

Safety Management Manual of The RailwayCompany, RWC

Revised 01/07/2004

**Appendix
to the Brochure**

Safety Management in European Railway Companies

**(Commentary on the Implementation
of the European Directive on Railway Safety in the Community)**

Contents

1	Aim and Subject of this Document.....	6
2	Safety Management System	6
2.1	Definition	6
2.2	Position within the RWC Management Systems.....	7
2.3	Delineation	8
3	Safety Organisation and Responsibilities	8
3.1	Basic Principles.....	8
3.2	RWC Safety Platforms	9
3.3	Safety Manager	11
3.4	Responsibility for Safety.....	11
3.5	Safety Management at Domestic and Foreign Subsidiaries, Associated Companies and Major Projects and Foreign Operations of the RWC Group	11
4	Structure of the Safety Management Process	12
5	Measurement Systems.....	13
5.1	Accidents, Unsafe Incidents	13
5.2	Monitoring	15
5.3	Safety Comparisons.....	15
5.4	Early Warning Indicators	16
6	Accident Investigation	17
7	Audits.....	18
8	Risk Assessment.....	19
8.1	General Description	19
8.2	General Risk Assessment	19
8.3	Specific Risk Assessment	20
8.4	Methodology for Risk Assessment and Action Evaluation	21
9	Target vs Actual, Action	23
9.1	External Requirements.....	24

9.2	RWC Safety Policy	25
9.3	Safety Strategy.....	25
9.4	Safety Targets.....	26
9.5	Safety Programme	27
9.6	Resources.....	28
10	Safety Communication	29
10.1	Reporting System.....	29
10.2	Internal Safety Communication	29
10.3	External Communication	30
10.4	Information from Infrastructure to Railway Undertakings	30
10.5	International Contacts	31
10.6	Communication of Requirements	31
11	Emergency Management	32
11.1	Emergency Management	32
11.2	Crisis Management	32

List of Illustrations

Figure 1: Fundamental principle of RWC safety management system	6
Figure 2: RWC management system concept	7
Figure 3: Safety organisation/responsibilities/process	8
Figure 4: Role of platforms	9
Figure 5: RWC safety management process	12
Figure 6: ESI system	14
Figure 7: Risk matrix	20
Figure 8: Risk assessment process	22
Figure 9: Example of a risk scale diagram for the transport of hazardous goods	22
Figure 10: Cost-benefit optimisation	23
Figure 11: Strategic areas of action for safety as per safety strategy	26
Figure 12: Excerpt from 2004 Safety Programme – Assessment of Main Risk Areas	27
Figure 13: Excerpt from 2004 Safety Programme – Measures	28
Figure 14: Excerpt from 2004 Safety Programme – Key Monitoring Figures	28

Appendices

Appendix A Administration of the RWC Safety Management Manual	33
Appendix B Definitions and Abbreviations	34
Appendix C Process for Recording and Analysis of Safety Early Warning Indicators	35
Appendix D Safety Planning Process	36
Appendix E Reference List for European Railway Safety Directive 2004/49/EC	37

Declaration of Obligation

This document describes the company-wide safety management system (SMS) of the Railway Company, RWC. That system includes rules, process descriptions and details of the allocation of responsibilities for ensuring RWC's safety capabilities.

The SMS supports the achievement of the safety targets. Those targets, and therefore the SMS as well, take account of the general legal, social and corporate circumstances. The SMS makes a substantial contribution to directing safety activities towards the correct targets and ensuring that staff act appropriately and responsibly. The operation of processes is systematised with the process owners responsible so that it takes place under controlled, reproducible conditions and continuously improves.

The SMS encompasses all activities that are either directly or indirectly related to the efficient assurance of safety in railway operation.

The safety management system is obligatory for all employees of RWC.

The Railway Company, RWC

Chairman

Safety Manager

1 Aim and Subject of this Document

The subject of this document is to describe the basic principles of the company-wide safety management system (SMS) of RWC, placing the main emphasis on the processes at Group level. The Divisions (Passenger Transport, Cargo and Infrastructure) are included with respect to their mutual interfaces and the inter-divisional instruments.

The aim is to describe and present the SMS with the intention of

- providing an overall understanding
- communicating the SMS, and
- promoting application of the SMS for the purposes of continual improvement.

This document is not concerned with

- achieving certification or
 - obtaining licences or approval
- because as far as those aspects are concerned, the Divisions act independently.

This documentation is based on

- the policy
- the strategy
- the RWC code of procedures and
- legal regulations.

2 Safety Management System

2.1 Definition

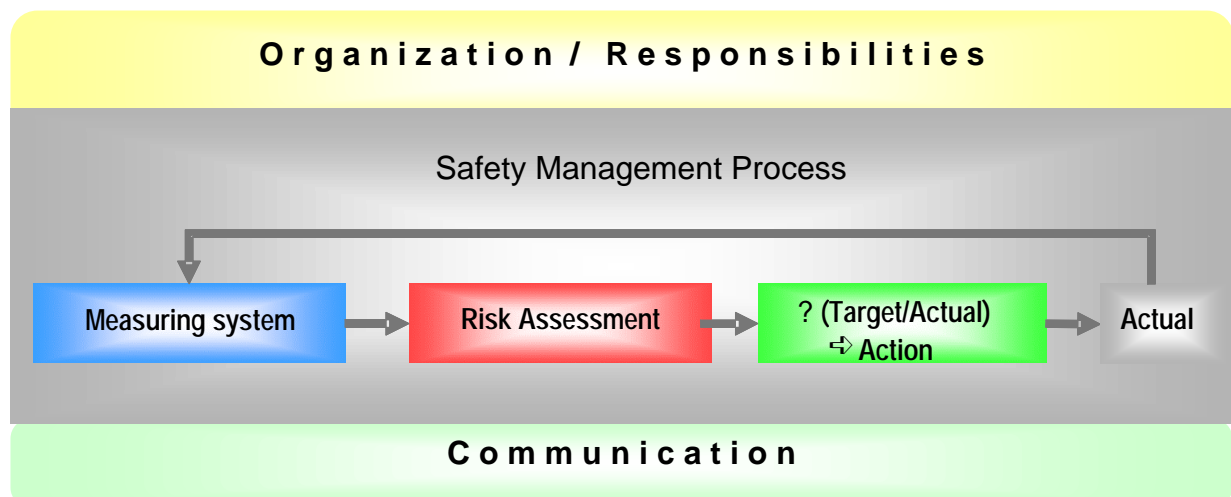


Figure 1: Fundamental principle of RWC safety management system

The RWC SMS essentially consists of a safety management process with feedback (see diagram) which comprises the following four elements:

Measurement system: ascertains the safety level

Risk assessment: assesses the safety level

? (Target vs Actual) ? Action: defines the action required, produces strategies and safety plans and programmes

Implementation: implements required action

The safety management process together with

- the safety organisation,
 - communication and information about safety, including safety instructions,
 - monitoring mechanisms relating to safety, and
 - all processes and management tools that directly or indirectly affect safety
- form the safety management system.

The **purpose** of the SMS is the efficient maintenance and improvement of safety levels.

The **aim** of the SMS is to provide the necessary management tools and aids for safety-related matters and to place them in a meaningful context.

2.2 Position within the RWC Management Systems

The safety management process is one of the management processes at RWC. This RWC Safety Management Manual represents the documentation at major process level as illustrated by the following diagram.

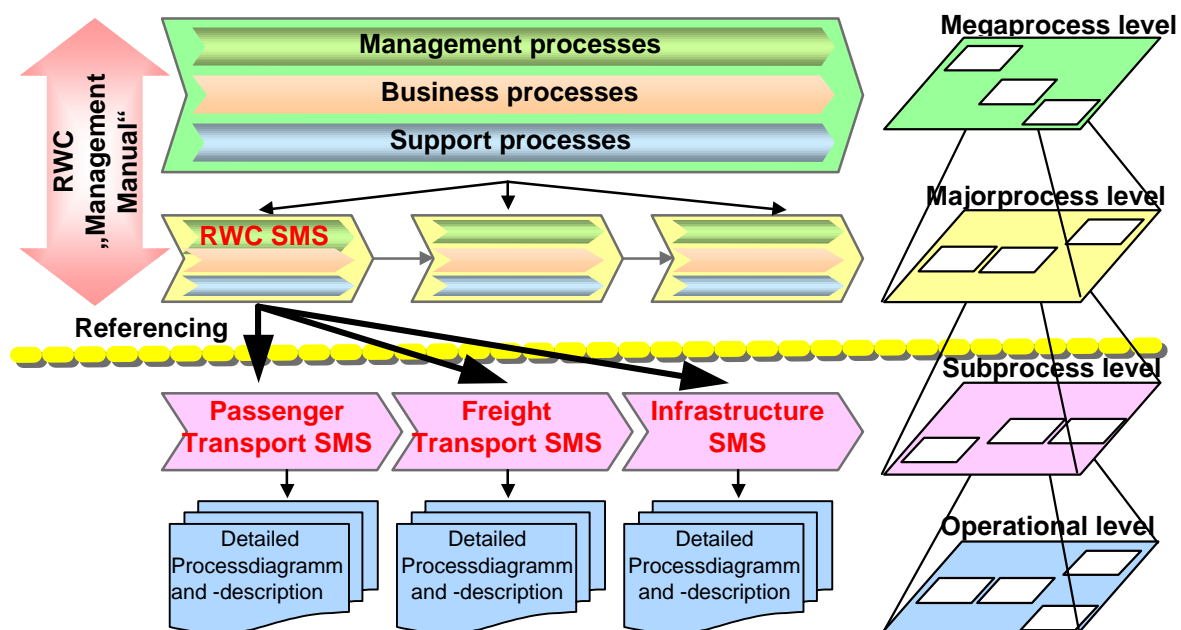


Figure 2: RWC management system concept

Further documentation

RWC management manuals on the intranet

2.3 Delineation

Safety is one of the essential attributes of the product "railway". Consequently, safety is an important aspect of all management, business and support processes at RWC (e.g. in the personnel process). Those processes constitute components of the SMS. The interfaces with those processes are dealt with below; the processes themselves are dealt with and described separately.

