



STATE OF RAILWAY SAFETY IN SOUTH AFRICA
ANNUAL REPORT 2008 - 09



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INTRODUCTION:

STATE OF SAFETY REPORT (2008/09)



Introduction: State of Safety Report (2008/09)

The State of Railway Safety Report provides an assessment of safety performance of the railway operators issued with safety permits by the Railway Safety Regulator.

The assessment of the overall safety performance of the railway industry is crucial in identifying areas requiring urgent intervention as well as assessing the impact of the work of the RSR. In this regard, the State of Railway Safety report provides the RSR, Parliament, the Department of Transport, the railway industry and the public at large with the necessary information to assess safety performance in railways. This report serves to provide a broad overview of the safety performance by the railway operators in different occurrence categories such as collisions, derailments, security and other railway occurrences. It furthermore includes the occurrence costs for major operators. This report will therefore play a key role in highlighting areas that require focused attention by both operators and the RSR.

The 2008/09 State of Safety report is the first report produced following the amendments to the reporting requirements as contained in the revised South African National Standard: Railway Safety management: Part 1 General (SANS 300-1:2009 edition 2). Fundamental to the RSR being able to execute its mandate of overseeing safety of railway transport is being in possession of meaningful management information in respect of railway occurrences and security incidences. Certain shortcomings were found in the 2005 version of the occurrence reporting requirements contained in SANS 3000-1, which resulted in the RSR not being in a position to make meaningful analysis of the railway occurrence data. The revised reporting requirements and categories have now placed the RSR in a better position to provide meaningful analysis of railway occurrence data.

In addition, the revised reporting requirements make provision for the capturing of immediate and root causes of occurrences, which will enhance the RSR's ability to undertake meaningful statistical analysis. The RSR has furthermore instituted a mechanism where occurrence data is verified on a quarterly basis to ensure a high degree of data integrity. In addition, guidelines have been issued to all operators to ensure correct data recording and reporting. The RSR is currently working on measures to address late submissions by operators and the delays resulting from the data verification processes.

Despite the challenges experienced in compiling the report, the 2008/09 State of Safety report provides a useful assessment of the state of safety in railways. The report makes important observations in its conclusions based on the occurrence data gathered, namely, that safety performance in railways requires urgent attention. The report pays particular attention of the following key areas;

- Collisions and Derailments
- Unauthorised Movements
- Level Crossings
- Injuries and fatalities
- Security Related Occurrences and
- Railway Occurrence costs

It should be noted that the collective activities of the RSR and operators must be channeled towards the achievement of improved safety performance in railways. In this regard, the state of safety report will play a central role in measuring overall performance on railway safety as well as assist in identifying areas requiring urgent attention.



EXECUTIVE OVERVIEW - STATE OF SAFETY

EXECUTIVE OVERVIEW

INTRODUCTION

The State of Railway Safety Report (SoS) provides an assessment of safety performance of railway operators issued with Safety Permits by the Railway Safety Regulator (RSR).

The assessment of the overall safety performance of the railway industry is crucial for identifying areas requiring urgent intervention as well as assessing the impact of the work of the RSR. In this regard, the SoS provides the RSR, Parliament, the Department of Transport, the railway industry and the public at large with the necessary information to assess safety performance of railways. This SoS serves to provide a broad overview of the safety performance in key categories of occurrence reporting as well as the occurrence costs of the two major operators, namely Transnet Freight Rail (TFR) and Metrorail. This report will therefore play a key role in highlighting areas that require attention by both operators and the RSR.

1. Collisions and Derailments

The rate of derailments and collisions remain high and this is mainly apparent in freight rail operations, particularly in Transnet's Freight Rail operation. Over 90% of Transnet Freight Rail occurrence costs are directly attributed to derailments and collisions. This has direct impact on the efficient operation of the freight rail system as poor safety performance impacts directly on the efficiency and competitiveness of rail freight transport. As a consequence, derailments have led to costly delays on freight corridors leading to the cancellation of trains due to accidents and other disruptive security incidents such as theft of copper cables. Transnet Freight Rail (formerly Spoornet) has incurred huge losses resulting from incidences related to the derailment of trains. For example, in its annual report (2007/08), Transnet attributed, amongst other factors, the decreased volumes on the coal line to ongoing service disruptions resulting mainly from derailments and other operational issues, such as cable theft and load shedding.

2. Condition of railway infrastructure and rolling stock

The condition of aging railway infrastructure and rolling stock has led to constant failures in railway operations, and in the case of train control equipment, to the constant introduction of inherently less safe manual procedures. A notable number of accidents that the RSR investigated (mainly in the commuter rail environment) over the years occurred when manual procedures were put in place, often resulting in non-adherence to operating procedures.

The commuter rail system operated by PRASA is of major concern as it is battling to provide a safe and reliable service due to poor condition of the infrastructure and rolling stock in addition to insufficient capacity to meet the passenger demands. The estimated investment backlog of the commuter rail service is estimated to be around R20bn whilst Rolling Stock recapitalisation requirements are estimated at R60bn.

The following are key concerns;

- It is estimated that 40% of the fleet is over 37 years old and one-third is constantly out of service leading to poor performance, safety and reliability.
- The signalling system is at the end of its economic life with only 14% of the 162 signalling installations having not exceeded their design life.

Although the RSR has noted increased investment in key areas to

stabilise the rail commuter system, we are of the view that more needs to be done in this area. The RSR's audits, inspections and occurrence investigations findings point out the need for urgent investments in safety critical infrastructure and rolling stock.

3. Capacity to meet demand and manage safe and reliable railway operations.

Directly linked to poor state of infrastructure and rolling stock is the inadequate technical skills level to meet the demands of running safe and reliable railway services. The RSR's audits and investigations have revealed challenges related to operators' not having adequate technical capacity to effectively maintain and operate the rail system. Moreover, the RSR's investigations have raised serious concerns around the inability of safety critical personnel (e.g. Train Drivers) to deal with abnormal conditions particularly linked with system failures. The immediate causes of a notable number of accidents have as a result, been directly linked to human error.

4. Security (including vandalism & theft of operational assets), personal safety in trains and stations

Vandalism and theft of railway assets continue to pose a major challenge in the railway environment. Of major concern is the theft of copper cables. A number of RSR's accident investigations have revealed that the theft of railway assets impacts negatively on the safety and reliability of railway operations. The theft of signal wires often impacts on the working of the train control system and directly renders the system useless in many parts of the network, leading to reliance on verbal instructions and manual operations which often results in serious safety challenges. In many instances, the theft of assets has directly led to accidents, train delays & cancellations amounting to millions of Rands in losses.

5. Personal safety in trains and stations.

The RSR is encouraged by the notable improvements in reducing the levels of crime relating to personal safety in trains and stations. A steady improvement in this regard can be attributed to the ongoing successful roll-out of the Railway Police. This improvement will go a long way in addressing the most serious concern amongst the commuting public regarding personal safety within trains and stations.

Despite the improvements in personal safety in trains and stations, the number of incidences involving passengers falling or being pushed from inside a moving or stationary train or falling between the train and platform in both stationary and moving trains remains a major safety and security challenge.

6. Informal settlements along the rail reserve

The mushrooming of informal settlements along the rail reserve poses major safety risks in railway operations. It should be noted that the highest number of fatalities and injuries in railways are people struck by trains. The settlement patterns along the rail reserve often lead to people crossing active lines in illegal crossings which often lead to major safety risks. Even where bridges are provided, many people still choose to cross the line directly at great danger to themselves.

The other concern relates to the theft and vandalism of railway assets as current indications point to a high prevalence rate of theft around settlements alongside the rail reserve. These acts impact negatively on railway operations have similarly directly led to accidents, train delays and cancellations.

7. Key Conclusions

The RSR regulates a highly complex and dynamic industry with a long history of self regulation. The last five years have been a steep learning curve and have provided invaluable insights into possible interventions that may result in long-term sustainable improvement to safety performance in South Africa's railways.

In conducting an analysis of the state of railway safety in South Africa, a number of pervasive challenges loom large and remain a significant barrier to improved safety performance. The most critical of these challenges are highlighted hereunder:

- a) Derailments and collisions remain unacceptably high. Over 90% of Transnet Freight Rail occurrence costs are directly attributable to derailments and collisions. Derailments have led to costly delays and train cancellations on freight corridors resulting in significant impact on the economy.
- b) Direct costs associated with railway occurrences remain high. Rail occurrence costs for 2008/09 amounted to R635 million for Transnet Freight Rail (TFR) and the Passenger Rail Agency of South Africa (PRASA), which exclude indirect and consequential costs.
- c) Poor conditions and underinvestment in rail infrastructure and rolling stock result in constant system failures which either drive or result from the systematic erosion of safety. This is further evidenced by lack of compliance with safe operating procedures when systems fail and require activation of manual procedures.
- d) Inadequate capacity to meet demand as well as manage safe and reliable railway operations. This is evidenced by inadequate technical capacity in the operators' environments as well as inadequate infrastructure, including rolling stock to meet the rising demand.
- e) Human Factor management challenges in safety critical roles, (e.g. train drivers) which manifests itself in the low levels of competency of drivers in responding to abnormal conditions in the rail environment.
- f) Mushrooming of informal settlements along rail reserves poses major safety risks. This results in illegal crossings on the railway line and this is where the highest number of people struck by trains is recorded. This also results in difficulty to access the railway line by maintenance vehicles and personnel and also leads to vandalism and theft of safety critical assets.
- g) Vandalism and theft of railway assets remain a major challenge that impact directly on the day to day operations of railway services.
- h) Personal safety in trains and stations remain a key concern despite the notable improvement in this regard.
- i) Operational interface problems with freight and passenger services on shared infrastructure remains to be a big challenge. This manifests itself in the conflict between demands of both commuter and freight rail services.

8. Medium Term Focus

As a direct response to safety challenges in the railway environment, the RSR has refined its strategic focus and interventions over the medium term in order to achieve maximum impact and achieve sustainable improvement in safety performance. The following are the key interventions that will drive the RSR's focus over the medium term:

- The assessment of the condition/status of critical elements of infrastructure, rolling stock, operational systems and management (including personnel undertaking safety critical work) from both individual and overall systems perspective through the undertaking of adequacy and effectiveness audits.
- The interrogation of the extent to which the envisaged investment programs address the current investment backlogs and have the desired result of improving availability, reliability and operational safety.
- An assessment of the extent to which sufficient measures are taken to ensure that current assets can continue to be used in a safe manner whilst renewal programmes are being introduced.
- The interrogation of the level of compliance with railway safety standards as well as the RSR's directives resulting from safety audits, inspections and occurrence investigations.
- An analysis of the measures that are in place to ensure the safety and security of railway assets, passengers and the public within the railway reserve and surrounding environment.
- An interrogation of measures that are in place to ensure sustainable capacity for railway operations.

The various challenges faced by the railway industry continue to illustrate the need to significantly increase and strengthen the RSR's capacity in order to enable appropriate interventions. Over the medium term, the RSR will need to substantially increase its capacity in order to strengthen its safety compliance, monitoring and enforcement capacity.





RAILWAY OCCURRENCE DATA ANALYSIS

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1. INTRODUCTION

The State of Railway Safety Report (SoS) provides an assessment of safety performance of railway operators issued with Safety Permits by the Railway Safety Regulator (RSR).

The assessment of the overall safety performance of the railway industry is crucial for identifying areas requiring urgent intervention as well as assessing the impact of the work of the RSR. In this regard, the SoS provides the RSR, Parliament, the Department of Transport, the railway industry and the public at large with the necessary information to assess safety performance of railways. This SoS serves to provide a broad overview of the safety performance in key categories of occurrence reporting as well as the occurrence costs of the two major operators, namely Transnet Freight Rail (TFR) and Metrorail. This report will therefore play a key role in highlighting areas that require attention by both operators and the RSR.

2. BACKGROUND

The mission of the RSR is 'to oversee and promote safe railway operations through appropriate support, monitoring and enforcement guided by an enabling regulatory framework'. The RSR's mission must always be viewed alongside the Department of Transport's vision of "Transport, the heartbeat of South Africa's economic growth and social development." Safe railway operations are vital to the national economy and therefore critical to the sustainability of our freight logistics and public transport systems. The RSR's mandate is informed by the government's objective of ensuring the provision of a safe, affordable, accessible and reliable transport system.

The establishment of the Railway Safety Regulator constitutes a commitment to improve safety of the country's railways in a systematic and sustainable manner. It is equally an acknowledgement of a critical role railways continue to play in the overall transportation system in the country.

