International Civil Aviation Organization
Asia and Pacific Office

Tenth Meeting of the Asia Pacific Accident Investigation Group (APAC-AIG/10)

(Bangkok, Thailand, 9-10 November 2022 — Hybrid Format)

Agenda Item 4: Enhancing Accident Investigation Capabilities

A PROJECT MANAGEMENT APPROACH TO INVESTIGATIONS

(Presented by Australian Transport Safety Bureau)

SUMMARY

The ATSB has been using a project management approach to investigation that has been shown to reduce the re-work of investigation reports and shorten the duration of investigations. The approach uses a mostly linear 10 phase approach, from evidence collection, to analysis, followed by report writing and approval. Formal milestone meetings are held at the end of each phase to approve content completed and findings established at that point, and to plan the next phase.

1. INTRODUCTION

1.1 All State accident investigation agencies are faced with pressure from external parties to complete investigations in shorter timeframes. However, as the investigation reports from State agencies become the public record, both in their own State and at worldwide via ICAO, proper investigation rigour is required. To minimise the time taken to complete an investigation, agencies must ensure time is not wasted. This includes minimising effort done investigating areas that were not relevant to the findings, and ensuring that writing the draft report is focused on presenting evidence and arguments justifying the final investigation findings.

1.2 The Australian Transport Safety Bureau (ATSB) has been using a project management process that has been shown to reduce the re-work of investigation reports and shorten the duration of the investigations. This is described below for the benefit of other agencies.

2. DISCUSSION

2.1 The ATSB has divided investigations into 10 phases. Not all investigations complete all phases. As seen in the diagram below, the smaller investigations (Short) have 8 phases, the medium investigations (defined) have 9, while the most complex (Systemic) have all 10 phases.

2.2 Completion of each phase allows for:

a) readjustment of predicted completion date (recorded internally and on the public webpage),

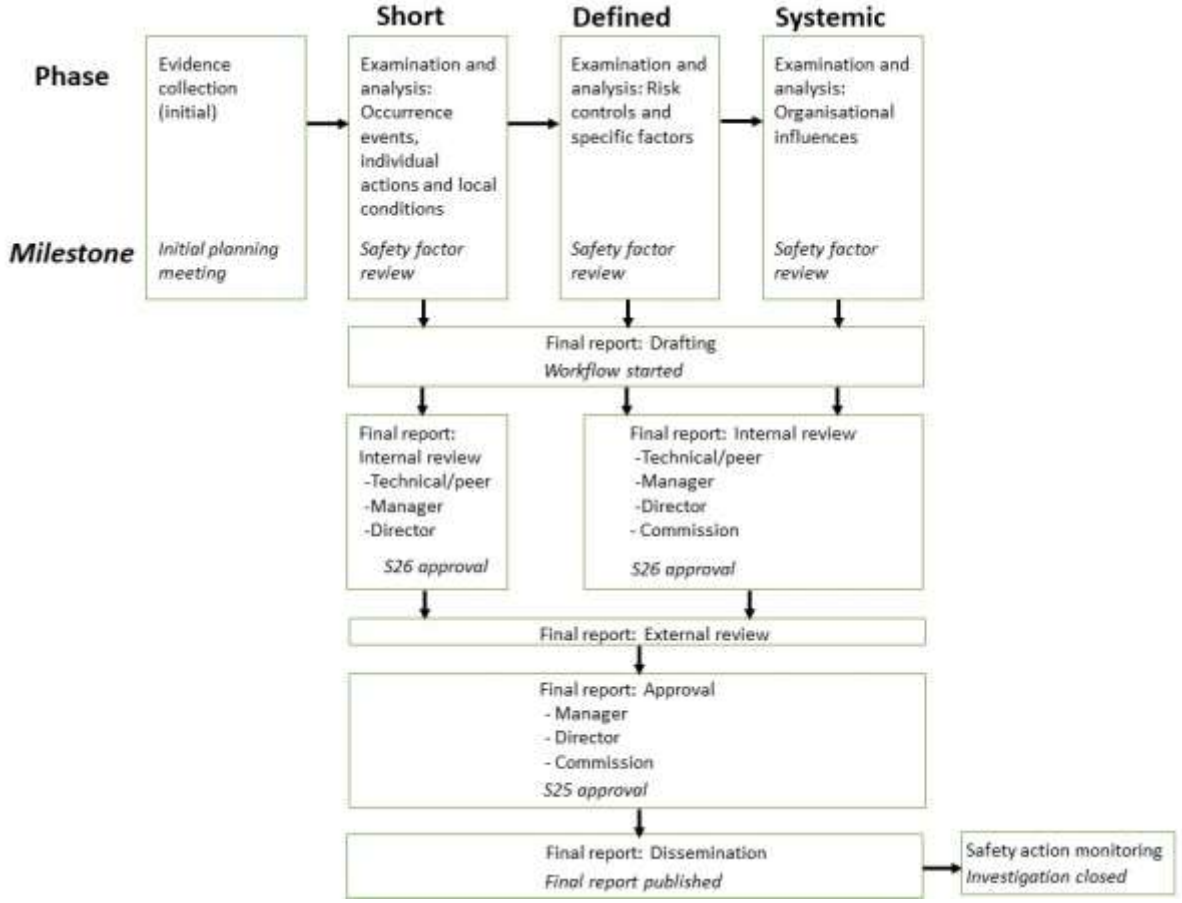
b) an update on the public website about what investigation activities have been completed and what will be done next