Refer to:

RWC Management Manual
Personnel Management Manual
Financial Management Manual
IT Project Manual
Safety management systems of the Divisions
Management systems of the Divisions

3 Safety Organisation and Responsibilities

3.1 Basic Principles

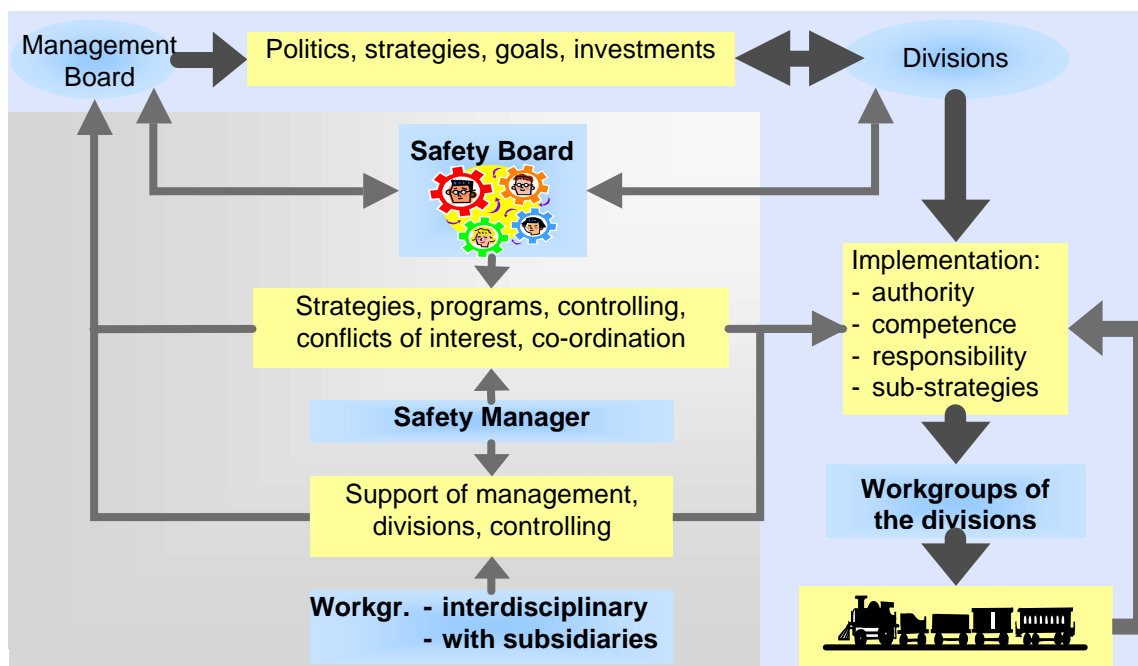


Figure 3: Safety organisation/responsibilities/process

Line:

The senior management is responsible for defining the safety policy and safety strategy, setting the safety targets and making decisions relating to investment in safety.

Safety matters that are of relevance at Group level are represented by the Chairman. As the highest SMS management body, the Board ensures that the requirements placed on the SMS are met and continuously complied with. In that connection, it is responsible for

- bringing the SMS (manual) into force
- defining the safety policy and the safety requirements that derive from it
- assessing the ongoing safety situation
- defining annual safety targets
- assessing the efficiency and effectiveness of the SMS.

The operational responsibility for safety is in the hands of the Divisions.

Specialist support:

The following elements are available to the line as support:

- Platforms and the RWC Holding safety manager at Group level for
- specialist support
- production of control documentation
- performing line duties where delegated by the line.

Working parties at Division level as described in the SMS and management manuals.

3.2 RWC Safety Platforms

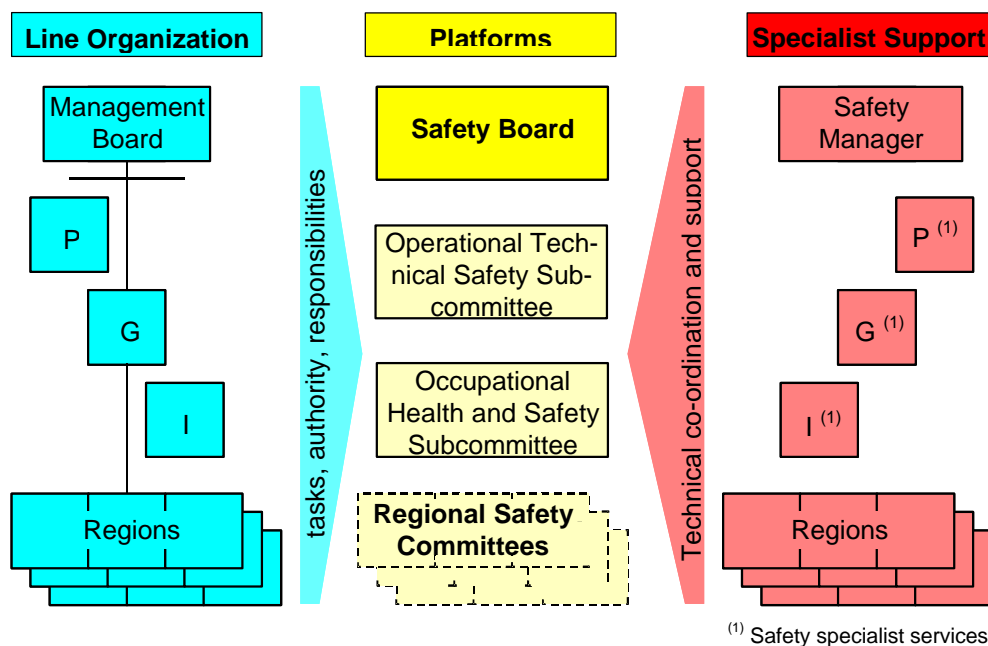


Figure 4: Role of platforms

The platforms constitute the connecting link between the line and the specialist support. They serve to protect interests across the corporation as a whole, to utilise synergetic effects and to control interfaces between the Divisions.

a) Safety Board

The Safety Board has the following tasks:

- To prepare the strategic and conceptual requirements for safety, the safety targets and the safety programme for submission to the Board of Directors.

- To assess the safety situation and initiate safety projects where necessary (inc. senior project management)
- To co-ordinate and resolve conflicts of interest in inter-divisional safety matters

Members of the Safety Board:

- The Divisions are represented by heads of organisational units with substantial influence on safety or by heads of staff units with inter-divisional safety duties.
- The Safety Board is chaired by the RWC Holding safety manager as the representative of the Chairman of the Board of Directors.

b) Operational Technical Safety Subcommittee (OTSS)

Duties, Function:

- Group-wide co-ordination of action, campaigns and the production and implementation of the requirements of the Board of Directors and the statutory provisions in the area of operational technical safety.
- Communication of technical knowledge and experience, utilisation of synergetic effects and knowledge pool.
- The OTSS deals in particular with "risk mapping", the systematic identification and assessment of situations that involve risk.

Members of the OTSS:

The committee includes representatives of the specialist units for operational technical safety in the Divisions or the specialist departments and representatives of the workforce under the chairmanship of the RWC Holding safety manager.

c) Occupational Health and Safety Subcommittee (OHSS)

Duties, Function:

- Group-wide co-ordination of action, campaigns and the production and implementation of the requirements of the Board of Directors and the statutory provisions in the area of occupational health and safety.
- Communication of technical knowledge and experience, utilisation of synergetic effects and knowledge pool.

Members of the OHSS:

Represented on the OHSS are the specialist units for occupational health and safety in the Divisions or the specialist departments plus the medical service and the welfare or worker-participation organisations as per the statutory accident-prevention regulations chaired by the RWC Holding safety manager.

d) Other Generally Temporary Committees

Other generally temporary committees are formed to deal with specific topics such as the Detection/Incident Regulations Steering Committee.

e) Regional Safety Committees

The Divisions institute regional safety committees (e.g. SMS and management manuals).

3.3 Safety Manager

The RWC Holding safety manager is responsible for inter-divisional safety management. He/she also assists the line with questions of methodology and technical management.

Main functions:

- Preparation of safety policy and safety strategy at Group level
- Formulation of annual safety programme
- Support with Division-specific implementation planning
- Co-ordination of group-wide implementation of legal requirements in selected areas (e.g. incident regulations, occupational health and safety)
- Co-operation with national authorities in selected areas as well as within international organisations and with neighbouring railways in the area of safety
- Providing the Divisions with specialist advice
- Support with specialist training in safety matters
- Overseeing the area of safety-related data management (analysis/management statistics)
- Direction and management of the safety-related subcommittees
- Supporting the Board of Directors with the monitoring of safety performance and the SMS

3.4 Responsibility for Safety

Vertical Responsibility for Safety

In addition to the basic principles of safety organisation and safety responsibilities as set out in Section 3.1 of this document, the responsibilities and authorities set down in the RWC CPR (Code of Procedures and Responsibilities) also apply to safety-related matters. The CPR defines the boundaries of authorities and responsibilities between different levels of hierarchy.

Horizontal Responsibility for Safety

Clearly defined and fully comprehensive authorities in safety-related matters are the fundamental requirement for proper operation of the railway and must be defined according to the legal principles (railway legislation and implementing regulations).

The responsibilities for operational safety as the basis for organisational and detailed local regulations are defined in the "Regulations for Internal Responsibilities for Operational Safety and Security at RWC". As a fundamental principal, each division of RWC is responsible for the proper establishment, safe operation and maintenance of the installations, equipment and rolling stock allocated to it. That responsibility relates to local, organisational and functional aspects of safety.

3.5 Safety Management at Domestic and Foreign Subsidiaries, Associated Companies and Major Projects and Foreign Operations of the RWC Group

Domestic and foreign subsidiaries and associated companies conform to minimum standards set down in a graduated model derived from the SMS in order to achieve the following aims:

- No gaps in safety at home or abroad, i.e. conformity with minimum standards demanded by RWC or foreign country

- Early detection of gaps in safety by RWC Holding
- Safety results detailed separately for subsidiary and country
- Aggregated data at Group level
- No restriction of competitiveness of foreign subsidiaries

Responsibility

- Controlling responsibility for safety is in the hands of RWC Holding or Divisions as specified by the regulations "RWC Representatives on Administrative Committees". The SMS tools employed are primarily those implemented in the safety management process (cf. Section 4).
- The subsidiaries and associated companies are responsible for compliance with local standards, e.g. EU requirements.