3. OCCURRENCE REPORTING

In order to provide the context to this report, it is important to note that the reporting requirements, which in turn results in the compilation of this report, are contained in the revised South African National Standard: Railway Safety Management: Part 1: General (SANS 3000-1: 2009 edition 2). Fundamental to the RSR being able to execute its mandate of overseeing safety of railway transport is being in possession of meaningful management information in respect of railway occurrences and security incidences. SANS 3000-1: 2009 describes the categories of railway occurrences that operators are required to report to the RSR. Certain shortcomings were found in the 2005 version of SANS 3000-1, which resulted in the RSR not being in a position to make meaningful analysis of the railway occurrence data. For example, collisions and derailments were captured as a single category in the SANS 3000-1 (2005), but were split into two categories in the 2009 version, which has enabled the RSR to hone in on the critical trends. Furthermore, in SANS 3000-1 (2005), security incidences were captured as a single item. This meant that theft and vandalism were lumped together with personal safety issues such as mugging, rape and robbery. In SANS 3000-1 (2009) nine categories of security incidences have been created, which again enables the RSR to focus its attention and to provide the SAPS with meaningful information in its efforts to combat crime.

Railway occurrence and security incident data are therefore captured in relevant different categories, which are broken down

into sub-categories, where appropriate, to facilitate meaningful analysis. Railway Occurrences are captured in the 11 categories, namely:

Collisions during movement of rolling stock (Category A); Derailments during movement of rolling stock (Category B); Unauthorised Movements (rolling stock movements exceeding limit of authority)(Category C); Level Crossing occurrences(Category D); People struck by trains during movement of rolling stock (Category E); People-related occurrences: trains outside station platform areas (in section)(Category F); Passenger- related occurrences: travelling outside designated area of train (Category G); People related occurrences: platform- train interchange (Category H); People related occurrences: station Infrastructure(Category I); Electric shock (Category J); Spillage/leakage, explosion or loss of dangerous goods (Category K); L = Fire (Category L).

Security incident categories are:

Theft of assets (impacting on operational safety) (Category 1); Malicious damage (vandalism) to property (impacting on operational safety) (Category 2); Threats (to operational safety) (Category 3); Hijacking of trains(Category 4); Crowd-related incidences(Category 5); Industrial action (Category 6); Personal safety on trains(Category 7); Personal safety on stations(Category 8); Personal safety outside station platform area (including yards, sidings and depots) (Category 9).

In addition, in SANS 3000-1: 2009, provision has been made to capture the immediate and root causes of occurrences, which enhances the ability to undertake meaningful statistical analyses.

In compiling the SoS, the RSR has been faced with a number of challenges regarding the interpretation of the management information. As at end of 2008/09 year, the RSR had issued 184 safety permits to operators. The key challenge is in relation to reporting by mainly small operators (chiefly siding operators) who made mistakes when allocating the railway occurrence and security incident data to correct categories. This related mainly to the definitions and interpretation of various occurrence categories. It should be noted that smaller operators also have capacity constraints with regard to occurrence data management, which was compounded by the revision of the occurrence reporting categories. However, the two largest railway operators (namely, Transnet Freight Rail (TFR) and PRASA referred as SARCC/ Metrorail in the year under review) submitted their occurrence data as per the requirements. Both operators' occurrence reports constitute over 90% of all reported railway occurrences during the year under review. As a result, much of the analysis of occurrence information in this report focuses on the 2 large operators.

The RSR has instituted a mechanism where occurrence data is verified on a monthly and quarterly basis to ensure a high degree of integrity. In addition, the RSR has issued guidelines to all operators to ensure correct data recording and reporting. The late submissions and delays resulting from the data verification processes have resulted in the delay in compiling this SoS.

4. KEY CATEGORY ANALYSES

4.1. INTRODUCTION

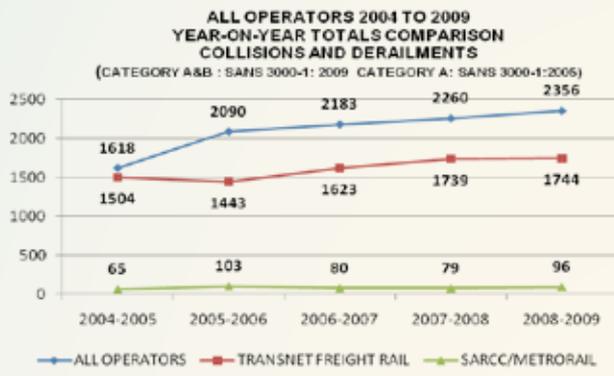
- 4.1.1. In this section of the SoS, railway occurrence and security incidents will be presented in graphical or chart format, analysed and commented on where appropriate for the entire railway industry and then separately for TFR and Metrorail.
- 4.1.2. Statistics for the five years from 2004/05 to 2008/09 will be provided in order to develop an understanding of trends in the industry as a whole.
- 4.1.3. As TFR and Metrorail are the two largest operators currently, a breakdown of the statics for the 2008/09 year

will be provided. This will provide an indication where both these operators and the RSR need to focus their resources to ensure an improvement in safety performance.

NOTE. Because of the changes in reporting categories with effect from the 2008/09 year it is not possible to make meaningful comparisons with previous year's figures, other than an interpretation of the category as a whole.

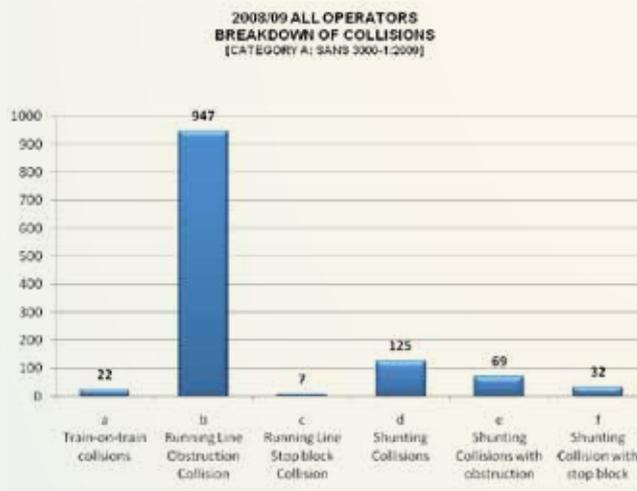
4.2. COLLISIONS AND DERAILMENTS

Chart 1



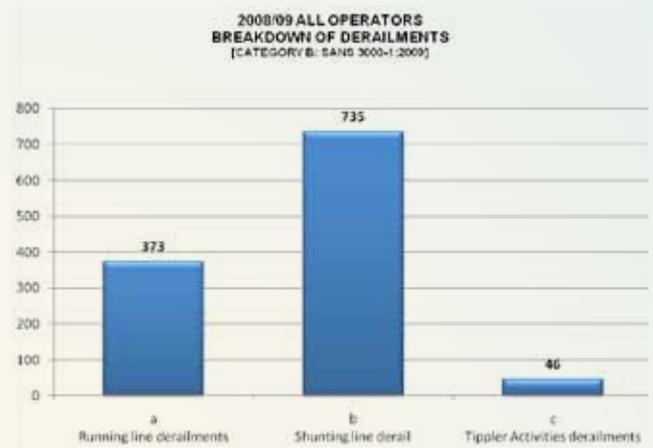
- 1) Prior to the 2008/09 reporting year collisions and derailment were reported and captured as a single category. This made meaningful analysis extremely difficult.
- 2) The year-on-year figure indicates an upward trend, which may be attributed to an improvement in reporting by the industry as a whole.
- 3) Analysis of 2356 reported Collisions and Derailments for the 2008/09 year is reflected in the Charts 2 to 7 below.

Chart 2



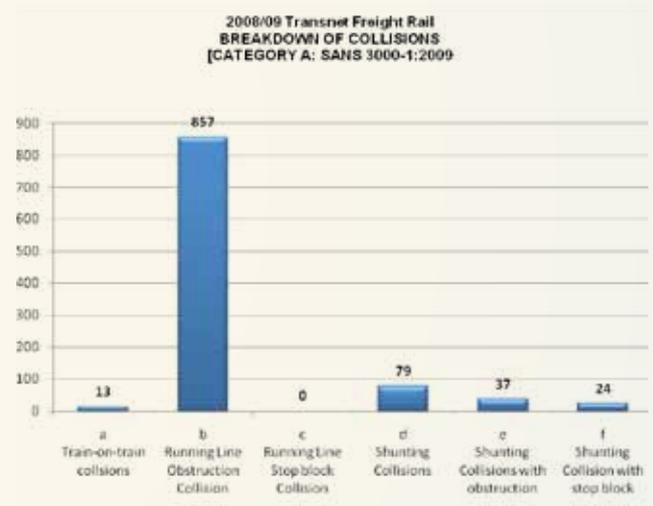
- 1) Category A-b constitutes 79% of all collisions. They include collisions with animals, vehicles on illegal level crossings, trees, and objects such as sleepers placed on the line.
- 2) Category A-d constitutes approximately 10% of all collisions and is primarily slow moving collisions in yards, where the impact is relatively small.
- 3) Running line collisions, i.e. between two trains (Category A-a) are the most serious and although relatively small (1.8%), the impact can be severe, resulting in injuries and fatalities, and considerable damage to infrastructure elements and rolling stock. This is an area where the RSR focuses its limited resources.

Chart 3



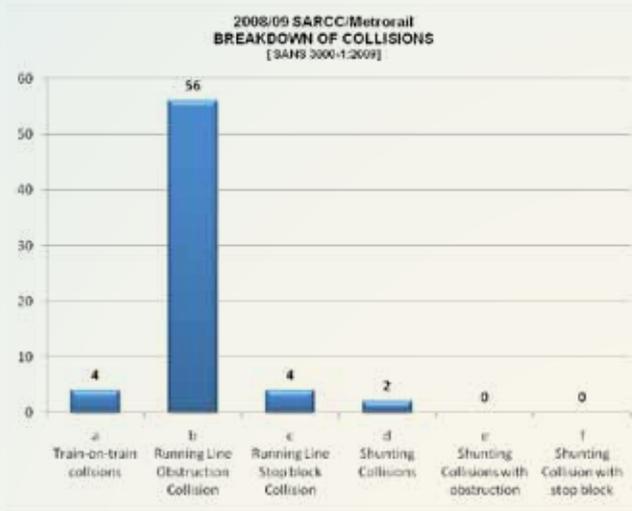
- 1) Although derailments on running line are approximately half of those on other lines, the impact of running line derailments (primarily because of the train dynamics of speed, train mass, and length of train) is very much more severe. The RSR therefore focuses its attention on these derailments.
- 2) Charts 4 and 5 below provide further analysis of collisions for 2008/09 as experienced by TFR and SARCC/ Metrorail, respectively.

Chart 4



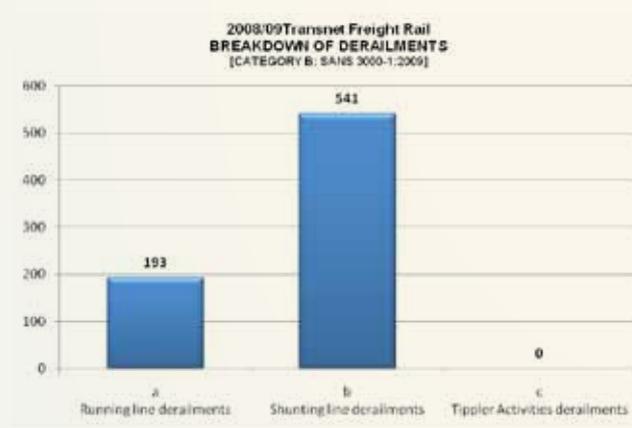
- 1) In excess of 90% of collisions between rolling stock and an obstruction on a running line are with livestock and game. The maintenance of fences and ensuring that farm gates are kept closed at all times remains a challenge that TFR needs to address, although the impact of these collisions is relatively low.
- 2) The collision of trains with road motor vehicles at illegal level crossings and with objects placed on the track total in excess of 7%. These are far more serious than collisions with livestock as they can lead to derailments, injuries and fatalities.

