and mental well-being and the individual's state of attention.

[Further guidance on applying the 10 Incident Factors is available in the Guide to using to 10 Incident Factors.](#)

Operational Close Calls

Guidance on Risk Ranking

- Score on the basis of:
1. Identify worst foreseeable outcome (across the top)
 2. Estimate how close this outcome was to happening (down the left)

Enter codes shown in boxes on page 1

<u>Worst credible outcome</u>	No foreseeable safety loss	Injury	Major Injury	Single Fatality	Multiple Fatalities
<u>Closeness to happening</u>	O	L	M/L	M	H
High chance of happening	D	Low risk	Medium risk	Potentially Significant	Potentially Severe
Medium chance of happening	H	Low risk	Low risk	Medium/High Risk	Potentially Significant
Low chance of happening	J	Low risk	Low risk	Low risk	Medium risk
No foreseeable safety loss	K	Nil			

Use the following statements to help categorise the specific incident being risk ranked:

Foreseeable Outcome

Ranking

Multiple Fatalities includes	<ul style="list-style-type: none"> ▪ High speed collision (> 40 mph) or ▪ Derailment > 15 mph, train outside the kinematic envelope (potential for roll-over, secondary collision with another train or collision with a line side structure) 	H
Single Fatality includes	<ul style="list-style-type: none"> ▪ Multiple major injuries or ▪ Collision (> 15 mph but < 40 mph) ▪ Derailment > 15 mph, train inside the kinematic envelope (low likelihood of roll-over, secondary collision with another train or a collision with a line side structure) ▪ Level crossing collision with road vehicle or pedestrian 	M
Major Injury includes	<ul style="list-style-type: none"> ▪ Low speed collision or derailment (< 15 mph) ▪ Minor reportable injuries 	M/L
Injury includes	<ul style="list-style-type: none"> ▪ Low speed collision or derailment (< 15 mph) ▪ Non reportable injuries 	L
No foreseeable safety loss	<ul style="list-style-type: none"> ▪ No consequences identified - The design of the railway or controls in place prevented the possibility of consequences arising 	O

Closeness to happening

Ranking

High chance of happening	<ul style="list-style-type: none"> ▪ Potential accident only prevented by restricted time window for accident or recovery action 	D
Medium chance of happening	<ul style="list-style-type: none"> ▪ Potential accident prevented by some intervention 	H
Low chance of happening	<ul style="list-style-type: none"> ▪ Potential accident prevented by automatic intervention 	J
No foreseeable safety loss	<ul style="list-style-type: none"> ▪ Escalation to accident highly unlikely – The design of the railway or controls in place prevented the possibility of an accident occurring 	K

Dangerous Goods Report

General

Place a 'X' in appropriate tick box of form.

Enter times in 24 hour format

This form may also be used by train operators to report events occurring in sidings, yards and depots that **are not** managed by Network Rail

SECTION 3 - Event classification

Incidents

- Fire on locomotive** hauling block trains of Dangerous Goods
- Fire on wagon** carrying Dangerous Goods
- Fire on locomotives/vehicles adjacent** to vehicles carrying Dangerous Goods

- Leakage, spillage or other escape** of Dangerous Goods
- Insecure end caps** on outlet pipes from tank wagons **involving leakage** of product
- Improperly secured** valves, manlids, covers or doors giving access to load

- Collision, derailment and other mishaps** involving wagons carrying Dangerous Goods
- Defect of wagon or container** giving rise to risk of fire, explosion or leakage of Dangerous Goods (*including confirmed hot axle box detection and brake defects e.g. dragging brakes and hand brakes left on*)

Irregularities

- TOPS and documentation error**
- Train incorrectly formed**
- Labelling, placarding or marking errors**
- Insecure end caps** on outlet pipes of tank wagons **NOT involving leakage** of Dangerous Goods
- Suspect incidents with **no fault found**
- Unconfirmed hot axle box detection**

- Wagon or container defects **NOT requiring attendance of the Emergency Services** (these include Wheel Impact Load Detector (WILD) and Wheelchex activations)

SECTION 3 - Dangerous Goods Class

Explosives	1	Flammable solids	4.1	Harmful substances	6.1B
Flammable gases	2.1	Substances liable to spontaneous combustion	4.2	Infectious substances	6.2
Non-flammable non toxic gases	2.2	Substances which give off flammable gases when wet	4.3	Radioactive Substances	7
Toxic gases	2.3	Oxidizing substances	5.1	Corrosives	8
Highly flammable liquids	3A	Organic peroxides	5.2	Miscellaneous dangerous goods	9
Flammable liquids	3B	Toxic substances	6.1A	Mixed D.G. (UN8989)	-

SECTION 3 - UN Number

The 4-digit number of the goods being carried Use the UN Number quoted on train consist or shown on the wagon placard.

SECTION 3 - Alpha code

The 2-letter code identifying the telephone number for reporting incidents and summoning 24 hour assistance of specialists in an emergency. The Alpha code is displayed immediately following the UN number on the train consist, or on a J6 enquiry.

Events occurring in sidings, yards and depots that are not Network Rail managed infrastructure may also be reported using this form