Technical Standards and Procedures for Tourist and Heritage Railways

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SUMMARY

Rail safety laws cover a multitude of issues. This paper restricts itself to discussing the preparation of effective technical standards and procedures to be used in an operator's asset management activities. The author has reviewed a large number of technical documents, submitted by a variety of operators over a 10 year period. Such documents represent a small yet important proportion of the multitude of documents required by rail safety laws. They are a part of the overall risk management framework and the documented safety management system.

The comments provided in this paper do not provide guidance on the acceptability of other documentation or activities necessary to satisfy other aspects of rail safety laws. They are the views of an experienced document reviewer, intended to draw attention to some of the best features he has observed in effective technical standards and procedures.

Tourist and heritage rail operators often seek guidance on what content should be included in technical standards and procedures. They often choose to combine these into a Technical Manual covering discrete items or assemblies of infrastructure.

This paper suggests a standardised Table of Contents for such a manual. It also provides a simplified but comprehensive listing of Essential Elements of the risk management process from which the content of the manual is derived. The paper concentrates on five content areas from both lists which – in the author's experience – are important but often omitted and/or poorly addressed by operators. Such content includes:

- the operator's safety objectives
- measuring performance against objectives
- documentation of stakeholder involvement
- interface management
- the purpose of the standard or procedure.

The use of a mandatory tone in the documentation is also highly recommended to demonstrate the operator's commitment to the achievement of its objectives.

The author suggests that reviewers are likely to accept standards and procedures contained within a manual with the listed Table of Contents, provided it can be demonstrated that the content was developed through a risk management exercise that included the elements listed in the Essential Elements list.

INTRODUCTION

Tourist and heritage railway operators have often asked rail safety regulators to articulate what they expect to see in technical standards and procedures. They wish to be guided to where they need to be by the shortest possible route.

To fulfil this request, this paper will begin with the Table of Contents for a technical manual for infrastructure maintenance that would satisfy the author's review if all items were fully addressed.

Technical Manual - TABLE OF CONTENTS

1) Document control details

Nominating: (with relevant dates)

   a) Prepared by ...
   b) Approved/Owned by … (Technical Authority Holder)
   c) Issued by …
   d) Amendment record
   e) Reference to source documentation

2) About this document
   a) Purpose of this document – (identified risks for which it provides a control)
   b) Scope and limits of application
   c) Recognised stakeholders
   d) How to use this document
   e) Accessibility of this document
   f) Glossary of terms / acronyms
   g) Document hierarchy
   h) Related documents on which this document relies
   i) Related documents relying on this document
   j) Review period
3) Responsibilities and authorities
   a) Persons who have responsibilities under this document
   b) Delegated Authorities to commit funds for works
   c) Technical Authority to exempt or temporarily waive this standard or procedure
   d) Technical Authority to vary this standard or procedure
4) Interface management
5) Precautions – safety and general hazards
6) Operational functionality
   a) Performance requirements and/or
   b) Design specifications with tolerances
   c) Degraded or emergency mode operational criteria with tolerances
7) Risk control measures
   a) What must be done during the operation and maintenance phase
      i) Servicing requirements
      ii) Active inspection, measurement and /or tests required
      iii) Ad hoc or incident inspection and reporting
      iv) Levels of degradation at which specified intervention is required
      v) Default responses at defined levels of degradation or absence or violation of any requirements
      vi) Protection that must be applied until restoration
      vii) Application of works management system
         (1) Authorities to whom required works are to be reported
         (2) Recording of works required into works management system
         (3) Scheduling works by priority and to avoid further deterioration
         (4) Resourcing required works
         (5) Allocating responsibility for required works
         (6) Use of Works Orders to restore operational functionality
         (7) Witness points (if any)
         (8) Certifying works with/without conditions
         (9) Closing out works in the records system with/without further requirements
      viii) Frequency or other indicator defining when works must be performed - with latitudes
      ix) Where or over what area the works must be done
      x) Procedures to ensure effectiveness of the works

xi) Competencies of personnel authorised to carry out the works
xii) Alternatives to specified requirements for specified circumstances

8) Monitoring
   a) KPI's against which the success of the risk controls specified in this document will be measured
   b) Monitoring the effectiveness of this document in achieving acceptable KPI's
9) Records
   a) Records to be created
   b) Forms to be used
   c) Period of retention
   d) Reports to be created (including stakeholder information)
10) Source of further guidance or explanation

Documents which effectively address the items listed in the above Table of Contents will only satisfy reviewers if the operator can demonstrate that the content of each item was the product of sound risk management. It is necessary therefore, to link this list with the essential elements of a sound risk management process.