Chart 5



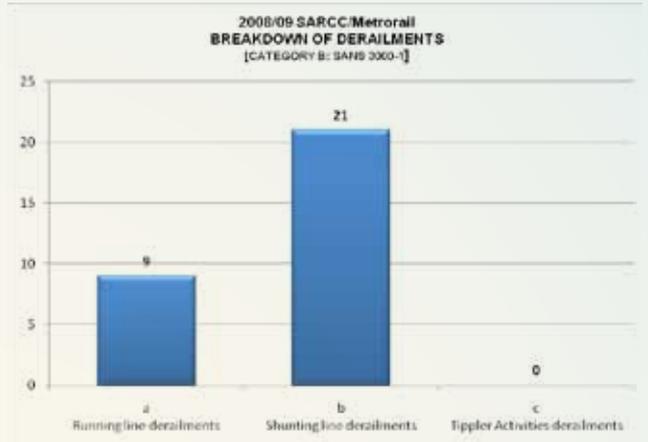
- 1) Approximately 33% of collisions between rolling stock and objects on running lines are with livestock. The maintenance of fences and ensuring that farm gates are kept closed at all times needs to be addressed by the SARCC/Metrorail as they cause disruptions to the commuter services, with the concomitant safety implications, although the direct impact of these collisions is relatively low.
- 2) The collision of trains with road motor vehicles at illegal level crossings and with objects placed on the track total in excess of 37%. These are far more serious than collisions with livestock as they can lead to derailments, injuries and fatalities both to road vehicle occupants and well as Metrorail passengers.

Chart 6



- 1) Running line derailments are caused by the following irregularities or a combination of them:
 - a. Operational (usually speeding or exceeding the limit of authority);
 - b. Track defects (usually rail breaks or track geometry);
 - c. Rolling stock defects, including broken axles or wheel defects; or
 - d. Security incidents (mainly vandalism or theft of operational assets)
- 2) Running line derailments are the primary driver of occurrence costs (see Table 2)
- 3) Shunting derailments usually take place at slow speeds, resulting in minimal damage to rolling stock and infrastructure. They are, however, a significant contributory factor to poor service delivery.

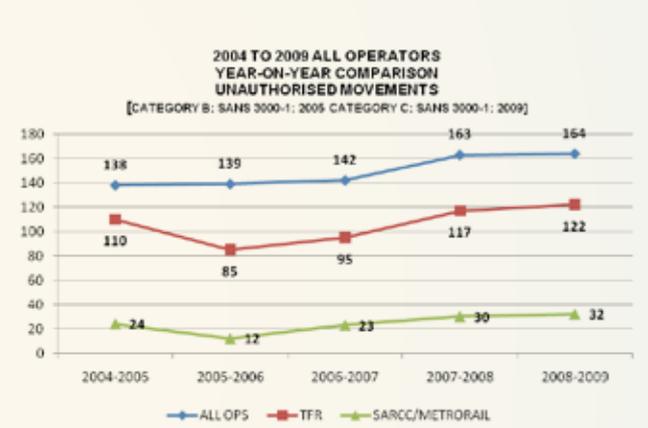
Chart 7



The train dynamics of Metrorail trains are such that the impact of derailments on the network and rolling stock is relatively small (See Table 3)

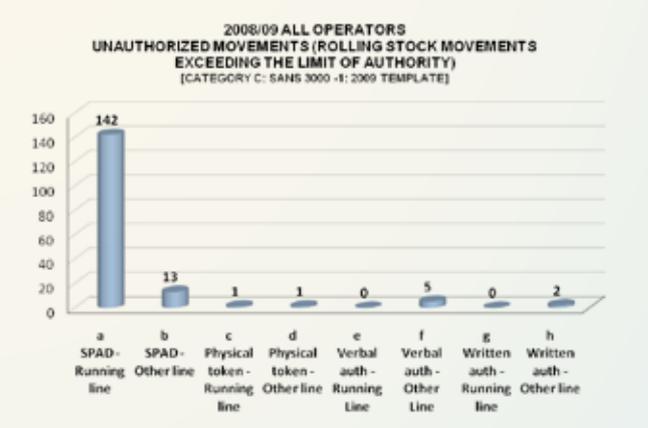
4.3. UNAUTHORISED MOVEMENTS

Chart 8



- 1) The year-on-year figure indicates a marginal upward trend in the period 2007/08 to 2008/09. The increase in previous years may be attributed to an improvement in reporting by the industry as a whole.
- 2) Analysis of 164 reported Unauthorised Movement for the 2008/09 year is reflected in the Charts 9, 10 and 11 below.

Chart 9



COMMENT

- 1) Signal Past at Danger (SPAD) is considered to be one

of the most serious operating irregularities, which frequently leads to collisions and derailments.

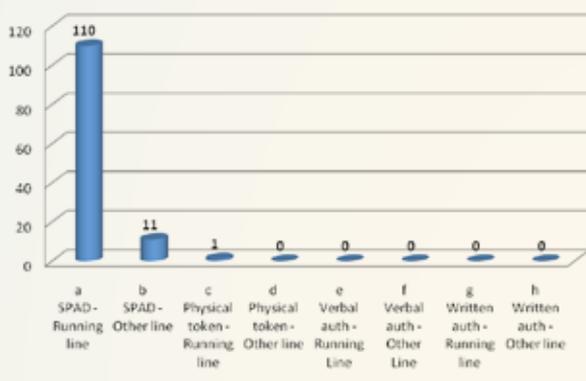
NOTES:

- (i) Signal Past at Danger (SPAD) which results in a collision or derailment is not reported as a SPAD, but as a collision or derailment, as the case may be.
 - (ii) A new category has been introduced in SANS 3000-1: 2009 for the reporting of immediate causes, which includes SPADS.
 - (iii) This will mean that the total impact of SPADS will be able to be reported on in future.
- 2) Technology is available to automatically stop trains when they exceed the limit of authority, including SPADS. Any new train authorisation system will have to provide for this facility.



Chart 10

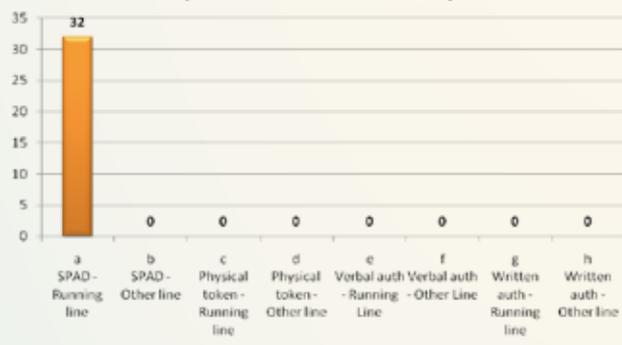
**2008/09 TRANSNET FREIGHT RAIL
UNAUTHORIZED MOVEMENTS (ROLLING STOCK MOVEMENT
EXCEEDING THE LIMIT OF AUTHORITY)
[CATEGORY C: SANS 3000-1: 2009: TEMPLATE]**



The 121 Signal Past at Danger (SPAD) reported occurrences constitutes 77% of all SPADS reported. Of concern is the running line SPADS which have the potential to cause major collisions or derailments, with the concomitant injuries, loss of life and damage to property and the environment.

Chart 11

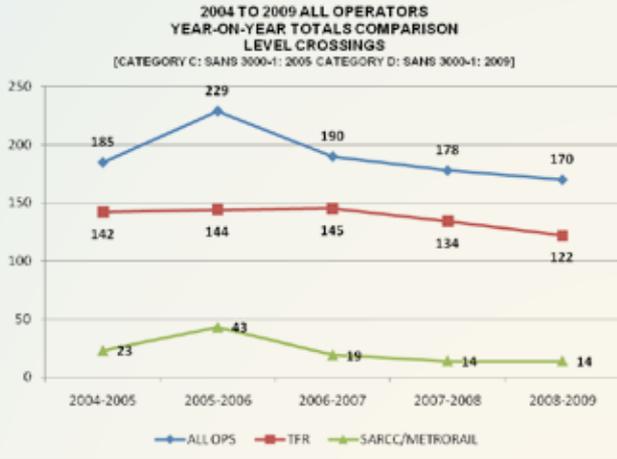
**2008/09 SARCC/METRO RAIL
UNAUTHORIZED MOVEMENTS (ROLLING STOCK MOVEMENT
EXCEEDING THE LIMIT OF AUTHORITY)
[CATEGORY C: SANS 3001-1:2009: TEMPLATE]**



Although the 32 SPADS are approximately 27% of the TFR running line SPADS, the significance and impact cannot be underestimated. Collisions accounted for 341 passenger injuries (see Chart 20), more often than not attributable to SPADS.

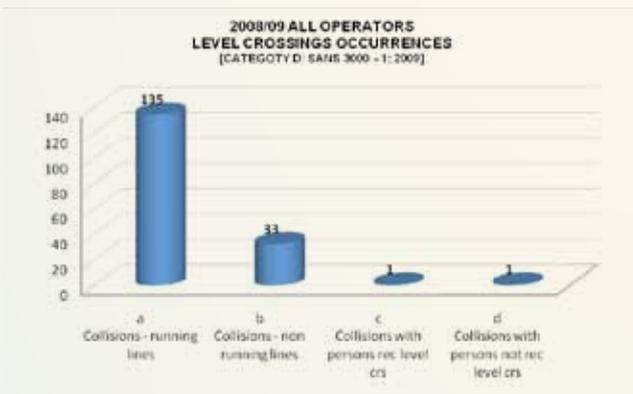


Chart 12



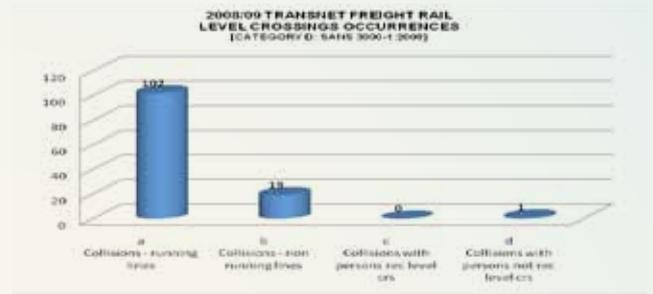
- 1) There has been a steady decline in the number of level crossing occurrence since 2005/06.
- 2) Internationally, level crossing accidents are very emotive. In excess of 95% of all level crossing accidents are attributable to inappropriate road vehicle driver behaviour.
- 3) The level of protection i.e. road signage, flashing lights, or booms, has primarily been determined by the history of accidents. The RSR has embarked on a project in conjunction with the railway industry and the Department of Transport to revise the signage and level of protection for level crossings, by using a risk management approach to addressing this national problem.
- 4) In the 2008/09 reporting period there were 85 injuries and 34 fatalities to the public and 4 employees were injured.(see Table 'Injuries and Fatalities' below).

Chart 13



- 1) Nearly 80% of level crossing occurrences occur on running lines.
- 2) There appears to be a general lack of appreciation that a train cannot stop once a train driver sees an obstruction on a railway line, including road vehicles crossing at a level crossing.

Chart 14



- 1) There are approximately 8500 level crossings on the TFR network of approximately 22000 km.
- 2) Occurrence investigations have shown that in 95% of cases, the primary cause is vehicle driver behaviour. This is symptomatic of the general disregard of the law as displayed by road drivers and society in general.

Chart 15



There are approximately 120 level crossings on the 1830km network of the SARCC/Metro rail.



Table 1

2008/09: ALL OPERATORS: INJURIES AND FATALITIES PER RAILWAY OCCURRENCE CATEGORY													
CATEGORY	INJURIES					FATALITIES					TOTALS		
	Employee	Passenger	Public	International passengers	Contractors	Employees	Passengers	Public	International passengers	Contractors	TOTAL INJURIES	TOTAL FATALITIES	GRAND TOTAL
A: Collisions	15	341	4	0	8	0	0	0	0	0	368	0	368
B: Derailments	6	201	4	0	0	2	0	0	0	0	211	2	213
C: Unauthorised movements	0	0	1	0	0	0	0	0	0	0	1	0	1
D: Level crossings	4	0	85	0	0	0	0	34	0	0	89	34	123
E: Persons struck during train movement	5	0	223	0	2	4	0	334	0	3	230	341	571
F: People-related: in section	4	109	6	0	0	0	8	1	0	0	119	9	128
G: Passenger related: travel outside pass. area	0	21	11	0	0	0	2	3	0	0	32	5	37
H: People related: train platform interchange	2	753	0	0	0	0	33	1	0	0	755	34	789
I: People related: station infra-structure	1	25	74	0	0	0	0	2	0	0	100	2	102
J: Electric shock	8	0	18	0	1	0	0	7	0	0	27	7	34
K: Dangerous goods	0	0	0	0	0	0	0	0	0	0	0	0	0
L: Fires	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTALS	45	1450	426	0	11	6	43	382	0	3	1932	434	2366

- 1) Table 1 is analysed further as reflected in Charts 15 to 22.
- 2) In the 2008/09 reporting period, an overall analysis reveals that a total of 2366 people were injured, of whom 434 were fatal, which is further broken down to as follows:
 - a. 51 employees were injured, of whom 6 were fatal;
 - b. 1493 passengers were injured, of whom 43 were fatal;
 - c. 808 members of the public were injured, of whom 382 were fatal; and
 - d. 14 contractors were injured, of whom 3 were fatal.
- 3) Injuries and fatalities may also be analysed in terms of:
 - a. The consequences of occurrence categories A, B, C, I, K and L. A reduction in the numbers of collisions, derailments, and station infrastructure occurrences will reduce injuries and fatalities.
 - b. The result of the actions of the individual as recorded in categories D and E. Level crossing and people struck by train are the direct consequence of the behaviour of the individual.