c) ensuring established Findings have sufficient evidence and are agreed by investigation team and investigation management

d) discussion and agreement about the scope of the next phases based on what has been established to date

e) discussion about whether additional/different resources are needed

f) discussion whether investigation priority and/or level needs changing.



2.3 Planning is conducted for one phase at a time between the investigator in change (IIC) and their manager. Detailed planning of investigation tasks and effort required, for each investigator, for each phase will occur when the milestone for the previous phase is completed, while more general estimates for effort required will be added to the schedule for future phases.

2.4 Phase 1: Initially evidence gathering

a) This phase includes all initial evidence gathering, both onsite and office-based, including witness interviews, wreckage inspection, document retrieval, recorder analysis, etc. These activities are done with minimal time for planning, and while they are done with some manager guidance, they are fairly generic for most investigations.

b) This phase will always end with the first planning meeting, which decides what additional evidence is required to be collected for phase 2, along with which investigators need to be involved.

c) A preliminary report is normally published.

2.5 Phases 2, 3, 4. Examination and analysis

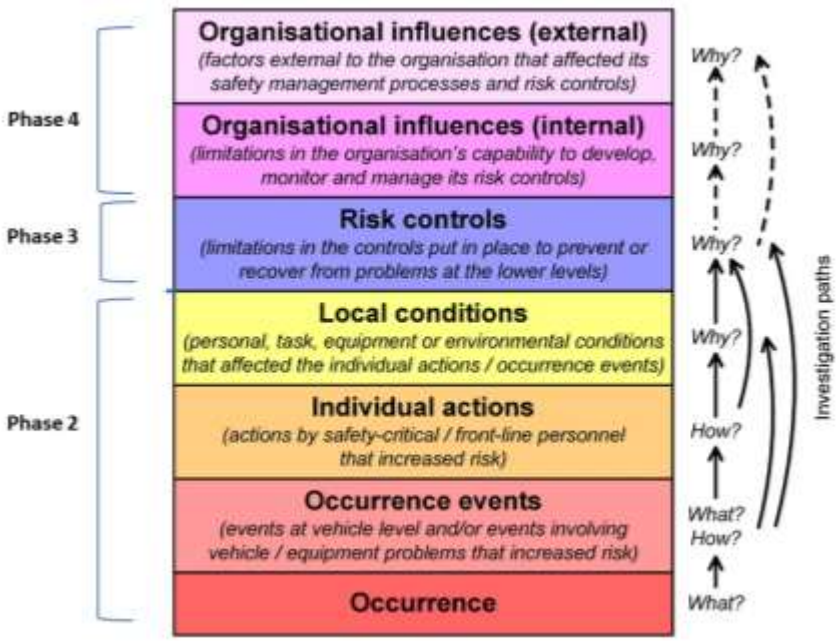
a) Each examination and analysis phase concentrates on determining findings (safety factors) at different levels, and ends with a safety factor review (agreement on findings) and future planning meeting. This occurs at formal meeting between the investigation team and investigation management.