Further documentation

For details of basic concept, see safety manager's report "Safety Management System for Domestic and Foreign Subsidiaries, Associated Companies and Major Projects and for Foreign Operations of the RWC Group" of 18/05/2004.

4 Structure of the Safety Management Process

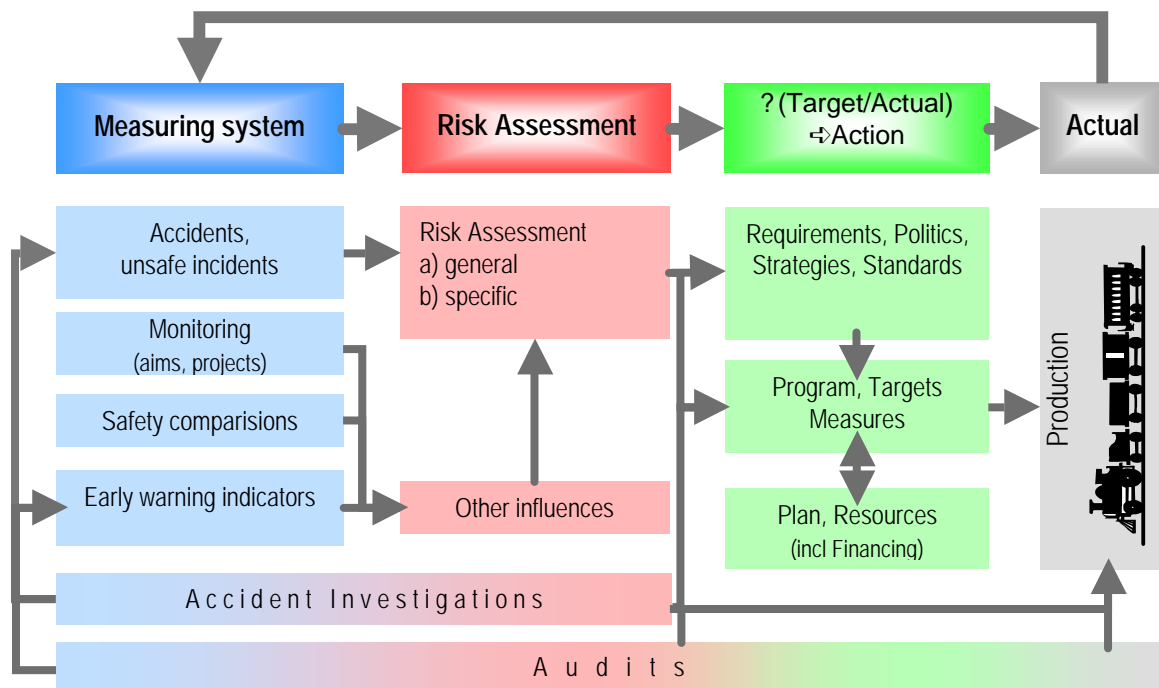


Figure 5: RWC safety management process

Structure

The safety management process is the core element of the SMS. The safety management process is a system in its own right made up of subsystems. The **measurement system** encompasses the collection and recording of information that has direct or indirect relevance to safety on a graduated scale. The information established by the measurement system is analysed in the **risk assessment** stage. The risk assessments may be restricted to specific areas or generally applicable. The input is not only data ascertained by the measurement system but also all conceivable influencing factors under the general heading of "environ-

ment". The findings of accident investigations and audits are also taken into consideration. On the basis of the risk assessment in conjunction with internal and external safety requirements **the action required (? (Target vs Actual) ? Action?)** is identified. Cost-benefit considerations play central role in those deliberations so as to ensure maximum safety performance is attained from the finite resources available.

Aim

The aim of the safety management process is to correctly and efficiently control and impose the **safety-related parameters in production**. All efforts at continual improvement of the SMS are directed at that aim.

Responsibility

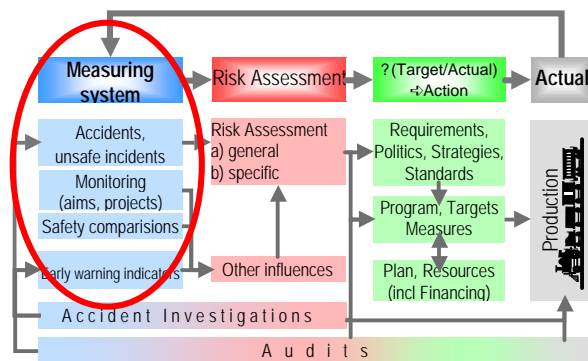
Responsibility for the safety management process at Group level is held by the RWC Holding safety manager.

5 Measurement Systems

Consistent quantitative assessment of safety, and monitoring and control using appropriate key figures enable focussed and rapid identification of the critical areas of the RWC risk landscape and the action required at all levels of management.

The **subject** of the RWC safety measurement system are basically all parameters that affect safety. The following in particular are measured:

- Accidents → ESI, AFUS
- Near misses → ESI
- Unsafe actions → ESI
- Environmental parameters with direct effect on safety → ESI, early warning system
- Parameters with indirect effect on safety → early warning system



The accuracy of measurement varies because it is heavily dependent on the possibilities for recording.

5.1 Accidents, Unsafe Incidents

ESI (**E**vent database for **S**afety-related **I**nformation) is a computer-based information system which stores details of all safety-related events (accidents, near misses, unsafe actions) at RWC. The scope of the data is, therefore, not restricted with regard to category (criminal action, accidents, operator errors, etc.) or with respect to area of operation (railway operation, power stations, main depots, regions, network, etc.). In particular, ESI is not restricted to data that relates directly to actual railway operation but extends across all RWC's safety-related activities including occupational health and safety.

ESI makes it possible to obtain an overall view of safety-related operational conduct at all levels so as to be able to produce specifically targeted improvement measures based on (statistical) analyses and findings.

Other aims served by ESI are:

- as complete as possible recording of safety-related incidents and data
- provision of information for specialist units
- availability of statistics based on a central and comprehensive database (e.g. for safety projects, national authorities, UIC)
- production of aggregated data for divisions and categories
- identification of trends in safety developments
- creation of a long-term database as the basis for risk analyses
- online queries by specialist units relating to various safety-related occurrences
- access to initial information relating to notifiable incidents for the national supervisory authority.

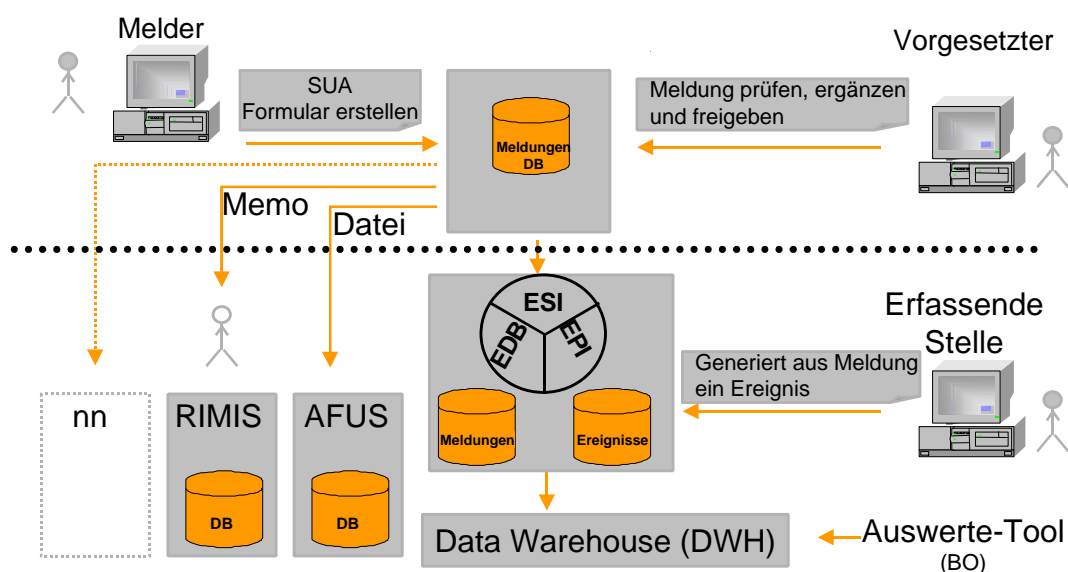


Figure 6: ESI system

A report entered by the reporter is assessed by the reporter's superior, cleared and subsequently sent via interfaces to relevant linked systems (e.g. RIMIS insurance event database, AFUS work and leisure accidents database). After clearance of the report, the recording unit (DEM decentralised event data manager) generates an event from it. The events are transferred to the data warehouse where they can be analysed using the analysis tool (Business Objects).

Most safety-related events are recorded on the ESI database. However, directly or at least indirectly safety-related data is also stored on the system for monitoring the condition of installations and rolling stock. Links with ESI are planned.

Responsibility

- **Responsibility for the system** of recording accidents and events is in the hands of the RWC Holding safety manager.
- Every employee has an obligation to **report** identified irregularities and accidents in writing or electronically using the appropriate forms.
- Responsibility for the correct and prompt **recording of data** is held by the line.

Further documentation

Details are set down in the Group directive "Procedure for Internal Reporting and Clarification of Irregularities and Accidents at RWC".

5.2 Monitoring

The monitoring of aims, planned measures and projects takes place on a quarterly basis. Input is provided by the organisational units affected of the Divisions. The results are documented in a brief assessment of the situation in the reports on the safety programme. Following a response to the situation by the Safety Board, the results are dealt with by the Board of Directors, which decides on necessary corrective action.

Examples of some of the key figures that are monitored by the safety programme are the following:

- Specifications from the proprietor's strategy
- Safety of hazardous goods transport
- Derailments, collisions, impacts
- Shunting safety

In addition, individual key figures are tracked on a monthly basis using the management information systems AFUS (work and leisure accidents) and ESI (unsafe actions, accidents as defined by UIC). Those management information systems break down the key figures to Division level.