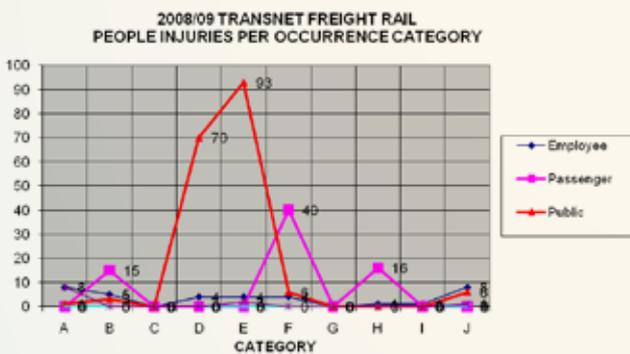
- c. The result of the actions of the individual, for which the operator needs to improve safety of the environment, as captured in categories F, G, H and J. These categories are a reflection of the state of commuter rolling stock and overcrowding on trains for which the operator has primary responsibility to address.

Chart 16



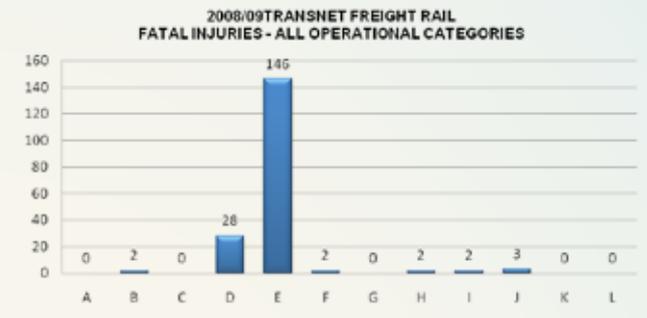
- Key:
- Category A: Collisions during movement of rolling stock;
 - Category B: Derailments during movement of rolling stock;
 - Category C: Unauthorised Movements;
 - Category D: Level crossing occurrences;
 - Category E: People struck by trains during movement of rolling stock;
 - Category F: People-related occurrences: trains in section;
 - Category G: Passenger-related: travelling outside train;
 - Category H: People-related: platform- train interchange;
 - Category I: People related occurrences: station infrastructure;
 - Category J: Electric shock;
 - Category K: Spillage/leakage, explosion or loss of dangerous goods;
 - Category L: Fire

Chart 17



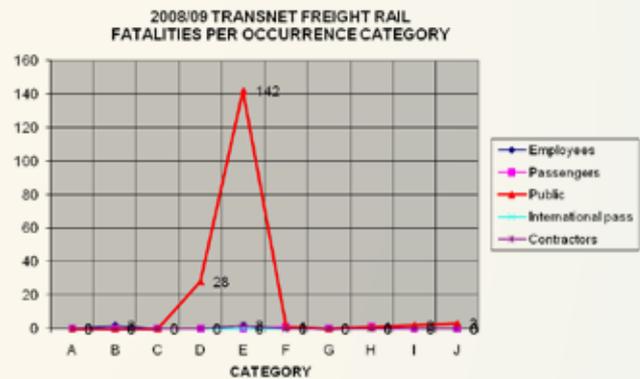
- 1) Charts 16 and 17 show the injuries per reporting category and the split between employee, passenger, public, international passengers (zero injuries were reported), and contractors;
- 2) Level crossing accidents resulted in 70 injuries;
- 3) People struck by train whilst walking in the railway reserve resulted in 98 injuries;
- 4) Passengers falling from a moving train (Shosholoza Meyl) accounted for 40 injuries, whilst 16 were injured in entraining or detraining, usually when the train is moving.

Chart 18



- Key:
- Category A: Collisions during movement of rolling stock;
 - Category B: Derailments during movement of rolling stock;
 - Category C: Unauthorised Movements;
 - Category D: Level crossing occurrences;
 - Category E: People struck by trains during movement of rolling stock;
 - Category F: People-related occurrences: trains in section;
 - Category G: Passenger-related: travelling outside train;
 - Category H: People-related: platform- train interchange;
 - Category I: People related occurrences: station infrastructure;
 - Category J: Electric shock;
 - Category K: Spillage/leakage, explosion or loss of dangerous goods;
 - Category L: Fire

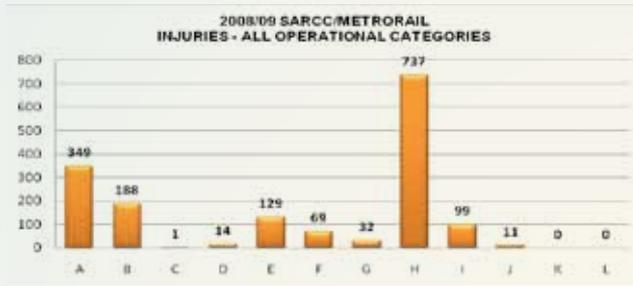
Chart 19



- Key:
- Category A: Collisions during movement of rolling stock;
 - Category B: Derailments during movement of rolling stock;
 - Category C: Unauthorised Movements;
 - Category D: Level crossing occurrences;
 - Category E: People struck by trains during movement of rolling stock;
 - Category F: People-related occurrences: trains in section;
 - Category G: Passenger-related: travelling outside train;
 - Category H: People-related: platform- train interchange;
 - Category I: People related occurrences: station infrastructure;
 - Category J: Electric shock;
 - Category K: Spillage/leakage, explosion or loss of dangerous goods;
 - Category L: Fire
- 1) Level crossing occurrences accounted for 28 fatalities in the reporting period.

- 2) However, there were 142 fatal injuries arising from people being struck by a train whilst walking on the railway lines. This statistic read together with the 98 injuries poses a big challenge to the RSR and TFR.

Chart 20



Key:

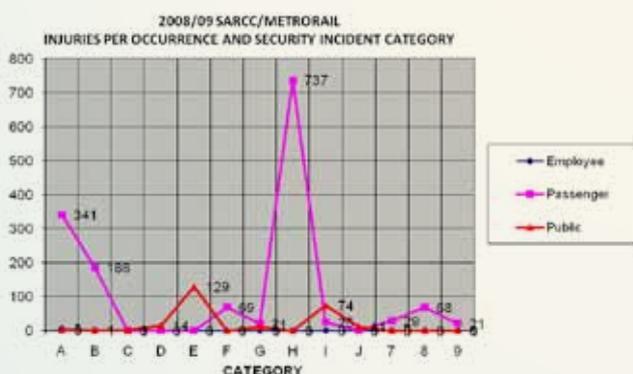
Railway occurrences

- Category A: Collisions during movement of rolling stock;
- Category B: Derailments during movement of rolling stock;
- Category C: Unauthorised Movements;
- Category D: Level crossing occurrences;
- Category E: People struck by trains during movement of rolling stock;
- Category F: People-related occurrences: trains in section;
- Category G: Passenger-related: travelling outside train;
- Category H: People-related: platform- train interchange;
- Category I: People related occurrences: station infrastructure;
- Category J: Electric shock;
- Category K: Spillage/leakage, explosion or loss of dangerous goods;
- Category L: Fire

Security incidences

- Category 1: Theft of assets (impacting on operational safety);
- Category 2: Malicious damage (vandalism) to property;
- Category 3: Threats to operational safety;
- Category 4: Hijacking of trains;
- Category 5: Crowd-related incidences;
- Category 6: Industrial action;
- Category 7: Personal safety on trains;
- Category 8: Personal safety on stations;
- Category 9: Personal safety outside station platform area (including yards, sidings and depots)

Chart 21



- 1) A total of 527 passengers were injured on Metrorail trains during the 2008/09 reporting period as a result of the 60 collisions and 9 derailments (refer to charts 5 and 7 respectively);
- 2) A further 737 passengers were injured whilst

entraining and detraining.

- 3) A total of 129 people (trespassers) were injured by being struck by a train whilst walking on the railway line.
- 4) A total of 68 persons experienced a personal safety incident and were injured. The presence of the SAPS railway branch is expected to result in a reduction in these incidents.

Chart 22

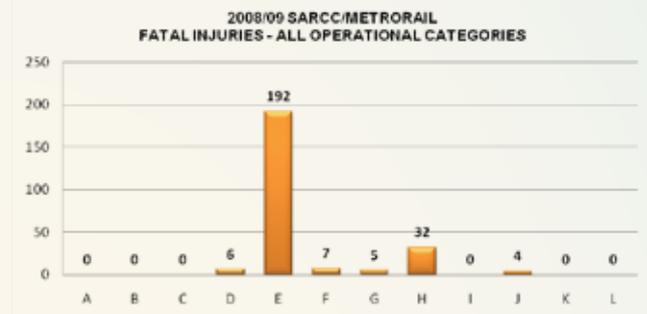
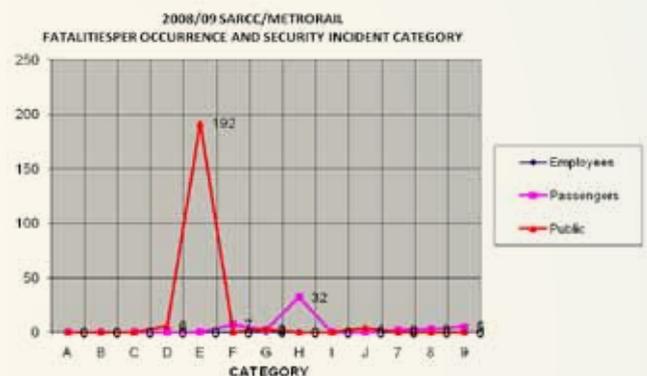
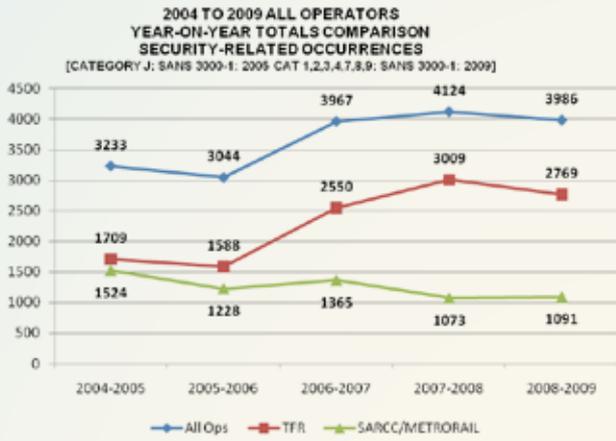


Chart 23



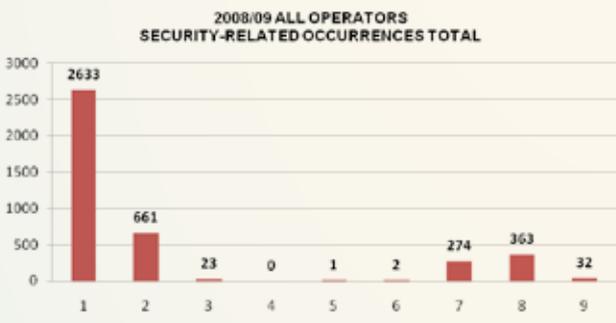
- 1) There were 192 fatal injuries arising from people being struck by a train whilst walking on the railway lines. This statistic read together with the 129 injuries poses a huge challenge to the RSR and the SARCC/Metrorail.
- 2) A total of 32 people were fatally injured entraining and detraining. Besides being a behavioural problem, the problem is exacerbated by doors either being forcibly held open or faulty door mechanisms.

Chart 24



- 1) All security incidences in the period 2004/05 to 2007/08 were captured in a single category (Category J). This meant that meaningful analysis of the security incidences which included person safety, train hijacking including theft of freight; vandalism including theft and damage of operational assets, and sabotage has not been possible.
- 2) Viewed in totality, security incidences over the past 3 years have remained constant for all intents and purposes.
- 3) With effect from 2008/09 security-related incidences have been captured separately in the categories which impact on operation safety, namely theft of assets; malicious damage to property; threats to operational safety; hijacking of trains; crowd-related incidences and industrial action. Personal safety incidents on trains, on stations and outside the platform area have been captured separately.