b) The wording of the findings are agreed after the evidence and arguments for and against each finding are presented to investigation management. These are stored in the ATSB investigation management System (AIMS) for future reference, in particular, so that the agreed findings can be added to the investigation report and the evidence and arguments for each finding can be written into the Safety analysis section of the investigation report to justify each finding.

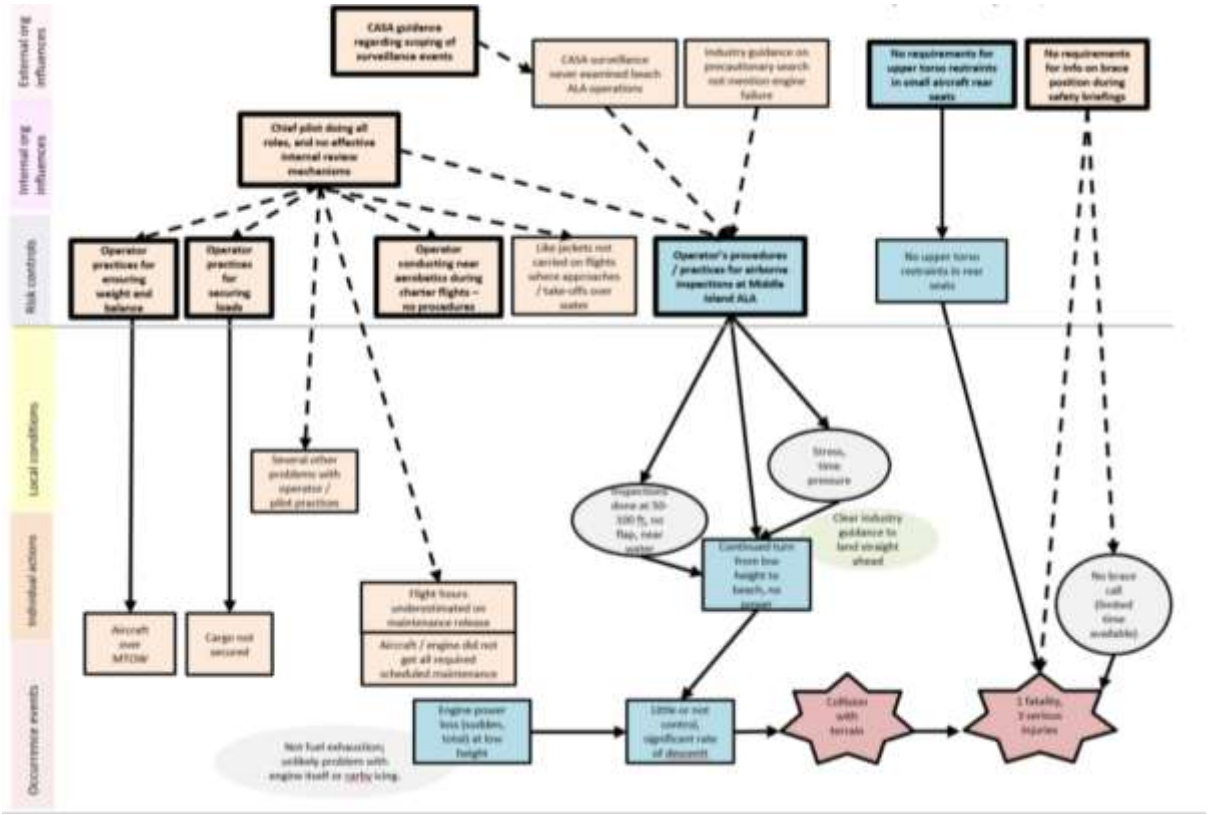
c) Phase 2 starts with a detailed sequence of events and ensuring evidence and analysis is sufficient to determine the safety factors at the lower levels of the ATSB analysis model (that is, occurrence events, individual actions, local conditions – findings that would appear in a short investigation) – see diagram below. The phase ends in agreement of those factors via a safety factor review. That meeting will also be used to plan and scope higher-level factors and potential safety issues in phase 3 and 4. Short investigations stop here and move to report drafting.