Risk Management Process - ESSENTIAL ELEMENTS

1) Establish Context
   a. Scope of interest (with limits)
   b. Stakeholders – internal and external
   c. Stakeholder objectives
   d. Acceptance criteria defined by stakeholders
   e. Body of knowledge consulted
      1. Related authoritative references
      2. Related advisory/informative references
      3. Relevant authorities and their specific requirements
   f. Environment and Interfaces (internal and external):
      1. Physical
      2. Organizational
      3. Systemic
   g. Assumptions – (existing controls and what others are relied upon to do)
   h. Constraints recognised (e.g. cost, time, industrial relations, agreements)
   i. Stakeholder agreement to context
2) Conduct Risk Management Steps
   a. Risks identified by cause and effect
   b. Risks assessed by consequences, likelihood and frequency or exposure rates
   c. Risk control measures devised and selected
   d. Original risks re-assessed
   e. Effects of this new standard or procedure on any other related standards or procedures assessed
   f. Controls signed-off by stakeholders
3) Establish Implementation Plan nominating:
   a. Responsible party
   b. Communication and training plan
   c. Training requirements / material
   d. Implementation timeframe
   e. Implementation monitoring and review
   f. Implementation records
4) Measure and Monitor Success establishing:
   a. Key Performance Indicators (lead and lag)
   b. Risk management monitoring and review plan
   c. Reporting regime (including to stakeholders)
   d. Document review methodology and frequency
   e. Change management processes
   f. Remedial actions if objectives are not being achieved to the required acceptance criteria

DISCUSSION

Most rail operators are familiar with the majority of the items in both of these lists. They routinely address most requirements in their documentation. However, within the lists are some items that are not-so-common such as “Monitoring” and “Interface management”. The author considers that these items add so much value to the document – and, ultimately, to the achievement of the desired safety outcomes – that they should also become routine inclusions. This paper will concentrate on these not-so-common items.

Before doing so, some further introductory remarks are necessary.

Modern rail safety laws invariably require that railway operators have technical standards and procedures. Effective standards and procedures contain the controls necessary to mitigate identified safety risks. The best standards and procedures leave no doubt about what must be done; by whom; when; how; why; where and to what order of accuracy. They especially specify protective actions to be taken when the asset is found to be in a condition outside safe operating parameters and a repair schedule to prevent further deterioration.

It is accepted that the contents of the above “Table of Contents” may not be restricted to a single “Manual”. The content may be spread across a number of documents. Standards and procedures are part of the Safety Management System (SMS). Some operators may find it necessary or convenient to split off some of the elements into separate documents to suit the detail that needs to be included. For example, design specifications may occupy several volumes describing the design inputs.

Nevertheless, it is essential that all of the elements listed in the Table of Contents are covered somewhere in the SMS documentation. If one or another element is missing from the primary Manual, the reader must be provided with easy-to-find cross-references so that the section can be readily accessed by those who have safety management responsibilities.

Backing up the “Table of Contents”, is a simplified but comprehensive listing of the “Essential Elements” of the risk management exercise needed to determine the contents of the Manual. Again, these may not be contained in a single document but must be readily accessible to users of the standards and procedures.

Operators should use both check-lists to ensure that they have not omitted an important process or requirement from their SMS documentation.

NOT-SO-COMMON ITEMS

The not-so-common but highly recommended items included in the Table of Contents will now be discussed.

