



Introduction

The Federal Transit Administration (FTA) developed this guide to explain the distinct functions of safety risk mitigations and corrective actions. The guide discusses their respective roles within the Safety Risk Management and Safety Assurance processes within a Safety Management System (SMS). The guide also presents related regulatory requirements for both safety risk mitigations and corrective actions.



Four key concepts to keep in mind

Safety Risk Management (SRM)

SRM is mostly a *planning* activity. It provides a perspective into the future, regarding safety. SRM supports managers in assigning resources (ultimately, the safety risk mitigations) based on available information from SMEs in order to solve safety concerns. Implementation of those safety risk mitigations does not necessarily mean the safety concern will be solved.

Safety Assurance (SA)

SA is mostly a *monitoring* activity. Among other SA activities, we monitor safety risk mitigations to figure out whether or not our implementation of resources to address the safety concern (i.e. our investment) is working as SMEs expected.

Safety Risk Mitigations

Safety risk mitigations are put in place to address safety risk. The goal is to avoid or reduce the impact of the potential consequences of hazards in the safe delivery of rail transit operations.

Corrective Actions

We take corrective actions to address the cause(s) of non-conformities with rules, procedures, allocation of resources, and established requirements in general. The corrective actions taken may include addressing non-conformities in the implementation of the safety risk mitigations.

The guidance in this document is not legally binding in its own right and will not be relied upon by the Federal Transit Administration as a separate basis for affirmative enforcement action or other administrative penalty. Compliance with the guidance in this document (as distinct from existing statutes and regulations) is voluntary only, and noncompliance will not affect rights and obligations under existing statutes and regulations.



How Do Safety Risk Mitigations and Corrective Actions Support SRM?

Safety risk mitigations and corrective actions both play critical roles in SRM. One does not replace the other, and both support safe delivery of rail transit agency (RTA) services. Their relationship is complementary as opposed to adversarial, but there is one important difference: corrective actions address *compliance with requirements*, safety risk mitigation address *actual performance* to ensure that the *safety intent* behind the requirements is met.

The role of *safety risk mitigations* in SRM is to address the potential consequences of hazards in RTA service delivery and supporting operations, by one or any combination of the following:

- Eliminating the hazard;
- Reducing the likelihood of occurrence of the potential consequence(s) of the hazard;
- Reducing the severity of the potential consequence(s) of the hazard, if the potential consequence occurs.

In practical terms, RTAs put defenses in place to protect RTA service delivery operations from hazards leading to potential consequences. This is an essential activity within SRM.

The role of *corrective actions* in SRM is to address *deviations* (i.e. *non-conformities*) in the implementation of baseline requirements regarding human and/or technical resources, procedures, rules, etc. Under SRM, monitoring non-conformities against baseline requirements helps capture deviations that might detract from the expected effectiveness, or performance, of the safety risk mitigations. This allows for corrective actions to address the deviations and restore effectiveness of safety risk mitigations.



Comparing Safety Risk Mitigations and Corrective Actions

Safety Risk Mitigations

Corrective Actions

Purpose

Address potential consequences of hazards determined by the RTA to have unacceptable safety risk.

Address non-conformities with, and deviations from, the baseline of human and/or technical resources, procedures, rules, procedures, and requirements in general.

Practical Objectives

Put defenses in place to protect service delivery operations from the potential consequences of hazards.

Close non-conformities between established transit service rules and procedures and the actual practices in the field.

Sources

- Safety risk assessments
- Safety data analyses
- Safety investigations

- Investigations
- Audits (including SSOA triennial)
- Directed by SSOA
- Directed by FTA

- NTSB reports
- Reviews
- Inspections
- Compliance checks
- Failures

Lifecycle

As long as the hazard or safety concern exist.

Closed after the corrective action is implemented.



The table below provides some examples to help further clarify the different functions safety risk mitigations and corrective actions play in SRM.

Real World Examples of Safety Risk Mitigations and Corrective Actions

Potential Consequence: Derailment with Fatalities	
<p>Safety risk mitigation: Formal inspection program with twice-weekly inspections.</p>	<p>Audit identifies that RTA does not complete twice-weekly inspections due to a lack of available personnel as per pre-established inspection requirements. Corrective Action: Comply with track inspection program requirements.</p>
Potential Consequence: Fire/Smoke in Tunnels	
<p>Safety risk mitigation: Develop and implement a Trash and Debris Removal Monitoring Plan.</p>	<p>Proposed Trash and Debris Removal Monitoring Plan developed without input from maintenance SMEs. Corrective Action: Revise plan to include maintenance SME input.</p>

In the first example, the formal inspection program (safety risk mitigation) addresses the safety risk of the potential consequence. However, the lower than necessary number of inspectors may detract from its effectiveness (performance). This is addressed through a corrective action (compliance).

In the second example, the Trash and Debris Removal Plan (safety risk mitigation) addresses the safety risk of the potential consequence. However, the lack of maintenance SME input may result in an incomplete plan and thus in an ineffective safety risk mitigation (performance). This is addressed through a corrective action (compliance).



Documenting and Tracking Safety Risk Mitigations and Corrective Actions

Safety risk mitigations and corrective actions are interventions to improve safety. Both represent an investment of resources by the RTA. As such, documenting the investment makes both safety *and* business sense.