To supplement those standardised monitoring operations, special analyses for examining specific problem areas are produced (e.g. all causes of incident type 'accident/railway operation accident/collision' arranged according to originator).

Responsibility

- The RWC safety manager is responsible for the monitoring system at Group level. He/she also provides specialist assistance with the monitoring of safety-related data and the production of special analyses.
- Responsibility for correct and prompt data collection and provision and for implementation of the measures is held by the line.

Details of the responsibility for the production and the frequency of the reports are given in Section 10.1, Reporting System.

5.3 Safety Comparisons

In order for a railway company to maintain a high safety level, it is not sufficient to simply base self-criticism on internal comparisons; instead there must be opportunities to study developments and lessons learned at other railways.

There are fundamentally two possible ways in which safety comparisons with other railways can be made. Firstly, comparisons can be made using the UIC database, though this has not become established. Secondly, there is a regular comparison of safety criteria that can be reliably measured by all parties and at the same time have a certain significance for railway safety. That safety comparison is based on simple definitions of the recorded events in order to achieve the maximum possible reliability. The reference quantities are chosen with simplicity in mind in order, once again, to benefit clarity, but with the disadvantage of limited comparability. The safety comparison therefore primarily serves as an indicator of necessary action which may require more detailed analysis. In addition to RWC, the railways that take part in the annual safety comparison are DB, NS, ÖBB, RSSB, SBB, SNCB, SNCF and Trenitalia. The platform is the ERMS (European Railway Safety Managers) working party in which RWC is represented by the RWC Holding safety manager. At the request of individual

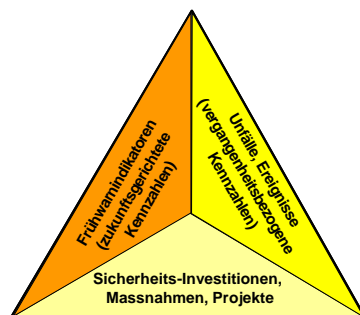
members, the safety comparison is treated confidentially to the extent that it may not be published and may only be distributed internally in anonymous form.

Responsibility

The safety manager is responsible for producing the safety comparison.

5.4 Early Warning Indicators

The early warning indicators are a means by which the Group, the Divisions and organisational units can obtain indications of circumstances that positively or negatively affect safety in the long term.



In contrast with the key figures for accidents/incidents, the early warning indicators represent an attempt to pick up signs well in advance of accumulations of accidents which can be analysed to identify growing risks and define corrective action. The early warning indicators are based on data that is directly or indirectly related to safety and is primarily collected independently for other purposes than safety. The early warning indicators are an aid to identifying trends. The forward-looking and long-term view is intended to counteract any tendency towards precipitous and poorly founded action.

The process for recording and analysing early warning indicators is described in Appendix C.

Responsibility

- The line records the key figures and reports them to the RWC Holding safety manager (half-yearly figures).
- The safety manager processes and statistically analyses the key figures. Together with the "data supplier" the safety manager comments upon and interprets each indicator.
- A synthesis team (safety manager and members of OTSS) interprets the indicators taking account of their interrelationships in order to obtain an overall view of safety at RWC. The interpretation also takes account of accident figures.
- The Safety Board adopts the trend report on behalf of the Board of Directors.
- The Board of Directors decides on follow-up action (more detailed analyses, examination of possible action)

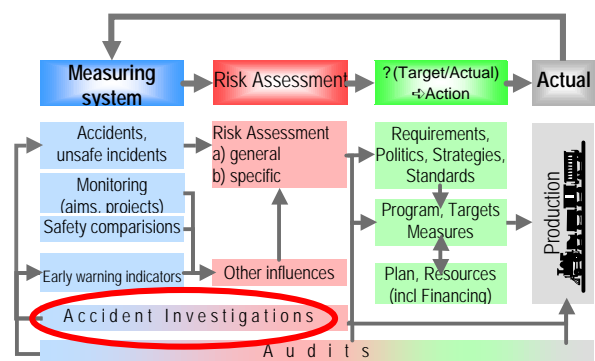
Examples of possible indicators:

Possible indicator	Description and measurable quantity
Employee stress	Absenteeism, overtime, motivation, satisfaction
Technical competence	Qualification level, skills, level of expertise, training courses completed
Experience	Length of service
System stability	Deviation from specified condition, customer pressure, delays
Vandalism	Relationship of society & railway system, property damage
Process conformity	Interpretation and application of regulations, audit results
Technical safety of goods wagons and passenger carriages	Maintenance data
Availability of traction units for goods	Number of traction units

transport	
Reliability of rolling stock for passenger transport	Available rolling stock, maintenance data
Condition of running gear	Hot-box locating systems
Condition of track	Infrastructure quality data, damage to rails
Unsafe actions	Reported events
Signals passed at danger	Incidents database

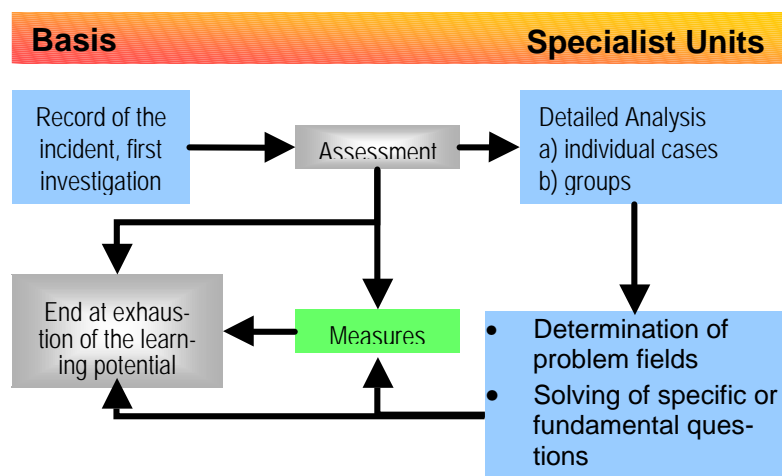
6 Accident Investigation

With the aim of identifying the need for action from irregularities and accidents, the SAI (Systematic Accident Investigation) tool was introduced at RWC. SAI functionally complements the measurement and risk assessment phases of the safety process. In addition, it has a direct influence on the production process to the extent that safety measures are directly implemented on the basis of SAI.



The following basic tenets apply to the **principles and procedures** for systematic accident investigation (cf. diagram of system model):

- Every accident is recorded and investigated. Recording takes place locally on the ESI database using standard forms; subsequent additions are made locally or centrally according to the wider significance of the event.
- Assessment of straightforward cases is made according to a standardised procedure at incident level; more complex cases are dealt with by the specialist units. Inter-divisional cases with wide-ranging significance and complexity are examined under the direction of the RWC Holding safety manager.
- The essential aim of assessment is to identify lessons to be learned rather than to attach blame.
- More detailed analyses by the specialist units relate to individual cases or groups of incidents. Such analyses are also concerned with gaining knowledge about the significance of fall-back levels and new risks. Measures and solutions are not based on cost-benefit criteria.



Systematic accident investigation at RWC complements the official accident investigations by taking place within a short time of the event (guide period one month) and by taking account of the internal circumstances.

Responsibility

- Responsibility for system: RWC Holding safety manager
- Accident investigations: Divisions concerned, safety manager

Further documentation

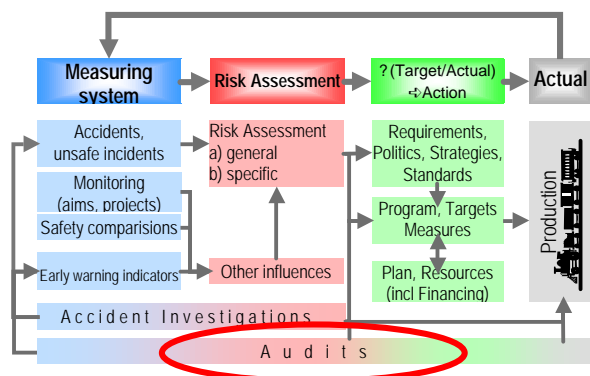
SAI manual

Group directive "Procedure for Internal Reporting and Clarification of Irregularities and Accidents at RWC".

Group directive "Reporting Irregularities and Accidents to the Safety Authority"

7 Audits

Auditors carry out internal safety audits to check whether the safety-related activities and outcomes meet the defined specifications and whether the system described in the SMS manual is effective. The scope of the internal system audits is defined once a year in an audit schedule. The content of the audits and the timetable are set out in an audit programme. The audit results and any necessary action are detailed in audit reports. The findings are taken into account by the measurement system or in the planning of action. Audits may also trigger immediate practical action.



A distinction is made between the following types of safety audit:

A) Internal System Audits

Internal system audits are used by the RWC Holding safety manager to check the effectiveness of the system described in the SMS manual.

B) Internal Technical Audits

The internal technical audits are used to examine individual SMS processes or individual products (e.g. radio audits, train driving audits, hazardous materials audits, ...).

Internal technical audits are carried out by the relevant specialist units of the business units utilising synergetic effects with management tools and technical audits by other units.

Further documentation

Process descriptions of internal audits by the business units

C) Inspections by the Auditing Department

The Auditing department as an independent unit within RWC carries out safety audits on all safety-related business activities. A detailed examination, which generally extends over a

relatively long period, follows methodological procedures that conform to international standards for internal auditing.

Further documentation

"Internal Auditing Policy" regulations

D) Safety Management System Audits by the National Regulatory Authority

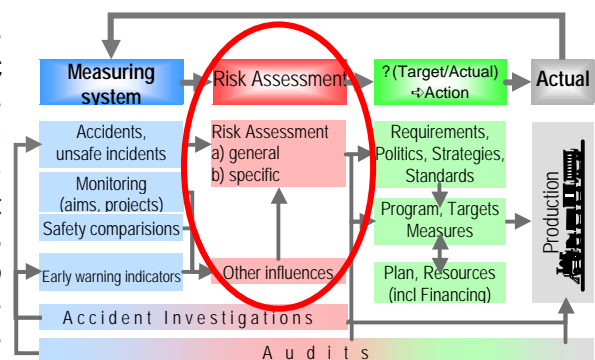
As part of its supervisory duties, the national regulatory authority performs safety audits on a case-by-case basis.