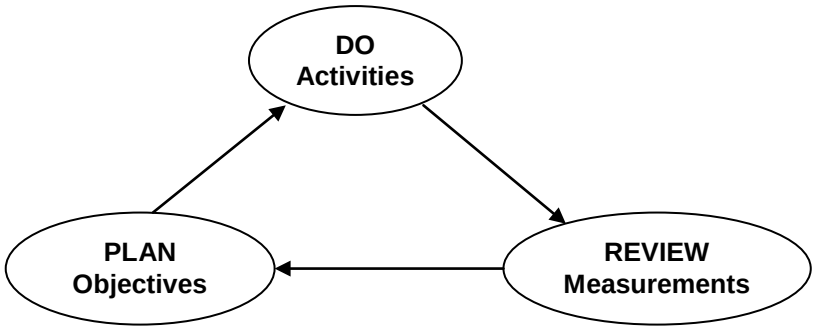
Objectives and measurement criteria

Standards and procedures are usually about “doing” things. The effectiveness of “doing” things is greatly enhanced by two related aspects. These are:

- a clear understanding of the objectives of the specified activities and
- the knowledge that the outcome of the activities will be measured

The author therefore maintains that the best standards and procedures contain a clear statement of the safety objectives and a description of the process by which the organisation measures whether the activities specified are satisfying the objectives as intended.

The “Plan – Do – Review” management cycle is incomplete without the planning and the reviewing.



Operators need to demonstrate that they have specific achievable safety objectives and that they regularly measure what and how effectively they are doing what they do. The operators must also demonstrate that they have used performance data to adjust their standards and procedures when required, in order to achieve what they set out to do. That is, there must be clear evidence that operators have carried out their activities, reviewed the results and planned for the next round of activities.

Operators routinely say that safety is their Number 1 priority. It is easier to accept this assertion if safety objectives are given the same prominence in the organisation's documents as commercial and other objectives. This means that the safety objectives must be well-defined and measureable, just as commercial and other objectives are invariably measurable. Operators must recognise the truth of what Peter Drucker said: "*What gets measured, gets managed*!"[1]

Defined key performance indicators (KPI's), their measurement and management should be a requirement of each standard and procedure.

Stakeholder involvement

The next aspect of the lists that requires particular comment is stakeholder involvement in the process. The Essential Elements list shows the need for identification of stakeholders, definition of their objectives (with acceptance criteria) and their agreement to the risk context. It also lists stakeholder sign-off on the risk controls chosen. The commitment of both internal and external stakeholders is necessary at each of these stages. It must be recorded in the supporting documentation. This will give the reviewer confidence that the documentation is specific and suitable for the particular operation and has the authority and acceptance it requires.

The Table of Contents listing then includes two items where the stakeholder involvement is addressed. The first item lists the identified stakeholders. The second item describes the process by which the stakeholders are informed of the performance of the standard and procedures in achieving their objectives. The latter measure ensures systemic review by stakeholders and promotes continuous improvement as stakeholders respond to reports.

Interface Management

The Table of Contents also lists an item entitled "Interface Management".

This item is intended to recognise that the standards and procedures do not exist in isolation. They are surrounded by an environment that both influences their successful operation and that they will influence by their operation. This item should contain the assumptions related to the operating environment on which the standard or procedure is based, especially what others will do. The documentation must recognise the relative importance of these interfaces and document those changes in the physical, organisational or systemic environments that would trigger review of relevant portions of the standards and procedures.

Purpose

The “Purpose” of a standard or procedure is often included but usually misinterpreted. The purpose is typically said to be to explain how to do something.

It would be much more informative if the document clearly stated that its purpose was to mitigate specific risks defined by their causes and effects. This would then show that the required actions described by the document have a purpose which is absolutely focussed on controlling specific risks.

Mandatory tone

Finally, reviewers wish to see the operator’s commitment to the achievement of its objectives convincingly expressed by the tone of its standards and procedures. It is essential therefore, that they are expressed in mandatory terms. The organisation has conducted its risk analysis and determined what must be done to control the risk. It has determined that the controls specified in the standards and procedures are mandatory, not discretionary. It follows that standards and procedures use the word “must” and not “should”. Phrases that introduce subjective judgement, such as: “if required”, must not be used.

CONCLUSION

The community values the tourist and heritage sector of the rail industry. Regulators recognise this and work to help operators understand their obligations under the rail safety laws and effectively apply those requirements to their individual operations. Provision of this guidance is seen as part of the regulatory role.

Technical standards and procedures provide some of the controls necessary to keep the operator’s asset management performance matched to its stakeholders’ objectives. The documents must fully express the controls developed by the operator’s robust risk management exercise. Operators can be more confident that they have produced effective standards and procedures, if they have fully addressed all of the items appearing in each of the two lists provided.

References:

1. Drucker PF, The practice of management, 1954. ISBN 0-06-011095-3