Chart 25



Security incidences

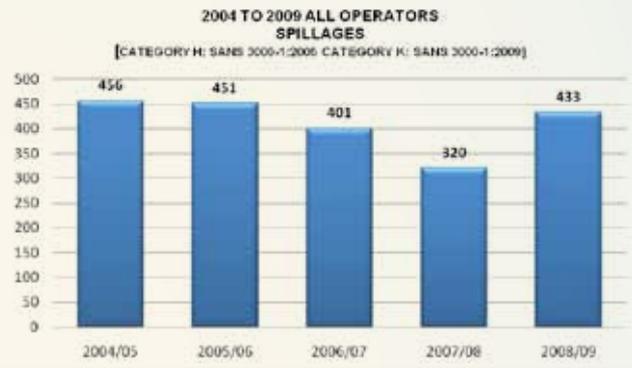
- Category 1: Theft of assets (impacting on operational safety);
- Category 2: Malicious damage (vandalism) to property;
- Category 3: Threats to operational safety;
- Category 4: Hijacking of trains;
- Category 5: Crowd-related incidences;
- Category 6: Industrial action;
- Category 7: Personal safety on trains;
- Category 8: Personal safety on stations;
- Category 9: Personal safety outside station platform area (including yards, sidings and depots)

- 1) A clearer picture begins to emerge with the analysis of the 2008/09 security incidences.

- 2) Whilst no trend can be determined, of major concern is the impact of theft and vandalism on safe railway operations (Categories 1 and 2, respectively). Frequently the theft and vandalism of operational assets results in train-on-train collisions and derailments, as operators are required to operate in a 'fall-back' mode for extended periods, with the inherent higher risks.
- 3) The 669 incidents impacting on personal safety is of concern. It is anticipated that the deployment of the SAPS railway division will have a positive impact on reducing the crime element in the railway environment

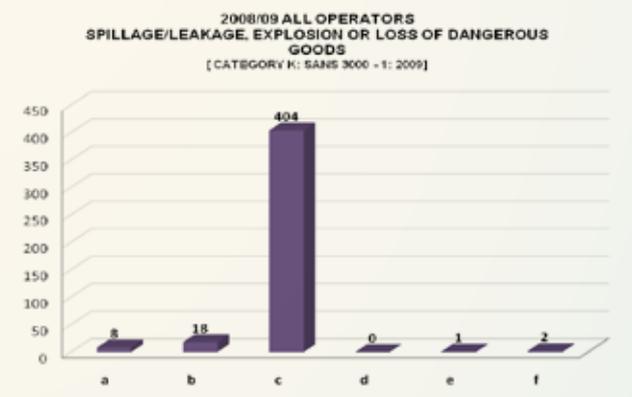
4.7. ENVIRONMENTAL OCCURRENCES IMPACTING ON THE ENVIRONMENT

Chart 26



- 1) In the period 2004/05 to 2007/08 only incidences where the quantities of dangerous goods released or spilled exceed the 'limited quantities' specified in SANS 10228 were reportable. In this period the reported incidents showed a decline.
- 2) With effect from 2008/09 all incidents, irrespective of volume are reportable. In addition, the category has been amplified to include missing consignments, theft and explosions.

Chart 27



KEY:

- Category a: Spillage or leakage en route
- Category b: Spillage or leakage during shunting
- Category c: Spillage or leakage whilst staged
- Category d: Missing consignments
- Category e: Theft of dangerous goods
- Category f: Explosion

COMMENTS

- 1) The spillage or leakage of dangerous goods is most easily observed whilst stationary;

- 2) The spillage or leakage of dangerous goods has potentially serious implications for the environment and workers in the yards where the wagons are staged.
- 3) Actions have been instituted to determine the root causes of the spillages or leakages whilst stationary.

4.8. COSTS OF OCCURRENCES

Chart 28

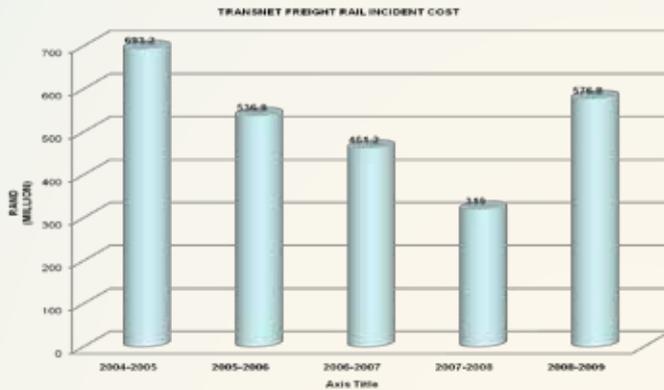


Table 2

TRANSNET FREIGHT RAIL 2008/09 OCCURRENCE COST BREAKDOWN			
Description	Category	Total	% Contribution to total costs
Theft & Vandalism	Cables	R 20,444,884	3.54%
Theft & Vandalism	Doors & Windows	R 3,128	0.00%
Arson	Rolling Stock	R 0	0.00%
Train Fires	Rolling Stock	R 5,802,715	1.01%
Level Crossing Accidents	R/S & Perway	R 16,350,561	2.83%
Collisions	R/S & Perway	R 86,119,018	14.93%
Derailments	R/S & Perway	R 448,159,026	77.69%
TOTALS		R 576,879,332	100%

Chart 29

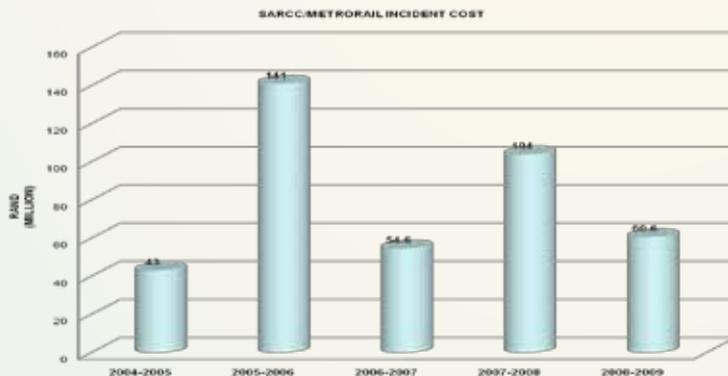


Table 3

SARCC/METRORAIL 2008/09 OCCURRENCE COST BREAKDOWN			
Description	Category	Amount	% Contribution to total costs
Theft & Vandalism	Cables, Doors, Windows & Trains Stoned	R7,583,345.89	12%
Train Fires	Rolling Stock	R43,491,081.04	72%
Level Crossing Accidents	R/S & Perway	R837,747.48	1%
Collisions	R/S & Perway	R3,537,471.40	6%
Derailments	R/S & Perway	R5,245,344.73	9%
Total		R60,694,990.54	100%

- 1) The direct costs associated with railway occurrences remained high in 2008/09. The combined costs for both Transnet Freight Rail and Metrorail (operating under PRASA) for 2008/09 amounted to R635m of which R576m was attributed to TFR and R60m to Metrorail.
- 2) The occurrence costs do not include the indirect costs associated with delays and cancellations associated with railway occurrences, which may lead to much higher figures when taken into account.
- 3) In the case of Transnet Freight Rail (Table 2), costs associated with derailments and collisions were the highest with theft and vandalism remaining a major concern.
- 4) In the case of SARCC/Metrorail (Table 4), arson or train fires lead the occurrence costs, whilst theft, vandalism and derailments remain a big concern.
- 5) The reduction in 2008/09 mainly due to reduction in train fires



5. RSR INTERVENTIONS

5.1 SAFETY MANAGEMENT SYSTEM AUDITS 2008/2009

As required by the National Railway Safety Regulator Act, 2002 (Act 16, 2002)(as amended), operators must submit a Safety Management System Report (SMSR) together with an application for a Safety Permit to the RSR in order to be issued with a Safety Permit to legally operate. The SMSR indicates how the operator will manage his railway operations safely, based on the minimum requirements contained in the South African National Standard for railway Safety Management: Part1: General (SANS 3000-1: 2005)

Operators are then audited to ensure that the commitments made in their SMSR are fulfilled in practice.

As indicated below, for the year under review the RSR planned a total 316 of SMS Audits that were scheduled and manage to complete a total of 323 with 0 audits that were still work in progress at year end. It needs to be emphasized that many operators conduct their operations at more than one operational site.



08-09 PROGRESS END MARCH 09	QUARTERLY PROGRESS 0809			
Monitoring Categories	Jun 08	Sep 08	Dec 08	Mar 09
Planned Cumulative Progress 08 -09	81	159	222	316
Actual Monthly cummulative Progress 08 -09	70	129	248	323
Actual Cumulative Completed % Progress	86%	81%	112%	102%
Actual Work in Progress	14	42	21	0
Cumalative Completed and Work in Progress% Progress	104%	108%	121%	102%

Safety Management System Audit Findings Enforcements

The results of Audit findings may manifest themselves in one of the following or a combination thereof:

- Audit non-conformance: an inadequacy as it relates to the requirements of SANS 3000-1, or
- Audit non-compliance: a total absence of a requirement of SANS 3000-1, or
- Improvement Directive: The presence of a potential threat to life or property, or
- Prohibition Directive: The immediate presence of threat to life or property

Number of Enforcements issued per category is as follows:

Of the 323 audits done a total of 32 operators were issued with 100% compliance reports and 14 operators were issued with Letters of Non-Compliance for Non implementation of any of the elements in SANS 3000-1: 2005 :PART 1: GENERAL. These operators will have to be re-audited. The balance was issued with:

- 1538 Audit non-conformances ;
- 33 Audit non-compliance letters;
- 34 Improvement Directives; and
- 0 Prohibition Directives

The immediate causes of the latter two categories can be summarized as follows:

Improvement Directive Category	Quantity
Incorrect operating procedures	0
Infrastructure related	25
Human Factors – Training	0
Level Crossing Related	8

- (i) The RSR's concerns around investment in and maintenance of railway infrastructure assets is clearly reflected in the number of Directives issued in this area.

Prohibition Directive Category	Quantity
Incorrect operating procedures	0
Infrastructure related	0
Human Factors – Training	0

Operators' responsiveness towards directives issued:

Improvement Directives

Number Issued	Number Responded	Number Completed	Outstanding for Completion
34	8	6	28

Prohibition Directives

Number Issued	Number Responded	Number Completed	Outstanding for Completion
0	0	0	0

Continual follow-up actions are launched with the operational support section to ensure timeous completion of improvement directives. As a result the increasing number of audits done and the shortage in human resources, a backlog has been effected but is currently being addressed.

With reference to the latter, the Operator may not operate until such time as evidence has been provided of the implementation of the issued directive

5.2 OCCURRENCES, INVESTIGATIONS AND INSPECTIONS

In fulfilling its mandate to determine the root cause and contributory factors pertaining to railway occurrences, with a view to steadily improving the State of Safety on rail, the RSR will follow one of a number of courses of action, determined by the severity of the railway occurrence, and the availability of its limited resources, including conducting of a -

- A full Board of enquiry (BOI);
- A full Investigation;
- A review of an operator's BOI;
- A 'Desk Top' investigation based on available or requested evidence; or
- An Inspection - either stand alone, or as part of the above.