The aim of a safety audit by the national regulatory authority is basically to check whether the corporation, from most senior management level down to operative personnel, is organised in such a way that it is capable of ensuring permanently safe operation. To that end, the structural and procedural organisation is examined and its operational implementation tested across all levels by random checks.

8 Risk Assessment

8.1 General Description

Starting from the basis of the national requirements and the appropriate safety culture, RWC adopts a risk-based approach to safety management. That means that a residual risk level is accepted and the safety measures implemented are those that offer the best cost-benefit analysis. In that way, the limited resources available even for safety can be used so as to produce the highest possible safety performance. This approach necessitates safety comparisons within a safety landscape. For that reason, RWC produces an annual review of risk levels across all risk categories. In similar fashion, risk assessments including action evaluations for special risk studies are produced within special projects.



8.2 General Risk Assessment

An annual RWC safety risk assessment is produced to provide an overall view of safety risks at RWC. That overall view of risks is based on a classification of possible scenarios and the appraisal of occurrence frequency and extent of damage. A scenario is taken to be an event that leads to damage as a direct consequence. The scenarios assessed are entered in the risk matrix shown below according to frequency of occurrence and extent of damage. Each cell of the risk matrix represents a risk class. Based on the risk assessment, action plans are produced for the scenarios with the highest risk levels and are incorporated in the annual safety programme.

Responsibility

Responsibility for general risk assessment is held by the RWC Holding safety manager.

Qualitative Classification	Frequency per year	Class of frequency	Class of risk					
frequently	over 100	I						
	10 to 100	II						
occasionally	1 to 10	III						
	0.1 to 1	IV						
rarely	0.01 to 0.1	V						
	below 0.01	VI						
Class of extent			A	B	C	D	E	F
Real values in CHF			below 10'000	10'000 to 100'000	100'000 to 1 Mio.	1 to 10 Mio.	10 to 100 Mio.	over 100 Mio.
Personal injuries			one easily hurt person, a heavy annoyance or a violent attack	several easily hurt persons, 1 moderately severe hurt person	1 severe hurt person (RK4) or 1 victim (RK2)	several severe hurt persons or 1 victim (RK4)	2 to 10 victims or numerous severe hurt persons	10 or more victims
Qualitative Classification			small		medium		high	

Figure 7: Risk matrix

8.3 Specific Risk Assessment

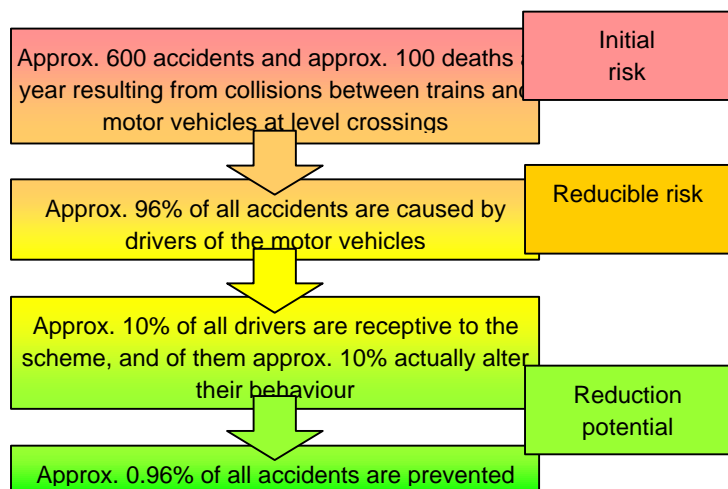
If the measurement system identifies quantitative concentrations in the RWC risk landscape, specific risk assessments are triggered. Specific risk assessments have in the past been carried out for circumscribed topic areas such as tunnel safety, safety of hazardous materials transport, expansion of train monitoring equipment network, personal safety of third parties, shunting safety. RWC adopts a risk-based approach in which the decisive factor is the relationship between the benefit of an expected risk reduction and its cost. Consequently, RWC proactively promotes the implementation of measures to reduce specific risks where there is an economically acceptable cost-benefit ratio.

Responsibility

The RWC safety manager is responsible for the risk assessment system. He/she provides technical advice for the performance of specific risk assessments.

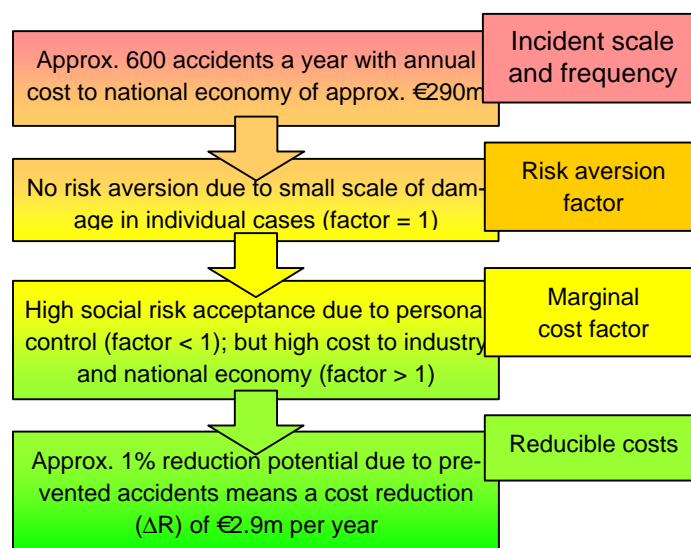
Example of an evaluation of possible action:

As an example of a selection process for possible action, we have taken a scheme running in Germany to reduce the annual total of roughly 600 accidents and 100 deaths resulting from unauthorised



crossing of level crossings when the barriers are closed. A campaign involving posters, leaflets, films for driving instructors and information documents on partners' websites that can be downloaded free of charge aims to raise awareness among motorists. The implementation costs of the scheme extend to €100,000 per annum investment expenditure. There are no maintenance or operating costs.

Assessment of the risk reduction potential r is based on a known potential risk or danger. The scheme is intended to affect and reduce a specific proportion of the risk based on type and scale.



Quantification of the risk in financial terms is performed with the aid of a calculation procedure based on the factors of incident frequency and scale, risk aversion and marginal costs. The marginal costs are a measure of the willingness to introduce a risk reduction strategy. They consist of the social acceptance of the risk cause, i.e. more money is spent on non-controllable social risks than on individual risks entered into by personal choice, and the potential business losses and consequential costs to the national economy. Multiplication of the cost savings for the prevented risk R (in €) by the percentage figure for r produces the risk reduction potential ΔR (in €) in financial terms. This process should be seen as the implementation of improvements "where reasonably practicable" because its criteria of economic viability, customer needs and social requirements are taken into account in determining the factors of incident scale, risk aversion and marginal costs. On the basis of the ratio of cost to benefit expressed in financial terms, $\Delta C / \Delta R$, a selection can be made as to the most economically effective measures according to the company's resources.

$$\Delta C / \Delta R = €100,000 / €2.9m \quad \Delta C / \Delta R \ll 0.1$$

$\Delta C / \Delta R < 0.1$	Very good ratio
$0.1 \leq \Delta C / \Delta R < 0.5$	Good ratio
$0.5 \leq \Delta C / \Delta R < 2.0$	Evenly balanced ratio
$2.0 \leq \Delta C / \Delta R < 5.0$	Poor ratio
$\Delta C / \Delta R \geq 0.5$	Very poor ratio

8.4 Methodology for Risk Assessment and Action Evaluation

In the *first stage* of risk assessment - the risk analysis - a number of approaches are combined for the purposes of risk detection and quantification. Firstly, there is the statistical approach in which the dangers and risks are determined by data analysis and evaluation. Where the volume of data is too small for statistical conclusions to be drawn, the statistical approach is supplemented by the intuitive approach in which expert opinion is included.

Another approach is the fault tree analysis by which causes and combinations of causes that may lead to a major incident can be identified with the aid of logical operators.

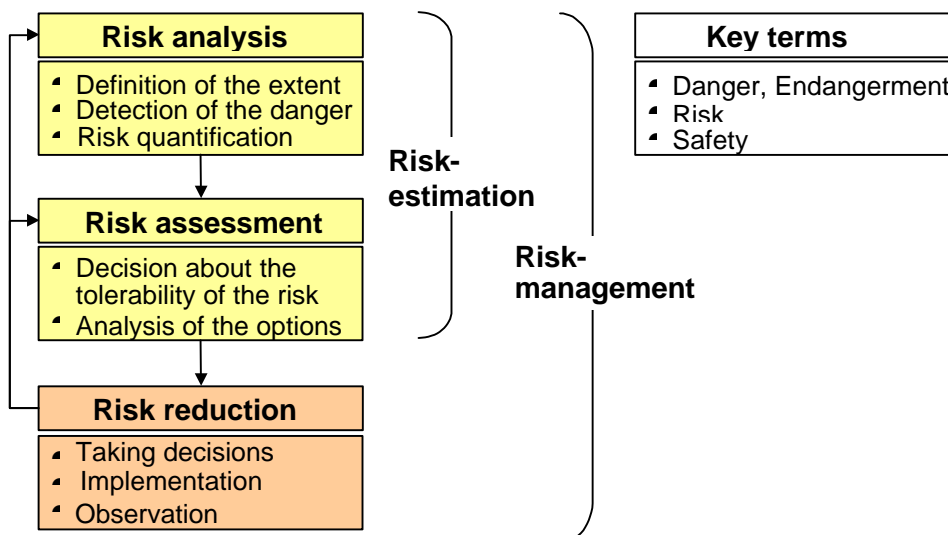


Figure 8: Risk assessment process (EN IEC 56(Sec)410: 1995-03)

For the purposes of risk quantification, the risk is defined according to ISO/IEC Guide 23, 2002 as a measure of the extent of a danger as a function of the frequency, F, of an instance of damage and its possible consequences C. Usual formula (excluding aversion): $R(F,C) = F \times C$.