Requirements for documenting safety risk mitigations and corrective actions differ. FTA explicitly requires that RTAs document corrective actions resulting from specific activities, such as an event investigation, in a corrective action plan (CAP). For safety risk mitigations, FTA does not specify how an RTA documents a safety risk mitigation. FTA does, however, require RTAs to maintain documents that set forth its Agency Safety Plan (ASP), including those related to the implementation of the SMS, such as safety risk mitigations.

Each RTA may decide to document corrective actions identified through activities outside the purview of FTA's regulation and an SSOA's requirements. For example, RTAs may not be required or choose to create CAPs from some internal activities, such as internal safety audits, compliance checks, and verification activities that may identify non-conformances. Of course, should an RTA's SSOA require CAPs to address findings from the above example source activities, the RTA must follow its SSOA's requirements.

The table on the next two pages provides FTA's requirements and recommendations with respect to safety risk mitigations and CAPs, for:

- Documentation,
- Contents,
- Review and approval,
- Monitoring, and
- Record keeping.



Documentation for Safety Risk Mitigations and Corrective Action

Safety Risk Mitigations

Documentation

Corrective Action Plans

Part 673.31 At all times, a transit agency must maintain documents that set forth its [Agency Safety Plan (ASP)], **including those related to the implementation of its Safety Management System (SMS), and results from SMS processes and activities.**

Not Required As safety risk mitigation monitoring falls under the Safety Assurance process, RTAs should consider a means to document the results of monitoring activities. This could occur through a mitigation monitoring plan.

Part 674.27 (a)(8) The [State Safety Oversight Agency (SSOA)] program standard must explain the process and criteria by which the **SSOA may order [a rail transit agency (RTA)] to develop and carry out a [CAP]...**

Part 674.35(b) The [event investigation] report must ... set forth a [CAP], as necessary or appropriate.

Part 674.5 Either [an SSOA] or FTA may require a recipient to develop and carry out a [CAP].

Part 670.21(c) [The FTA Administrator] may order a recipient to develop and carry out a [CAP].

Contents

Not Required FTA Recommends:

- Worst possible, credible, or common potential consequence
- Safety Performance Indicator(s) and Target(s)
- Timeframe
- Mitigations
- Monitoring means
- Responsible

Part 674.37 (a) A CAP must describe ... the actions the RTA will take to minimize, control, or eliminate the risks and hazards identified by the CAP, the schedule for taking those actions, and the individuals responsible for taking those actions.



Requirements for Review, Approval, and Monitoring

Safety Risk Mitigations		Review and Approval	Corrective Action Plans
<i>N/A</i>	None required unless directed by SSOA or FTA.	<i>Part 674.27 (a)(8)</i>	The program standard must explain the process and criteria by which the SSOA may order an RTA to develop and carry out a [CAP], and a procedure for the SSOA to review and approve a CAP.
Monitoring			
<i>Part 673.27(b) (2)</i>	[A transit agency must] monitor its operations to identify any safety risk mitigations that may be ineffective, inappropriate, or were not implemented as intended.	<i>Part 674.37 (a)</i>	The RTA must periodically report to the SSOA on its progress in carrying out the CAP.
Record Keeping			
<i>Part 673.31</i>	These documents [including those related to the implementation of SMS] must be made available upon request by the Federal Transit Administration or other Federal entity, or [an SSOA] having jurisdiction.	<i>Part 674.27 (a)(8)</i>	The program standard must explain the SSOA's policy and practice for tracking and verifying an RTA's compliance with the CAP.
		<i>Part 674.39(a) (3)</i>	[Report to FTA]... the status of corrective actions....



What does a CAP look like?

Beyond the three FTA required elements of a CAP (the “what,” “when,” and “who”), each RTA has flexibility in the format of a CAP (unless otherwise required by the SSOA). While FTA and SSOAs specify the *content* for each required CAP, the *form* of the CAP may vary. For example, CAPs have taken the form of official letters, reports, emails, and spreadsheets. Many RTAs (and SSOAs) maintain corrective action tracking sheets. Typically, these are documented in logs or spreadsheets. Currently, most SSOAs allow and encourage RTAs to submit CAPs as part of the RTA internal log or tracking system. SSOAs and RTAs have identified this as an efficient and effective means for CAP submission, review and approval, and tracking progress. Keep in mind that FTA requires SSOAs to review and approve each RTA CAP resulting from investigations and SSOA triennial audits.

What does a Safety Risk Mitigation Monitoring Plan/Document look like?

RTAs may document their safety risk mitigations and monitoring activities in any manner they choose unless otherwise specified by the SSOA. As depicted in the tables above, FTA suggests a few elements that, when documented, will support safety risk mitigation monitoring, tracking, and reporting activities. Some RTAs may choose to develop a mitigation monitoring plan as a method to document monitoring activities. Others may choose to use the same register (spreadsheet or system) used to track the results from safety risk assessments. The latter can provide a nice way of keeping the RTAs safety risk mitigations in the same place as your identified hazards and potential consequences.

In either case, a plan or register simply documents an agency’s approach for how it will monitor the implemented safety risk mitigations and track their status. Importantly, in addition to identified responsibilities and timeframe, the safety risk mitigation monitoring document or tool might contain the RTAs performance parameters (for example, safety performance indicators and safety performance targets) and how the agency will monitor them. The size of the agency and complexity of its operations may figure into the decision of how complex or simple the tracking tool should be.