The results of such BOI's, Investigations, and Inspections are summarised, together with an assessment of the key findings, below -

Boards of inquiry and RSR Investigations 2008/09

Braeside	A TFR derailment between Boughton and Braeside which resulted in 4 locomotives and 42 trucks being derailed and one fatality.
Springs-Brakpan	Rear end collision of two Metrorail trains resulting in 144 passengers being injured, 14 of these seriously injured
Lenz-Midway	Rear end collision of two Metrorail trains resulting in injuries to 181 passengers
Vlaeberg	Metrorail commuter train 3419, en-route from Eerste River to Lynedoch, collided with a VW Polo, XNY 689GP, at the Vlaeberg road level crossing.
Koeberg	Failure of Metro train at Koeberg resulting in train running backwards in section
Dikgale	Investigation at Dikgale station following derailment of a Shosholozha Meyl train on the facing points.
Metrorail Communication	Investigation of the train communications network in the Gauteng region

Operator BOI and investigations reviewed by the RSR 2008/09

Sundra (May 2009, TFR)	Collision of TFR train with a load that was left in section
-------------------------------	---



- **Classification of findings by Boards of Inquiry and Investigations 2009/09**

Category Of Findings	Vlaeberg	Braeside	Springs-Brakpan	Lenz-Midway	Koeberg	Dikgale	Total	Percentage
Inadequate Operating Procedure	1	4	2	3	4	0	14	16%
Inadequate Training	3	1	0	1	0	1	6	7%
Inadequate Technology/ Design	3	4	3	3	3	1	17	20%
Inadequate Maintenance	3	0	1	0	1	0	5	6%
Inadequate Standards	7	3	1	0	0	0	11	13%
Inadequate Management Processes	3	12	7	7	5	0	34	39%
Total	20	24	14	14	13	2	87	100%

Inadequate Procedures, and inadequate management processes play a significant role

- **RSR Inspections 2008/2009**

Vlaeberg	Inspection of Vlaeberg road level crossing following collision between SARCC commuter train and a VW Polo pending a full RSR BOI
Harmony Gold – Welkom	Inspection on new/additional lines
Harmony Gold – Welkom	Inspection on reinstated lines from old to new Permit
Total SA (Pty) Ltd - East London	Audit revealed that site is dormant - audit aborted and inspection done
TFR Kaapmuiden Infrastructure	Inspection of train control and infrastructure of Kaapmuiden CTC controlled sections
TFR	Remote controlled shunting – still an open project – this was a Submittal review

- **Classification of findings made from inspections 2008/09**

Category of Findings	Harmony new lines	Harmony New Permit	Total East London	Kaapmuiden	Total	Percentage
Inadequate Operating Procedure	0	0	0	1	1	9%
Inadequate Training	0	0	0	1	1	9%
Inadequate Technology/ Design	0	0	3	1	4	36%
Inadequate Maintenance	0	0	1	0	1	9%
Inadequate Standards	1	0	0	0	1	9%
Inadequate Management Processes	1	0	0	2	3	27%
Total	2	0	4	5	11	100%

6. FUTURE FOCUS

As a direct response to safety challenges in the railway environment, the RSR has refined its strategic focus and interventions over the medium term in order to achieve maximum impact and achieve sustainable improvement in safety performance. The following are the key interventions that will drive the RSR's focus over the medium term:

- The assessment of the condition/status of critical elements of infrastructure, rolling stock, operational systems and management (including personnel undertaking safety critical work) from both individual and overall systems perspective through the undertaking of adequacy and effectiveness audits.
- The interrogation of the extent to which the envisaged investment programs address the current investment backlogs and have the desired result of improving availability, reliability and operational safety.
- An assessment of the extent to which sufficient measures are taken to ensure that current assets can continue to be used in a safe manner whilst renewal programmes are being introduced.
- The interrogation of the level of compliance with railway safety standards as well as the RSR's directives resulting from safety audits, inspections and occurrence investigations.
- An analysis of the measures that are in place to ensure the safety and security of railway assets, passengers and the public within the railway reserve and surrounding environment.
- An interrogation of measures that are in place to ensure sustainable capacity for railway operations.

The various challenges faced by the railway industry continue to illustrate the need to significantly increase and strengthen the RSR's capacity in order to enable appropriate interventions. Over the medium term, the RSR will need to substantially increase its capacity in order to strengthen its safety compliance, monitoring and enforcement capacity.

7. CONCLUSION

The RSR regulates a highly complex and dynamic industry with a long history of self regulation. The last five years have been a steep learning curve and have provided invaluable insights into possible interventions that may result in long-term sustainable improvement to safety performance in South Africa's railways.

In conducting an analysis of the state of railway safety in South Africa, a number of pervasive challenges loom large and remain a significant barrier to improved safety performance. The most critical of these challenges are highlighted hereunder:

- a) Derailments and collisions remain unacceptably high. Over 90% of Transnet Freight Rail occurrence costs are directly attributable to derailments and collisions. Derailments have led to costly delays and train cancellations on freight corridors resulting in significant impact on the economy.
- b) Direct costs associated with railway occurrences remain high. Rail occurrence costs for 2008/09 amounted to R635 million for Transnet Freight Rail (TFR) and the Passenger Rail Agency of South Africa (PRASA), which exclude indirect costs.
- c) Poor conditions and underinvestment in rail infrastructure and rolling stock results in

constant system failures which either drive or result from the systematic erosion of safety. This is further evidenced by lack of compliance with safety operating procedures when systems fail and require activation of manual procedures.

- d) Inadequate capacity to meet demand as well as manage safe and reliable railway operations. This is evidenced by inadequate technical capacity in the operators' environments as well as inadequate infrastructure, including rolling stock to meet the rising demand.
- e) Human Factor management challenges in safety critical roles, (e.g. train drivers) which manifests itself in the low levels of competency of drivers in responding to abnormal conditions in the rail environment.
- f) Mushrooming of informal settlements along rail reserves poses major safety risks. This results in illegal crossings on the railway line and this is where the highest number of people struck by trains is recorded. This also results in difficulty to access the railway line by maintenance vehicles and personnel and also leads to vandalism and theft of safety critical assets.
- g) Vandalism and theft of railway assets remain a major challenge that impact directly on the day to day operations of railway services.
- h) Personal safety in trains and stations remain a key concern despite the notable improvement in this regard.
- i) Operational interface problems with freight and passenger services on shared infrastructure remains to be a big challenge. This manifests itself in the conflict between demands of both commuter and freight rail services.





OCCURRENCE

STATISTICS 2008/09

STATISTICS

The Table below provides the quarterly breakdown of all reported railway occurrences and security incidences for the 2008/09 reporting year.

Note: As the 2008/09 reporting year is a year of transition from the previous reporting categories, the breakdown is limited to 2008/09 as no meaningful comparison at a detailed level can be made.

ALL OPERATORS TOTAL FOR 2008-2009					
	QUARTERS				
	Apr-Jun	Jul-Sep	Oct-Dec	Jan-Mar	TOTAL
CATEGORY A: COLLISIONS DURING MOVEMENT OF ROLLING STOCK					
a	6	5	2	9	22
b	281	253	236	177	947
c	4	0	1	2	7
d	37	38	21	29	125
e	20	16	21	12	69
f	7	7	13	5	32
TOTAL	355	319	294	234	1202
CATEGORY B: DERAILMENTS DURING MOVEMENT OF ROLLING STOCK					
a:	98	108	104	63	373
b:	207	221	140	167	735
c:	10	18	8	10	46
TOTAL	315	347	252	240	1154
CATEGORY C: UNAUTHORIZED MOVEMENTS (ROLLING STOCK EXCEEDING THE LIMIT OF AUTHORITY)					
a	46	33	28	35	142
b	1	6	4	2	13
c	0	1	0	0	1
d	0	0	0	1	1
e	0	0	0	0	0
f	2	1	0	2	5
g	0	0	0	0	0
h	2	0	0	0	2
TOTAL	51	41	32	40	164
CATEGORY D: LEVEL CROSSING OCCURRENCES					
a	33	35	32	35	135
b	10	10	2	11	33
c	0	0	0	1	1
d	0	0	0	1	1
TOTAL	43	45	34	48	170

CATEGORY E: PERSONS STRUCK DURING MOVEMENT OF ROLLING STOCK (OTHER THAN AT LEVEL CROSSINGS)

a	139	174	139	145	597
b	2	1	0	0	3
c	3	0	0	0	3
d	1	2	1	1	5
e	3	0	0	1	4
f	1	0	0	0	1
TOTAL	149	177	140	147	613

CATEGORY F: PEOPLE RELATED OCCURRENCES: TRAINS OUTSIDE STATION PLATFORM AREAS (IN SECTION)

a	12	26	45	38	121
b	1	0	1	1	3
c	0	0	0	0	0
TOTAL	13	26	46	39	124

CATEGORY G: PEOPLE RELATED OCCURRENCES: TRAVELLING OUTSIDE DESIGNATED PASSENGER AREA

a	0	9	13	13	35
TOTAL	0	9	13	13	35

CATEGORY H: PEOPLE RELATED OCCURRENCES: PLATFORM -TRAIN INTERCHANGE

a	25	35	29	24	113
b	150	166	175	192	683
c	1	0	0	0	1
d	0	1	0	0	1
e	0	0	0	0	0
f	0	0	0	0	0
TOTAL	176	202	204	216	798

CATEGORY I: PEOPLE RELATED OCCURRENCES: STATION INFRASTRUCTURE

a	0	0	0	0	0
b	0	2	26	25	53
c	0	50	0	0	50
d	0	0	0	0	0
e	0	0	1	0	1
f	0	0	0	0	0
TOTAL	0	52	27	25	104

CATEGORY J: ELECTRICK SHOCK OF PEOPLE OCCURRENCES

a	2	4	4	8	18
b	3	0	0	0	3
c	0	0	3	0	3
d	1	4	0	1	6
e	1	2	3	2	8
f	0	0	0	0	0
g	2	0	2	0	4
h	0	0	0	0	0
i	0	0	0	0	0
j	0	0	0	1	1
k	0	0	0	0	0
l	0	0	0	0	0
TOTAL	9	10	12	12	43

CATEGORY K: SPILLAGE/LEAKAGE, EXPLOSION OR LOSS OF DANGEROUS GOODS

a	1	3	3	1	8
b	2	0	3	13	18
c	102	104	101	97	404
d	0	0	0	0	0
e	1	0	0	0	1
f	0	1	0	1	2
TOTAL	106	108	107	112	433

CATEGORY L: FIRE OCCURRENCES

a	25	9	11	4	49
b	3	2	3	1	9
c	37	24	19	21	101
d	56	168	50	34	308
TOTAL	121	203	83	60	467

CATEGORY 1: THEFT OF ASSETS IMPACTING ON OPERATIONAL SAFETY

a	100	50	0	14	164
b	0	62	61	76	199
c	261	221	147	131	760
d	1	0	5	3	9
e	122	263	156	144	685
f	2	0	1	1	4
g	211	232	179	145	767
h	0	0	14	14	28
i	11	2	2	2	17
TOTAL	708	830	565	530	2633

CATEGORY 2: MALICIOUS DAMAGE (VANDALISM) TO PROPERTY IMPACTING ON OPERATIONAL SAFETY

a	41	14	2	7	64
b	22	8	25	20	75
c	37	48	38	37	160
d	33	16	1	3	53
e	35	52	35	17	139
f	0	0	0	0	0
g	29	62	41	27	159
h	0	1	0	0	1
i	9	1	0	0	10
TOTAL	206	202	142	111	661

CATEGORY 3: THREATS OF OPERATIONAL SAFETY

a	14	2	5	1	22
b	0	0	0	0	0
c	0	0	0	1	1
d	0	0	0	0	0
e	0	0	0	0	0
TOTAL	14	2	5	2	23

CATEGORY 4: TRAIN KIDNAPPING OR HIJACKING

a	0	0	0	0	0
b	0	0	0	0	0
c	0	0	0	0	0
TOTAL	0	0	0	0	0

CATEGORY 5: CROWD-RELATED OCCURRENCES

a	1	0	0	0	1
TOTAL	1	0	0	0	1

CATEGORY 6: INDUSTRIAL ACTION

a	1	0	0	1	2
TOTAL	1	0	0	1	2

CATEGORY 7: PERSONAL SAFETY ON TRAINS

a	4	5	0	1	10
b	2	6	7	4	19
c	0	0	0	0	0
d	4	5	11	14	34
e	0	1	2	0	3
f	11	9	10	7	37
g	34	24	30	28	116
h	15	13	9	18	55
i	0	0	0	0	0
TOTAL	70	63	69	72	274

CATEGORY 8: PERSONAL SAFETY ON STATIONS

a	2	3	0	3	8
b	8	9	7	5	29
c	1	1	0	0	2
d	13	7	12	7	39
e	0	1	0	0	1
f	12	5	9	8	34
g	21	28	19	16	84
h	42	33	45	46	166
i	0	0	0	0	0
TOTAL	99	87	92	85	363

CATEGORY 9: PERSONAL SAFETY OUTSIDE STATION PLATFORM AREA (IN SECTION BETWEEN STATIONS, INCLUDING YARDS, SIDINGS AND DEPOTS)

a	3	2	6	1	12
b	1	0	1	5	7
c	0	0	0	0	0
d	2	1	0	1	4
e	0	0	0	0	0
f	0	0	1	2	3
g	0	0	2	1	3
h	1	2	0	0	3
i	0	0	0	0	0
TOTAL	7	5	10	10	32



STATE OF SAFETY

DATA SUPPLEMENT 2007 / 2008

INTRODUCTION

The Railway Safety Regulator implemented a revision process of the SANS 3000-1:2005 Standard on Railway Safety in terms of which the Occurrence Reporting categories and standards would be revised from the 2008 / 2009 reporting year . While some historic data will be reworked to provide trends on key variables , the bulk of data in the earlier format therefore will be concluded with that from the 2007 / 2008 period .

In order to present a complete picture of available information for analysis and archiving purposes , the key data for this period has been included for reference in this supplement in the same format as earlier publications , and should be read together with the previous 2006/ 2007 State of Safety report for context .

The Railway Safety Regulator monitors and promotes compliance and safety performance through a structured process of:

- Occurrence Safety Data Trend Analyses,
- RSR Interventions
 - Occurrence investigations,
 - Safety Inspections, and
 - Safety Management System Audits.