In the *second stage* – the risk assessment – the identified risks arising from the dangers considered are set out in the risk scale matrix or the risk scale diagram (see Figure 9). Using the defined criteria for assessing the risk, which are shown on the matrix/diagram as an acceptance line or zone, a decision as to the tolerability of the risk is made.

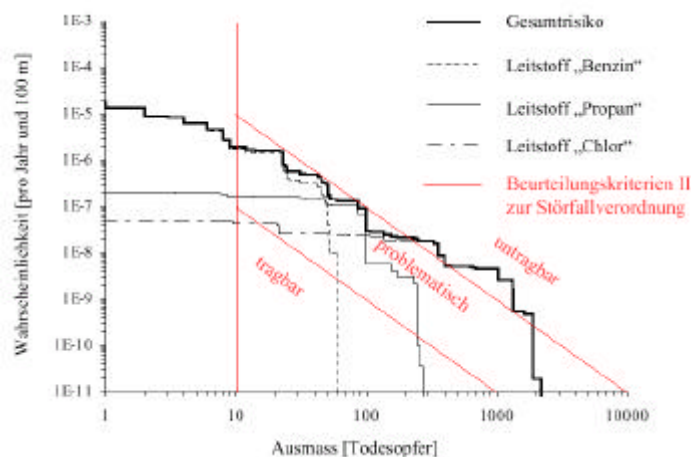


Figure 9: Example of a risk scale diagram for the transport of hazardous goods

If the risk is not acceptable, options for reducing the risk are analysed. The possible action is considered from the viewpoint of cost-benefit optimisation (see Figure 10).

The optimum ratio is considered to be that which achieves the lowest total from avoided accident costs and funds invested in safety-improving measures. The highest possible safety level is not aimed at. In other words, the ALARA/ALARP principle (As Low As Reasonably Achievable/Practicable) is followed.

In the *third stage* – risk reduction – a decision is made as to the action to be taken, its implementation ensured, and the effect on safety observed. If the risk is not reduced to the extent expected, risk analysis and assessment are repeated.

Responsibility

Responsibility for a standardised methodology is held by the RWC Holding safety manager (development, application, advice for Divisions).

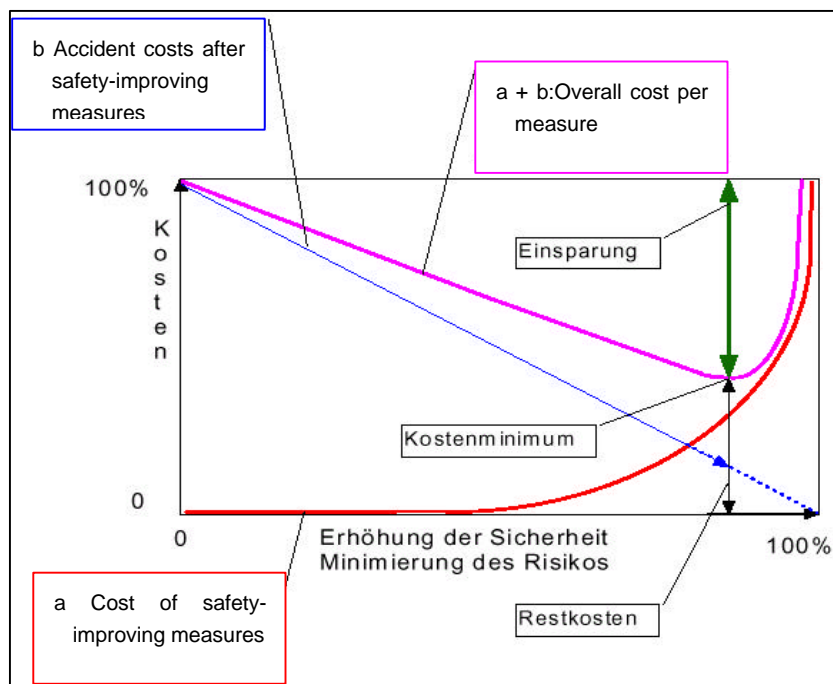
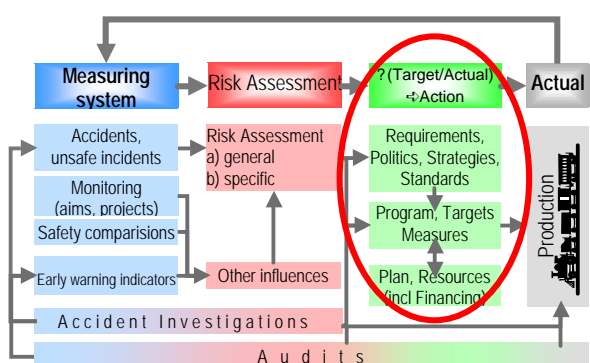


Figure 10: Cost-benefit optimisation

9 Target vs Actual, Action

The process stage "? (Target vs Actual) ? Action?" is concerned with the definition of what can be effectively implemented in productive operation in the way safety measures. This process stage essentially consists of the following elements:

- Definition of specifications, safety policy, safety strategy and all standards. All of those are directly or indirectly influenced by risk assessment and national requirements.
- The national safety requirements – from safety policy requirements to operating requirements (e.g. train loading and operating regulations) – are developed in consultation with RWC. In that way, insights from the risk assessments are also incorporated in the requirements.
- The requirements referred to in a) and b) are defined in practical terms in the operational safety targets and the safety programme. Influencing factors include not only the (gen-



eral) requirements but also the cost-benefit considerations arising from the risk assessments and lessons learned from accident investigations.

- d) A fundamental subprocess of the definition of the safety targets and the safety programme is the planning of resources.
- e) Safety measures may be prescribed not only in the course of defining safety targets and programmes. The system also provides scope for the immediate adoption of safety measures as a result of insights gained from accident investigations, for example.

The targets and measures defined at Group level are documented in the annual safety programme.

9.1 External Requirements

Note: this section is based on the assumption that RWC is state-owned.

Performance Agreement between Proprietor and RWC

The Performance Agreement sets out the targets agreed between Government and RWC for a period of four years. That also includes the general safety targets.

On the basis of that Performance Agreement, the Government adopts a proprietor strategy for RWC. This complements the Performance Agreement and explains its demands in practical terms. The Performance Agreement outlines the basic principles of service provision in the areas of transport and infrastructure. In addition, the Government contracts services for maintaining and developing the existing infrastructure.

Proprietor Strategy – Government-Defined Strategic Aims for RWC

The Government defines strategic aims for a period of four years. By so doing, it complements the targets defined in the Performance Agreement and sets them out in practical terms. In that context, practical safety targets are also specified.

The Proprietor Strategy is drawn up jointly by the Government and the Administrative Board of RWC. The Administrative Board is responsible to the Government for the achievement of the strategic aims.

The strategic aims apply to RWC and to all RWC subsidiaries created by demergers in the past or the future.

Overall direction at RWC is in the hands of the Secretary of the Administrative Board. The RWC Holding safety manager has an advisory role in matters of safety.

Government-Imposed Safety Standards

The Government enacts safety standards for the construction and operation of infrastructure and rolling stock. RWC is involved in the development of them. Opinion forming in safety matters takes place via a process similar to the safety management process.

Statements of opinion to public authorities on fundamental questions that are relevant to safety and have an inter-divisional significance are made via the RWC Holding safety manager.

Further documentation

Group directive "Assuring Inter-divisional Safety Management when Adopting Safety Measures"

9.2 RWC Safety Policy

The RWC safety policy is based on the higher-level requirements of the Proprietor Strategy and RWC corporate targets.

The RWC safety policy contains the generally applicable principles of safety at RWC and is structured as follows:

- a) Scope
- b) RWC Safety Principles
 - Safety Standard
 - People-Centred Approach
 - Safety Culture
 - Safety Communication
- c) Principles for Implementing the Safety Policy
 - Safety Management System
 - Handling Residual Risks
 - Management Responsibility for Safety
- d) Organisation and Tasks
 - RWC as Integrated Railway Company as Determinant of Safety Organisation
 - Safety Organisation based on Basic Organisation
 - Safety Board
 - Safety Subcommittees
 - RWC Holding Safety Manager
- e) Responsibility for Safety Policy

Responsibility

The RWC Holding safety manager is responsible for updating the safety policy.

9.3 Safety Strategy

RWC Safety Strategy

The RWC safety strategy sets out the means by which the required safety level is to be achieved. The main focus is on the strategic areas of action as shown in Figure 11.

The safety strategy is supplemented by various sub-strategies for specific specialist areas that are relevant to safety (including occupational health and safety).

The RWC Board of Directors periodically decides upon its safety strategy.

Responsibility

General responsibility for producing the safety strategy is in the hands of the RWC Holding safety manager.

Further documentation

Safety Strategy



Figure 11: Strategic areas of action for safety as per safety strategy

9.4 Safety Targets

Planning of the safety targets is a comprehensive management and co-ordination tool whose function is to align the targets and measures and the associated RWC resources with and effectively adapt them to the defined safety policy and strategy. In that way, the aim is to create the necessary conditions for safe and reliable railway operation.

The RWC safety targets must take account of the following **influencing parameters**:

- Safety status
- Safety risk assessment
- Higher-level internal and external requirements
- Plans for use of resources (medium-term plan, budget, etc.)

Safety targets are set in the general **annual targets** to be defined by the Board of Directors for the Divisions and the Group. In addition, other safety-related targets are defined as part of the annual **Safety Programme** (see below) to be adopted by the Board of Directors.

The **target setting process** (see Appendix D) takes place on an annual basis. The calculation of the target figures takes place under the overall direction of the RWC Holding safety manager in close co-operation with the Divisions. The negotiation process prior to submission of the proposals to the Board of Directors takes place on the Safety Board.

9.5 Safety Programme

Meaning

The safety programme is a central tool for the implementation of measures initiated by a need for action identified by the SMS.

Content

The safety programme contains targets for relevant safety projects. Those may be executive projects or action plans. In addition, the safety programme contains specifications for important safety-related parameters (accidents, unsafe incidents and actions, etc.). Excerpts from the safety programme are shown in the next three illustrations below.