d) Phase 3 is used for defined and systemic investigations, collecting further evidence for failed/absent risk controls that may have contributed to the lower safety factors established in phase 2. This may involve different activities such as interviews of personnel from other areas within an organisation. Similarly, it ends with another safety factor review which includes scoping and planning for higher level factors if needed. Defined investigations stop here and move to report drafting.

e) Phase 4 is only used for systemic investigations, collecting further evidence for organisational and regulatory matters that may have contributed to the fail or absent risk controls identified in phase 3. Again, this normally involves a different type of evidence collection activities, often with specialist investigators. It also ends in a safety factor review.



2.6 Each safety factor review above allows for agreement on scoping, moving up the safety factor map to ensure the investigation chases those potential safety factors linked to the lower level safety factors (see Safety factor map below).



2.7 While seemingly linear, these phases will often be less than linear. Evidence for higher-level safety factors will normally start early in the investigation; however, a focused effort on these factors will be reserved for later. In addition, some safety factors require long evidence collection and analysis periods that will continue after other areas of the investigation have moved into the risk control or organisational influences phases. In addition, a potential safety issue that becomes apparent early in an investigation that needs communication can also be followed-up without waiting phases 3 or 4.

2.8 However, one of the key goals of completing phases 2 to 4 in a mostly linear way is to ensure the investigation has solid evidence for findings concerning what happened and how, before putting time and effort into determining why they happened. Effort directed too early into the higher level factors can sometimes be wasted effort when assumptions about what happened early on turn out to be incorrect.

2.9 Phase 5: Draft report.

a) While some parts of the investigation report will be written early on as they form the basis of preliminary and interim reports, these mostly concern sequence of events and standard facts.

b) Most of the investigation report, in particular the Safety analysis, but also parts of the factual report that are needed to support the safety analysis, do not get written until the examination and analysis phases are complete.

c) Writing most of the investigation report at this stage of the investigation ensures the report includes all relevant facts and analysis to support the findings. Writing

the report before the findings have been agreed can lead to unnecessary factual and analytical material being included in the report, making the report longer than needed and more difficult to read.

2.10 Phase 6: Internal review

a) The draft investigation report is reviewed by a peer (investigator with subject matter expertise), manager, director and approved by the ATSB Commission.

b) Because the investigation findings have been agreed by manager and director *before* the report is written, reviewing the investigation report is limited to the content of the facts and arguments.

c) This results in considerably less re-work of investigation reports compared to when the findings were not formally reviewed and approved by management as sometimes management did not agree with the findings when reviewing the report. This meant that not only did the findings need to change, the written facts and analysis in the draft report needed to be re-written, extending the time taken to complete an investigation.

2.11 Phase 7: External review of draft investigation report.

2.12 Phase 8: Review by IIC, Manager, and Director of comments from external parties. Every comment provided to the ATSB is added to AIMS, along with a comment from the IIC about what changes have been made to the report and/or justification as why changes are not needed. This phase ends with the formal approval from the ATSB Commission to publicly release the Final report.

2.13 Phase 9: Publishing. This includes preparing for press releases, media grabs, website etc.

2.14 Phase 10: Safety action monitoring. While the investigation is completed, there is often outstanding safety recommendations that need to be continued monitoring. This phase was included by ATSB as a way to remind investigators that they need to keep the status of safety actions up to date after the investigation is completed by liaising the relevant external parties.

3. ACTION BY THE MEETING

3.1 The Meeting is invited to note the ATSB Project Management approach for consideration as a potential way to improve investigation timeliness.

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