1.1. SAFETY DATA TREND ANALYSIS

1.1.1 Background:

The Railway Safety Regulator receives occurrence reports from operators on a daily and quarterly basis. Operators were required to report railway occurrences in the categories A to L as prescribed in the Railway Safety Management Regulations, 2004 and amplified in the South African National Standard (SANS 3000-1:2005) up until the end of the 2007 / 2008 reporting period .

1.1.1.1. The quarters are being defined as follows:

- a. Quarter 1 - April to June
- b. Quarter 2 - July to September
- c. Quarter 3 - October to December
- d. Quarter 4 - January to March



Table 1: 2007/08 quarterly reports submission percentage per quarter

YEAR	2006/07					2007/08				
No of Operating sites	602					635				
No of Permit Holders	235					251				
Quarters	1	2	3	4	Avg	1	2	3	4	Avg
% of Operators responding	83%	76%	72%	71%	76%	73%	64%	64%	62%	62%

1.1.2. Reporting on the results of safety data trend analysis

This section of the report will highlight the results of safety data trend analysis in terms of the following original Categories :

- Category A: Derailments and Collisions
- Category B: Unauthorized train movements
- Category C: Level Crossing accidents
- Category D: Persons Struck During Train Movements
- Category E: Occurrences involving People and Trains
- Category F: Occurrences involving People and Stations

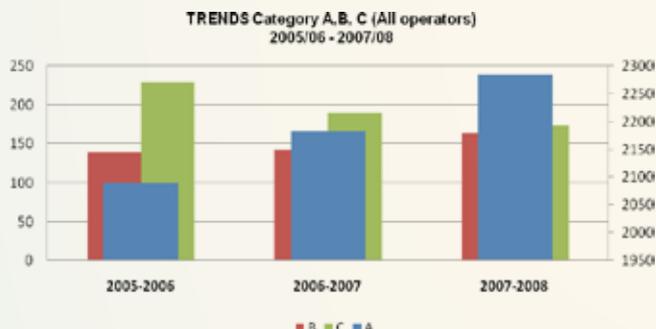
- Category G: An Electric Shock to a Person
- Category H: Uncontrolled Release or Spillage of Dangerous Goods
- Category I: Fires
- Category J: Security-related Occurrences
- Category K: Crowd-related Occurrences
- Category L: Labour Unrest

1.1.2.1 COMPARATIVE SAFETY DATA TREND ANALYSIS ON OCCURRENCE TOTALS FOR THE PERIOD 2005/06 – 2007/08 (ALL OPERATORS)

Table 2: Comparative safety data analysis for All Operators (2005/06-2007/08)

CATEGORY	2005-2006	2006-2007	2007-2008
	TOTAL	TOTAL	TOTAL
CATEGORY A	2090	2183	2284
CATEGORY B	139	142	164
CATEGORY C	229	190	174
CATEGORY D	586	584	589
CATEGORY E	842	546	723
CATEGORY F	121	110	128
CATEGORY G	26	33	34
CATEGORY H	451	401	322
CATEGORY I	516	475	431
CATEGORY J	3044	3967	4126
CATEGORY K	79	142	3
CATEGORY L	37	4	12
TOTAL FOR ALL CATEGORIES	8160	8777	8990

Figure 1: All Operators: Trend category A, B, and C for 2005/06 – 2007/08



1.1.2.2. COMPARATIVE SAFETY DATA ANALYSIS ON OCCURRENCE TOTALS FOR ALL OTHER OPERATORS EXCLUDING SPOORNET AND SARCC/METRORAIL (2005/06 – 2007/08)

Table 3: Totals All Other Operators EXCLUDING Spoornet and SARCC/Metrorail

CATEGORY	2005-2006	2006-2007	2007-2008
	TOTAL	TOTAL	TOTAL
CATEGORY A	544	480	466
CATEGORY B	42	24	17
CATEGORY C	42	26	26
CATEGORY D	9	9	16
CATEGORY E	92	13	2
CATEGORY F	8	2	0
CATEGORY G	0	0	1
CATEGORY H	1	4	16
CATEGORY I	27	8	5
CATEGORY J	228	52	44
CATEGORY K	1	2	0
CATEGORY L	23	4	7
TOTAL FOR ALL CATEGORIES	1017	624	600

1.1.2.3. COMPARATIVE SAFETY DATA ANALYSIS FOR SARCC/METRORAIL FOR THE PERIOD 2005/06 – 2007/08

Table 4: SARCC/Metrorail (2005/06 – 2007/08)

SARCC/METRORAIL OCCURRENCE TOTALS			
CATEGORY	2005-2006	2006-2007	2007-2008
	TOTAL	TOTAL	TOTAL
CATEGORY A	103	80	79
CATEGORY B	12	23	30
CATEGORY C	43	19	14
CATEGORY D	350	331	335
CATEGORY E	697	481	657
CATEGORY F	94	108	128
CATEGORY G	15	19	20
CATEGORY H	0	0	0
CATEGORY I	57	133	52
CATEGORY J	1228	1365	1073
CATEGORY K	78	140	2
CATEGORY L	14	0	4
TOTAL FOR ALL CATEGORIES	2691	2699	2394

Table 5: SARCC/Metrorail Total Train and Passenger Kilometers traveled

SARCC/METRORAIL'S TRAIN AND PASSENGER KILOMETERS TRAVELLED FOR 2005/06 – 2007/08			
	2005/06	2006/07	2007/08
Train Kilometers	27093120	26406461	26434053
Passenger Kilometers	13393751641	13862979578	15524151839

Table 6: SARCC/Metrorail's Accident Frequency Rate for Train Related Accidents

SARCC/METRO RAIL'S ACCIDENT FREQUENCY RATE FOR TRAIN RELATED ACCIDENTS PER MILLION TRAIN KILOMETERS TRAVELLED			
	2005/06	2006/07	2007/08
A	3.80	3.03	2.99
B	0.44	0.87	1.13
C	1.59	0.72	0.53
TOTAL	5.83	4.62	4.65

Table 7: Breakdown of SARCC/Metrorail's Category A Occurrences

SARCC/METRO RAIL YEAR-ON-YEAR CATEGORY A BREAKDOWN 2005-2008				
Sub-category	Definition of sub-category	2005-2006	2006-2007	2007-2008
A	Collision between rolling stock on a running line	6	5	1
B	Collision of rolling stock with an obstruction on a running line	46	47	50
C	Derailment of rolling stock on a running line	25	7	8
D	Collisions or derailments during shunting operations	26	19	16
E	Collision and/or derailments on lines other than a running line	0	2	4
TOTAL FOR CATEGORY A		103	80	79

Table 8: Breakdown of SARCC/Metrorail's Accident Frequency Rate for Category A Occurrences per Million Train Kilometers Traveled (Excluding shunting Operations)

BREAKDOWN OF SARCC/METRO RAIL'S ACCIDENT FREQUENCY RATE FOR CATEGORY A OCCURRENCES PER MILLION TRAIN KILOMETERS TRAVELLED			
Sub-category	2005/06	2006/07	2007/08
Train-on-Train collisions on a running line	0.22	0.19	0.04
Train Collisions with obstructions on a running line	1.70	1.78	1.89
Train derailments on a running line	0.92	0.27	0.61
Collisions and derailments on other line (except running lines and shunting)	0	0.008	0
TOTAL RATE FOR CATEGORY A PER MILLION KILOMETERS (EXCLUDING SHUNTING OPERATIONS)	2.84	2.25	2.54

Table 9: SARCC/Metrorail's Accident Frequency Rate for People Related Accidents

SARCC/METRO RAIL'S ACCIDENT FREQUENCY RATE FOR PEOPLE RELATED ACCIDENTS PER MILLION TRAIN KILOMETERS TRAVELLED			
Category	2005/06	2006/07	2007/08
E	0.052	0.034	0.034
F	0.070	0.007	0.064
TOTAL	0.122	0.041	0.098

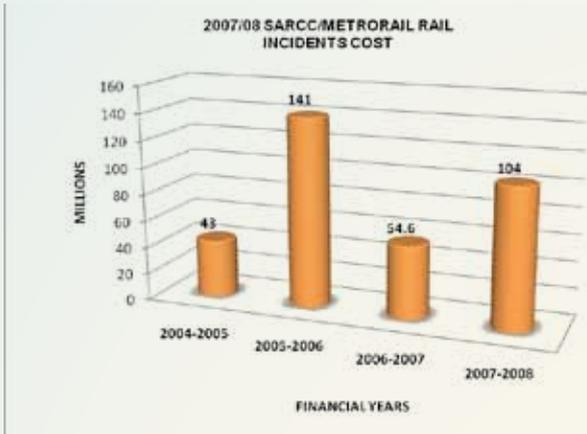
Table 10: Breakdown of SARCC/Metrorail's Category J Occurrences

BREAKDOWN OF SARCC/METRORAIL'S CATEGORY J YEAR-ON-YEAR TOTALS 2005-2008				
Sub-category	Definition of Sub-category	2005/06	2006/07	2007/08
A	Theft, murder, robbery, mugging, rape, serious assault	918	543	573
B	Piracy, or hijacking, theft of freight	0	1	1
C	Vandalism, theft and damage to operational assets	300	802	485
D	Sabotage of operational assets	10	19	14
TOTAL FOR CATEGORY J		1228	1365	1073

Table 11: SARCC/Metrorail (Injuries and Fatalities) associated with each occurrence category

CATEGORY	SARCC/METRORAIL INJURIES 2007-2008						SARCC/METRORAIL FATALITIES 2007-2008						GRAND TOTAL
	EMPLOYEE	PASSENGER	PUBLIC	INT PASS	CONTRACTORS	TOTAL	EMPLOYEE	PASSENGER	PUBLIC	INT PASS	CONTRACTORS	TOTAL	
A	4	30	0	0	0	34	0	0	0	0	0	0	34
B	0	0	0	0	0	0	0	0	0	0	0	0	0
C	0	0	6	0	0	6	0	0	1	0	0	1	7
D	0	0	93	0	0	93	1	0	208	0	0	209	302
E	0	640	0	0	0	640	0	20	1	0	0	21	661
F	0	0	139	0	0	139	0	0	0	0	0	0	139
G	2	0	12	0	0	14	0	0	5	0	0	5	19
H	0	0	0	0	0	0	0	0	0	0	0	0	0
I	0	0	2	0	0	2	0	0	0	0	0	0	2
J	14	193	8	0	259	474	0	4	16	0	0	20	494
K	0	0	0	0	0	0	0	0	0	0	0	0	0
L	0	0	0	0	0	0	0	0	0	0	0	0	0

Figure 2: SARCC/Metrorail's costs of railway incidents for all the reportable occurrence categories



Note:

SARCC/Metrorail reported a total incident cost of R104M for the financial year 2007/08. This is R49,4M more than the previous financial year and can be directly attributed to an increase on the costs of acts of vandalism and theft recorded for the year under review.