Monitoring

The safety programme is an important component of periodic safety monitoring. Once a quarter, the target achievement level is discussed by the Board of Directors and decisions made as to any necessary corrective action. The RWC Holding safety manager is responsible for preparing the figures. (See also Section 5.2)

Responsibility

The safety programme is part of the RWC targets (see above) and is adopted annually by the Board of Directors. General responsibility for producing the safety programme is in the hands of the RWC Holding safety manager. Revision and approval for submission to the Board of Directors takes place on the Safety Board.

Risiken - Schwerpunkte

Qualitative Einschätzung	Häufigkeits- Klasse	Risikoklassen					
häufig	I	M5					
	II						
gelegentlich	III		M3	M4			
	IV				M1		
selten	V						
	VI					M6	M2
Ausmaßsklasse Qualitative Einschätzung		A sehr niedrig	B niedrig	C mittel	D hoch	E sehr hoch	F extrem hoch

M1 to M6 are risk-reduction measures:

M1 Derailments, collisions, impacts

M2 Safety of hazardous goods transport

M3 Upgrading of level crossings

M4 Accidents involving third party passengers

M5 Occupational health and safety

M6 Tunnel safety

Figure 12: Excerpt from 2004 Safety Programme – Assessment of Main Risk Areas

Sicherheitsprogramm 2004: Massnahmen und Kennzahlen							Stand: 31.03.04
M Massnahmen							
Nr.	Projektbezeichnung / Massnahme	Inhalt	V (M)	Ziele 2004 für Abschluss	Termin / Zeitplan	Stand / Meilenstein	Beurteilung
M1 Entgleisungen, Zusammenstösse und Anpralle							
e	Strategie Zugsicherung	Weiterentwicklung Zugsicherung definiert	I-TIM (P, G)	Bericht zur Migrationsstrategie liegt vor	30.06.04	Eine Überprüfung der Strategie findet periodisch durch I-ETCS statt (geplant per 06/04).	
f	Sanierung Gleisstromkreise		I-ASM	Umsetzungsplanung für 05 erstellt	30.09.04	Konzept liegt im Entwurf vor, Planungsarbeiten laufen termingerecht.	
g	Bremsbereitschaft Züge (GL v. 26.01.04)	Rollenzuteilung Bremsprozess definiert	P-OP (P-KS, G-PN, I-BF)		31.03.04	Prozess in Vernehmlassung	
		Audit Zuguntersuchung	I-BF, RB, I-VS, P-OP, G-PN	Audit durchgeführt / ausgewertet	31.12.04	I-BF: Zuständigkeit bei EVU (Kontrollpflicht beim BAV!) → keine Audits! I-VS/I-BM: Auditvorgaben gesetzt (50 / 60 Audits in 2004) G: Dokumentation verteilt, keine Rückmeldung Audit P: Beobachtungsfeld vorhanden	
		period. Prüfungen für Rangier- u. Zugpersonal eingeführt	P, G, I		31.12.04	I-BM: Die Divisionen sind der Meinung, dass eine Prüfung umfassend durchgeführt werden und nicht nur die "Bremsbereitschaft" beinhalten soll. I-VS: Das Ziel ist so nicht erreichbar. Einführung so schnell wie möglich, sobald P: Vorgaben des BAV (VTE) vorliegen.	

Figure 13: Excerpt from 2004 Safety Programme – Measures

K	Monitoring Kennzahlen																							
Nr.	Thema	Ziele / Quelle / Verantwortung / Kommentar	Stand	Beurteilung																				
K4	Rangiersicherheit																							
	Rangierunfälle	<p>Ziel: Anzahl Rangierunfälle um 5 % gegenüber IST 2003 reduzieren (max. 78 Unfälle)</p> <p>Quelle: ESI</p> <p>Verantwortung: I</p> <p>Kommentar:</p>	<p>Rangierunfälle Div. I gesamt (Werte kumuliert)</p> <table border="1"><thead><tr><th>Quartal</th><th>2003</th><th>2004</th><th>Ziel 2004</th></tr></thead><tbody><tr><td>1. Quartal</td><td>18</td><td>19</td><td>19</td></tr><tr><td>2. Quartal</td><td>35</td><td>35</td><td>35</td></tr><tr><td>3. Quartal</td><td>60</td><td>60</td><td>60</td></tr><tr><td>4. Quartal</td><td>82</td><td>78</td><td>78</td></tr></tbody></table>	Quartal	2003	2004	Ziel 2004	1. Quartal	18	19	19	2. Quartal	35	35	35	3. Quartal	60	60	60	4. Quartal	82	78	78	
Quartal	2003	2004	Ziel 2004																					
1. Quartal	18	19	19																					
2. Quartal	35	35	35																					
3. Quartal	60	60	60																					
4. Quartal	82	78	78																					

Figure 14: Excerpt from 2004 Safety Programme – Key Monitoring Figures

9.6 Resources

The planning of resources associated with safety planning is incorporated in the corporate budgeting and planning processes.

In most cases, the financing of the projects contained within the safety programme is assured. In cases where a need for action has been identified but funds have not yet been secured, the safety programme contains an appropriate planning order for the planning of financially affordable stages.

Personnel Resources, Safety Training

Provision of the personnel resources including initial and continuing training is assured by Personnel Management and covers planning, recruitment, management, development and controlling (refer to Personnel Management Manual). Personnel development is aligned with the corporate strategy. It encompasses all measures designed to bring the capabilities, skills, needs and motivation of employees into harmony with the requirements of the company.

That also includes **training in matters of safety**. The Divisions are responsible for safety training. The safety manager assists with safety training in selected subject areas (e.g. occupational health and safety, accident investigation methodology, ESI safety database applications).

Responsibility

The line is responsible for provision of adequate resources for safety planning.

Further documentation

Financial Management Manual, Personnel Management Manual

Safety Communication

10.1 Reporting System

At Group level, the safety reports detailed in the table below are produced. The **aims** of this reporting system are:

- Overall view of safety status appropriate to level
- Prompt indication of where increased management vigilance is required
- Constant awareness of safety issues

Report	Content	Addressed to	Sources	Person/Unit	Frequency
RWC Annual Safety Report	The RWC Annual Safety Report is an annual assessment of safety and the SMS. It also examines the level to which the safety targets have been achieved and the degree to which the safety programme points have been implemented, and where appropriate sets out additional measures required.	Board of Directors, Administrative Board, specialist safety units of the Divisions, all employees via intranet		Safety manager	Annual
Safety Programme	The Safety Programme is the working and management tool for implementing individual measures and projects. The Safety Programme is periodically revised on the basis of the safety targets set and experience.	Board of Directors, Safety Board, OTSS, all employees via intranet	Business unit reports, ESI	Safety manager	Quarterly
RWC Safety Trends Report	Early warning indicators		Business unit reports, ESI	Safety manager, OTSS Synthesis Group	Twice yearly
Management Information System (MIS)	AFUS (work and leisure accidents) ESI (safety-related incidents)		ESI, AFUS	Safety manager	Monthly

10.2 Internal Safety Communication

In order to maintain and improve safety, open and objective communication of safety issues is indispensable. Starting from the basis of a "no-blame culture", RWC handles safety infor-

mation openly. Any type of safety information is seen as a means of heightening awareness of safety issues.

The permanent "STOP RISK" campaign develops staff safety consciousness (main emphasis on occupational health and safety as a vehicle for educating staff in general safe practices).

10.3 External Communication

RWC pursues a policy of maximum possible openness in external safety communication. The aim is to enable the public to form an opinion on safety at RWC that corresponds to the facts. Communication of the full circumstances plays an essential role in that.

- a) Public: Media relations at RWC are the responsibility of the spokespersons at the central Media Relations Office and its branch offices, and the communication co-ordinators of the business units. The Safety Report is not publicly distributed. The established practice is for the Safety Report to be released to the "Agence Presse" for preparation of a report.
- b) National regulatory authority: Information on safety-related incidents: The requirements for fulfilling reporting duties as per the "Accident Investigation Regulations" are defined by mutual agreement with the Government and set out in the RWC Group Directive "Reporting of Irregularities and Accidents to the Regulatory Authority".
- c) Proprietor: Control of Performance Agreement, proprietor strategy

Performance Agreement between Proprietor and RWC

Checks are carried out as to whether the targets of the Performance Agreement have been achieved.

Proprietor Strategy – Proprietor's Strategic Aims for RWC

RWC produces the following written reports:

- Annual Report and Accounts
- Achievement of Strategic Targets (half-yearly)
- Budget and Medium-Term Planning (annual)

The basis of the reports is a key figures system agreed between the proprietor and RWC. This is aligned with the key figures system for the Performance Agreement.

10.4 Information from Infrastructure to Railway Undertakings

Infrastructure communicates the fundamental conditions of network access, assuming they are not detailed in the Railway Network Access Regulations, and the essential technical details of lines such as profile (gradient), radius of bends, length of sidings, length of platforms, track classification, and safety equipment. That purpose is served, firstly by the Network Access Agreement which is concluded between Infrastructure and railway undertakings, and secondly by publication of excerpts from the RWC Regulations on the Internet.

Responsibility

Responsibility for communication between Infrastructure and railway undertakings is in the hands of the Infrastructure Division.

Further documentation

Railway Network Access Regulations

10.5 International Contacts

Safety Platform for Safety Managers

RWC is a member of the Safety Platform for Safety Managers and is represented on that body by the RWC Holding safety manager.

The aims of the Safety Platform are the exchange of information, the discussion of fundamental safety issues and the communication of its expert opinion to international bodies.

European Railway Safety Managers (ERSM)

This committee is made up of the safety managers of the European railway companies. RWC is represented by the RWC Holding safety manager.

The ERSM pursues the following goals:

Exchange of information, analysis of accidents, safety comparisons

10.6 Communication of Requirements

- A) Basic principles, regulations, documents
As well as distribution of the "hard copy", basic principles, regulations and documents are also made available electronically on the Intranet under "RWC Regulations". Identification of demand for and production, distribution, replacement and withdrawal of regulations are carried out as set out in the regulations "RWC Regulations – Structure, Definitions and Responsibilities" and "RWC Regulation Management – Distribution of Regulations to RWC Personnel and Third Parties" (GS 04/02).
- B) Requirements
The requirements in the area of safety at Group level are communicated by way of the Safety Programme, which is available to all employees on the Intranet.

Further documentation

Group directive "RWC Regulations – Structure, Definitions and Responsibilities"
Regulation GS 04/02 "RWC Regulation Management – Distribution of Regulations to RWC Personnel and Third Parties"

11 Emergency Management

11.1 Emergency Management

In the case of operational incidents, RWC on-site emergency management is in the hands of the Infrastructure Management department. The incident site organisation follows the requirements of the Infrastructure Management department.

In the case of non-operational incidents, the unit concerned is in charge.

The RWC emergency management must subordinate itself to the civil emergency services. Any necessary securing and rescue operations may be carried out without restrictions. The RWC emergency management must ensure that no other alterations to the accident site are made until the relevant criminal investigation authority or the official accident investigation unit has given its permission.

Further documentation

Infrastructure Management System – Operational Incident Management Process

11.2 Crisis Management

The aim of crisis management is to take control of a situation in extreme circumstances by means of an efficient and purposefully focussed organisation so that normal conditions can be restored as quickly as possible with the maximum possible damage limitation.

The core element of crisis team is the core team. For large-scale incidents it is provided by the Infrastructure Division. If the situation escalates, the crisis team is called in as well. In that case, the core team retains its original tasks.

Further documentation

Crisis Management Manual

Appendix A Administration of the RWC Safety Management Manual

The RWC Holding safety manager is charged with administration of the manual. He/she employs the following means to ensure that the up-to-date version of the documentation is available to users and that the revision history can be verified. He/she also makes sure that confidentiality considerations are taken into account when providing copies to third parties.

Revision and Clearance

All recipients of the documentation report errors or suggestions for improvements in the documentation to the safety manager. The subsequent procedure is determined by whether the alterations involve content-related changes to specific processes (revision by the process owner) or general aspects of the documentation. Where fundamental aspects are concerned, the safety manager decides on the subsequent procedure, documents the process and informs the applicant.

In the event of alterations, the entire manual is usually replaced.

Alterations to the documentation are cleared by the safety manager, the process owner or the Board of Directors, depending on the importance.

Distribution, Replacement and Withdrawal

Distribution, replacement and withdrawal are carried out as set out in the regulations "RWC Regulations – Structure, Definitions and Responsibilities" and "RWC Regulation Management – Distribution of Regulations to RWC Personnel and Third Parties".

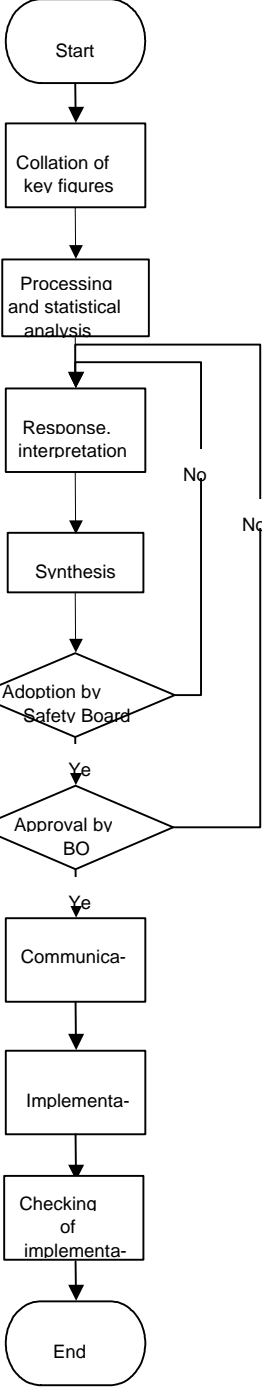
Confidentiality

As a matter of basic principle, no SMS documentation or process descriptions are passed on to third parties. If in exceptional cases, however, documentation (or parts of it) is passed to third parties, the safety manager ensures in consultation with the relevant specialist unit that confidentiality issues are given due consideration.

Appendix B Definitions and Abbreviations

AFUS	Work and leisure accident recording system
ESI	Event database for Safety-related Incidents
BOD	Board of Directors
RNAC	Railway Network Access Regulations
Safety	Preventative measures aimed at averting incidents resulting from passive dangers such as accidents, fires, release/spillage of hazardous materials and other undesirable situations that originate from unintended human and/or technical deficiencies and including the limitation or control of such incidents.
Security	Preventative measures aimed at averting incidents (criminal acts and other undesirable situations) that are perpetrated by persons with <u>malicious intent</u> against RWC (its employees, property or image) or passengers, and including the limitation or control of such incidents.
Safety management	All activities which define the safety policy, targets and responsibilities and implement them by means such as planning, control, safeguarding and improvement within the safety management system.
Safety management audit	A systematic and independent inspection in order to establish whether the safety-related activities and the associated outcomes match the planned requirements and whether they are effectively implemented and suitable for achieving the targets set.
SMS	Safety Management System
SAI	Systematic accident investigation
OTSS	Operational Technical Safety Subcommittee
OHSS	Occupational Health and Safety Subcommittee

Appendix C Process for Recording and Analysis of Safety Early Warning Indicators

Sequence	Activities	Further Instructions	Input Output	Pers./unit
 <pre> graph TD Start([Start]) --> Collation[Collation of key figures] Collation --> Processing[Processing and statistical analysis] Processing --> Response[Response interpretation] Response --> Synthesis[Synthesis] Synthesis --> Adoption{Adoption by Safety Board} Adoption -- No --> Response Adoption -- Yes --> Approval{Approval by BO} Approval -- No --> Response Approval -- Yes --> Comm[Communication] Comm --> Implement[Implementation] Implement --> Check[Checking of implementation] Check --> End([End]) </pre>	<p>Process carried out twice a year</p> <p>Collation and presentation of key figures</p> <p>Response to and interpretation of individual key figures</p> <p>Interpretation taking account of interrelationships of indicators inc. examination of necessary action and recommendation of follow-up action</p> <p>Adoption by Safety Board</p> <p>Approval by BOD inc. ordering of follow-up action</p> <p>Communication of Safety Trends Report to Safety Board & OTSS and data suppliers</p> <p>Implementation of follow-up action</p> <p>Adoption of follow-up action in Safety Programme for periodical checking of implementation and effective-</p>		<p>Key figures</p> <p>Draft Safety Trends Report</p> <p>Safety Trends Report</p>	<p>Line</p> <p>Safety Management</p> <p>Safety management-supported by Line</p> <p>Safety management-OTSS</p> <p>Safety Board</p> <p>BO</p> <p>Safety management-</p> <p>Line</p> <p>Safety management-</p>

Appendix D Safety Planning Process

Sequence	Activities	Further Instructions	Input Output	Pers./unit
<pre> graph TD Start([Start]) --> Analysis[Analysis of Requirements] Analysis --> Action{Action required?} Action -- No --> Analysis Action -- Yes --> Targets[New targets, programmes] Targets --> Viability{Check viability} Viability -- No --> Targets Viability -- Yes --> Approval{Approval} Approval --> Comm[Communication] Comm -- No --> Approval Comm -- Yes --> Checking1{Checking} Checking1 -- No --> Checking1 Checking1 -- Yes --> Implem[Implementation] Implem --> Checking2{Checking} Checking2 -- No --> Implem Checking2 -- Yes --> Achieved[Achieved targets] Achieved --> End([End]) </pre>	Process repeated annually or triggered by exceptional requirements/events		Safety strategy/ policy results of safety audits safety risk assessment risk analyses legislation	Safety Board
	Establishment and checking of internal and external			Safety Board
	Is action needed? Are there new requirements to take account of? Analysis of actual status			Safety Board
	Formulation of new Safety targets and production of Safety Programme with action plan		Submission of Safety Programme with targets	Safety Board
	Checking viability of targets/programmes inc. checking of resources			Business units
	Approval of Safety Programme and targets Application with cost and consequences		Safety Programme with targets	BO
	Communication and publication of safety targets			Safety Board
	Are the safety targets known and appropriate to level and function?		Audit reports	Business units
	Implementation of Safety and measures			Business units
	Periodic checking of target achievement and effectiveness of programme points and measures	Safety Programme with targets	Audit reports Updated Safety Programme Status Report available Annual Safety Report	Business units Safety Board Business units
	Documentation of achieved targets			

Appendix E Reference List for European Safety Directive 2004/49/EC

General EU requirements placed on safety management	Section of RWC SMS Manual
All important elements of the SMS must be documented . Those include:	
• Allocation of responsibilities within the organisation	2.2, 3.
• Assurance of monitoring by senior management	3.3, 5.2.
• Involvement of personnel and their representatives at all levels	3.2
• Continual improvement of safety management	4

Essential components of safety management according to EU	Section of RWC SMS Manual
a) A safety policy approved by the organisation's chief executive and communicated to all staff;	9.2
b) Qualitative and quantitative targets of the organisation for the maintenance and enhancement of safety, and plans and procedures for reaching these targets;	9.4
c) Procedures for ensuring compliance with existing, new and amended standards of a technical and operational nature, and procedures to assure compliance with the standards and other prescriptive conditions throughout the life-cycle of equipment and operations;	10.4
d) procedures and methods for carrying out risk evaluation and implementing risk control measures whenever a change of the operating conditions or new material imposes new risks on the infrastructure or on operations;	8
e) Provision of programmes for training of staff and systems to ensure that the staff's competence is maintained and tasks carried out accordingly;	9.6
f) arrangements for the provision of sufficient information within the organisation and, where appropriate, between organisations operating on the same infrastructure;	10
g) Procedures and formats for how safety information is to be documented and designation of procedures for configuration control of vital safety information;	5
h) Procedures to ensure that accidents, incidents, near misses and other dangerous occurrences are reported, investigated and analysed and that necessary preventive measures are taken;	6
i) Provision of plans for action and alerts and information in case of emergency, agreed upon with the appropriate public authorities;	11
j) Provisions for recurrent internal auditing of the safety management system.	7