Table 13: Breakdown of SARCC/Metrorail's incident costs

BREAKDOWN OF SARCC/METRO RAIL'S INCIDENT COSTS (2006/07 AND 2007/08)				
Category	2006/07		2007/08	
	Costs	% Contribution	Costs	% Contribution
A	R12 958 190	27,70	R 4 275 434.90	4.09%
C	R61 332	0,11	R 254 606.67	0.24%
J	R41 656 404	76,19	R 99 982 209.52	95.67%
TOTALS	R54, 675 926	100%	R 104 512 251	100%

COMPARATIVE SAFETY DATA TREND ANALYSIS FOR SPOORNET FOR THE PERIOD 2005/06 – 2007/08

Table 14: Spoornet (2005/06 – 2007/08)

SPOORNET TOTALS			
CATEGORY	2005-2006	2006-2007	2007-2008
	TOTAL	TOTAL	TOTAL
CATEGORY A	1504	1443	1623
CATEGORY B	110	85	95
CATEGORY C	142	144	145
CATEGORY D	247	227	244
CATEGORY E	54	53	52
CATEGORY F	23	19	0
CATEGORY G	4	11	14
CATEGORY H	455	450	397
CATEGORY I	393	432	334
CATEGORY J	1709	1588	2550
CATEGORY K	0	0	0
CATEGORY L	0	0	0
TOTAL FOR ALL CATEGORIES	4452	5454	5996

Table 15: Breakdown of Spoornet's Category A Occurrences

SPOORNET YEAR-ON-YEAR CATEGORY A OCCURRENCES BREAKDOWN FOR THE PERIOD 2005-2008				
Sub-category	Definition of sub-category	2005-2006	2006-2007	2007-2008
a	Collision between rolling stock on a running line	10	10	15
b	Collision of rolling stock with an obstruction on a running line	565	728	823
c	Derailment of rolling stock on a running line	163	190	181
d	Collisions or derailments during shunting operations	705	695	720
e	Collision and/or derailments on lines other than a running line	0	0	0
TOTAL FOR CATEGORY A		1443	1623	1739

Table 16: Spoornet Total Train Kilometers traveled

Area covered	SPOORNET Kilometers traveled		
	2005/06	2006/07	2007/08
Running lines	65829245	63413904	63689121
Marshalling Yards	3689750	3633820	3665430
Total	69518995 Km	67047724 Km	67354551 Km

Table 17: Breakdown of Spoornet's Accident Frequency Rate for Category A Occurrences Per Million Train Kilometers Traveled

BREAKDOWN OF SPOORNET'S ACCIDENT FREQUENCY RATE FOR CATEGORY A OCCURRENCES PER MILLION TRAIN KILOMETERS TRAVELLED			
Sub-category	2005/06	2006/07	2007/08
Train-on-Train collisions on a running line	0.15	0.16	0.23
Train Collisions with obstructions on a running line	8.58	11.48	12.92
Train derailments on a running line	2.48	3	2.84
Shunting Derailments & Collision	191.07	191.26	196.42
Total rate for Category A per million kilometers	202.28	205.90	212.41

Table 18: Spoornet's accident frequency rate for train related accidents per million kilometres travelled

SPOORNET'S ACCIDENT FREQUENCY RATE PER MILLION TRAIN KILOMETERS TRAVELLED			
Category	2005/06	2006/07	2007/08
A	20.76	24.21	27.30
B	1.220	1.42	1.84
C	2.07	2.16	2.10
TOTAL	24.05	27.79	31.25

Table 19: Breakdown of Spoornet Category J Occurrences

BREAKDOWN OF SPOORNET'S CATEGORY J YEAR-ON-YEAR TOTALS 2005-2008				
Sub-category	Definition of Sub-category	2005/06	2006/07	2007/08
a	Theft, murder, robbery, mugging, rape, serious assault	163	65	128
b	Piracy, or hijacking, theft of freight	0	153	161
c	Vandalism, theft and damage to operational assets	1420	2290	2677
d	Sabotage of operational assets	5	42	43
TOTAL FOR CATEGORY J		1588	2550	3009

Table 21: Spoornet (Injuries and Fatalities):

SPOORNET INJURIES AND FATALITIES 2007/08													
CATEGORY	INJURIES TOTALS FOR ALL QUARTERS					TOTAL	FATALITIES FOR ALL QUARTERS					TOTAL	GRAND TOTAL
	EMPLOYEE	PASSENGER	PUBLIC	INT PASS	CONTRACTOR		EMPLOYEE	PASSENGER	PUBLIC	INT PASS	CONTRACTOR		
A	43	10	13	0	0	66	1	0	1	0	0	2	68
B	1	0	0	0	0	1	0	0	0	0	0	0	1
C	6	0	90	0	0	96	0	0	13	0	0	13	109
D	7	0	73	0	2	82	2	0	162	0	1	165	247
E	18	31	8	0	0	57	0	0	6	0	0	6	63
F	0	0	1	0	0	1	0	0	0	0	0	0	1
G	3	0	1	0	1	5	1	0	4	0	2	7	12
H	0	0	4	0	0	4	0	0	0	0	0	0	4
I	0	0	0	0	0	0	0	0	2	0	0	2	2
J	4	20	0	0	0	24	0	0	1	0	0	1	25
K	0	0	0	0	0	0	0	0	1	0	0	1	1
L	0	0	0	0	0	0	0	0	0	0	0	0	0

Figure 3: Spoornet's cost of railway incidents for all reportable occurrences categories

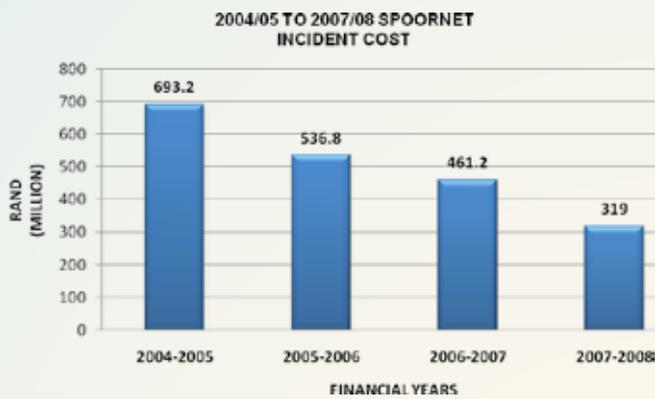


Table 22: Breakdown of Spoornet's incident costs

Breakdown of Spoornet's Incident Costs 2006/07 and 2007/08				
Category	2006/07		2007/08	
	Costs	% Contribution to total costs	Costs	% Contribution to total costs
A	R408 772 478	88.63%	R 305 496 380.69	95.75%
B	R18 006	0.004%		
C	R4 395 759	0.95%	R 4 512 628.41	1.41%
H	R314 640	0.07%		
I	R6 417 087	1.39%	R 34 011.00	0.97%
J	R41 320 069	8.96%	R 5 919 578.26	1.86%
Totals	R461 238 039	100%	R 315 962 598.36	99.99%

COMPARATIVE SAFETY DATA ANALYSIS FOR SPOORNET AND SARCC/METRORAIL FOR THE PERIOD 2005/06 – 2007/08

Table 23: Spoornet – SARCC/Metr rail (2005/06 – 2007/08)

SPOORNET - SARCC/METRORAIL OCCURRENCE TOTALS FOR 2005/06 -2007/08			
CATEGORY	2005-2006	2006-2007	2007-2008
	TOTAL	TOTAL	TOTAL
CATEGORY A	1546	1703	1818
CATEGORY B	97	118	147
CATEGORY C	187	164	148
CATEGORY D	577	575	573
CATEGORY E	750	533	721
CATEGORY F	113	108	128
CATEGORY G	26	33	33
CATEGORY H	450	397	306
CATEGORY I	489	467	426
CATEGORY J	2816	3915	4082
CATEGORY K	78	140	3
CATEGORY L	14	0	5
Total for all occurrence categories	7143	8153	8390

Table 26: Comparative breakdown of Category J related accidents between Spoornet and SARCC/ Metrorail for 2006/07

Comparative breakdown of Category J related accidents between Spoornet and SARCC/Metrorail for 2007/08					
	Total	Theft, murder, robbery, mugging, rape, serious assault	Piracy or hijacking, including theft of freight	Vandalism, and theft and damage to operational assets	Sabotage of operational assets
Spoornet	3009	128	161	2677	43
SARCC/Metrorail	1073	573	1	485	14

4. RSR INTERVENTIONS 2007/2008

4.1 Safety Management System Audits 2007/2008

As required by the NRSR Act, 2002 (Act 16, 2002), Operators must submit a Safety Management Report (SMSR) to the RSR Regulation department, to acquire a operating Permit to legally operate. The report indicates how the operator will manage his railway operations safely against the standard; SANS 3000-1 2005 PART 1 GENERAL

Operators are then audited to ensure that the commitments made in their SMS Report are fulfilled in practice.

As indicated below, for the previous year under review the RSR planned a total 288 of SMS Audits that were scheduled and manage to complete a total of 239 with 08 audits that were work in progress. It needs to be emphasized that many operators conduct their operations at more than one operational site.

07-08 PROGRESS END MARCH 2008	QUARTERLY PROGRESS 0708			
Monitoring Categories	Jun 07	Sep 07	Dec 07	Mar 08
Planned Cumulative Progress 07 -08	75	156	214	288
Actual Monthly cummulative Progress 07 -08	70	142	183	239
Actual Cumulative Completed % Progress 07 -08	93%	91%	86%	83%
Actual Work in Progress	24	20	0	8
Cumalative Completed and Work in Progress% Progress	97%	93%	83%	84%

Number of Enforcements issued per category is as follows:

Of the 239 audits done a total of 12 operators were issued with 100% compliance reports. The balance was issued with:

- 1478 Audit non-conformances:
- 24 Audit non-compliance Letters:
- 14 Improvement Directives
- 3 Prohibition Directives

The immediate causes of the latter two categories can be summarized as follows:

Improvement Directive Category	Quantity
Incorrect operating procedures	5
Infrastructure related	7
Human Factors – Training	1
Level Crossing Related	1

Prohibition Directive Category	Quantity
Incorrect operating procedures	1
Infrastructure related	1
Human Factors – Training	1

Operators’ responsiveness towards directives issued:

Improvement Directives

Number Issued	Number Responded	Number Completed	Outstanding for Completion
14	12	10	4

Prohibition Directives

Number Issued	Number Responded	Number Completed	Outstanding for Completion
3	2	1	2

Continuous follow up actions are launched with the operational support section to ensure timeous completion of improvement directives.

With reference to the latter, the Operator may not operate until such time as evidence has been provided of the implementation of the issued directive.

5. Investigations , Occurrences , and Inspections

In fulfilling its Mandate to determine the Root Cause and Contributory Factors pertaining to Incidents and Occurrences , with a view to steadily improving the State of Safety on rail , the RSR will follow one of a number of courses of action , determined by the severity of the Occurrence , and the availability of its resources -

- o Conduct a full Board of enquiry (BOI)
- o Conduct a full Investigation
- o Conduct a Review of an Operator BOI
- o Conduct a ‘Desk Top’ investigation on available or requested evidence
- o Conduct an Inspection - either standalone , or as part of the above

The results of such BOI’s , Investigations, and Inspections are summarised , together with an assessment of the key findings -



(ii) Operator BOI and investigations reviewed by the RSR 2007/08

Standerton wagon failure	Structural failure of steel carrying wagon leading to the wagon fouling the signaling equipment at the points in Standerton
Knights	Open hinged gate on Car Train struck commuters, who were hanging out of Metrorail Train between Knights and Ravensklip, killing 2 passengers and injuring 3.
Crown station	Metrorail train run over 5 commuters, killing 3 and seriously injuring 2 passengers
Delmas level crossing	Locomotives derailed at a level crossing near Delmas after striking a truck and trailer rig.
Andrea	Premier class Train 17005 to Johannesburg derailed with 1 x loco 1560, 1 x steam wagon 94 020 343 and Coach 32110. No injuries.
Swartkops	Fatal incident at Swartkops Locomotive Depot involving a Spoornet Employee
Wolhuter	Train collided on the mainline at Uitval with runaway locomotives which were detached by the same train
Westleigh	Passenger train no. 37016 passed starting signal at danger without authority at Westleigh on 06 June 2007

(iv) Classification of findings by Boards of Inquiry and Investigations 2007/08

Category Of Findings	Delmas	Standerton	Knights	Crown Station	Swartkops	Wolhuter	Westleigh	Sundra	Total	Percentage
Inadequate Operating Procedure	1	1	0	5	5	6	2	4	24	43%
Inadequate Training	1	0	0	3	1	2	5	1	13	23%
Inadequate Technology/ Design	1	0	1	0	0	0	0	0	2	4%
Inadequate Maintenance	0	2	2	0	0	0	0	0	4	7%
Inadequate Standards	1	0	0	0	0	0	0	0	1	2%
Inadequate Management Processes	0	0	1	0	2	2	4	3	12	21%
Total	4	3	4	8	8	10	11	8	56	100%

Notes - Inadequate Procedures, and inadequate management processes play a significant role

(vi) RSR Inspections 2007/2008

Knysna- George track damage	Inspection of section after extensive storm damage to railway line between George and Knysna
Botswana	Trains owned and operated by Botswana Railways running in South Africa on TFR's line between Ramathlabama and Mafikeng
Hexpass	Inspection of tourist train operating on a portion of the disused Spoornet single line between De Doorns and Matroosberg
Port Alfred	Inspection of Sunshine Trolleys and Trains: a tourist train staged at Port Alfred Station

(viii) Classification of findings made from inspections 2007/08

Category Of Findings	Hexpass	Port Alfred	Andrea	Knysna	Total	Percentage
Inadequate Operating Procedure	3	1	0	0	4	17%
Inadequate Training	0	0	0	0	0	0%
Inadequate Technology/ Design	1	3	0	6	10	42%
Inadequate Maintenance	1	0	1	3	5	21%
Inadequate Standards	1	0	0	2	3	13%
Inadequate Management Processes	2	0	0	0	2	8%
Total	8	4	1	11	24	100%

Note – the high percentage for Inadequate technology / design needs to be viewed in the context of the two operators who were in the ‘heritage’ class where the focus is on original and often old assets , and is not representative of the Industry as a whole

