8Steps™
OF EFFECTIVE INCIDENT INVESTIGATION

InterSafe — Protecting People

Steps 1 - 8 Checklists and Audit Criteria (ADVANCED)
(Team Investigation)

Step 1: Scope and Prepare for Investigation

	1.a. Scoping, Team Selection and Preparation	P	F	G	Ex
1	Identify Client				

2	Have preliminary conversation with Client:
	a. Get a basic understanding of the incident
	b. Identify:
	    i. Current situation, i.e. site secure versus major disturbance of site
	    ii. How the crew is coping
	    iii. Critical issues from the Client's perspective, e.g. cultural / political
	    iv. Expectations of feedback to Client as the investigation unfolds
	    v. Physical resources available to the Team onsite and offsite
	    vi. Technical resources available to the Team onsite				

3	Allow thinking time before scoping the investigation with Client				

4	Discuss Scope with Client:
	a. Purpose of investigation
	b. Consequences of interest:
	    i. Clearly define potential damage scenario
	c. Timeframe of interest:
	    i. Zones of the timeline that will be included in the scope of investigation
	    ii. Is the Team authorised to study the incident (if necessary) right back to design /equipment selection issues?
	d. People of interest:
	    i. Focused only on this incident / this department
	e. Geographical boundaries of interest:
	    i. Consider implications for the wider operation
	f. Activities of interest
	g. Analysis Methodology to be used				

5	Discuss Deliverables with Client:
	a. Timeframe for delivery (including close-out meetings / presentations)
	b. Resources available to assist:
	    i. Physical resources available to the Team
	    ii. Technical resources available to the Team onsite, i.e. reasonably competent content experts who are not close to or have a vested interest
	    iii. Secretarial/support resource to complete filing, assist in access to people, schedule interviews, etc.				

6	Discuss reporting requirements with Client (e.g. daily updates): a. Confirm expectations of feedback to Client as the investigation unfolds				
7	Agree with Client on a selection process and Team Member criteria before discussing individuals: a. Set expectations with Client about Team size b. Establish work plans / shift rosters of relevant people so that time on site can be gauged				
8	Consider the following before selecting Team Members: a. Think about the Team's skill-set before discussing with the Client and HSE, for example b. Numbers on Team c. Technical expertise d. Site knowledge / experience e. Give consideration to a trained Lead Investigator as a Team Member f. Consider need for independent process expert advisor to mentor you / Team through the investigation and who may also be able to act in the capacity of a Team Member				

1.a. Scoping, Team Selection and Preparation (Continued)	P	F	G	Ex
9 Discuss with the Site Manager, the availability of a "secretarial/support" resource to complete filing, assist in access to people, schedule interviews etc.				

10 Select Team Members:
a. Person familiar with work / task being conducted
b. Person unfamiliar with work / task being conducted
c. Subject Matter Experts in Damaging Energy / Equipment
d. Analysis Facilitator:
    i. Ensure that the Analysis Facilitator is part of the Team from the beginning of the investigation, i.e. Step 1 onwards
    ii. Establish that the Analysis Facilitator has completed the appropriate training
    iii. Set the expectation that you will not relinquish leadership of the Team to the Analysis Facilitator
e. Ensure the Team is not too large, i.e. no more than 5 to 7 people				

11 Follow up the Client's initial contact with each Team Member and set the following expectations for them: a. Organise / reschedule personal requirements b. Ensure availability for doing nothing but this investigation				

12 Lead Investigator and Team Members individually mentally prepare for investigation:
a. Set the following personal expectations for the investigation:
    i. The investigation may be complex and not superficial
    ii. The investigation may develop multiple hypotheses
    iii. Will need to follow the process slowly and methodically
b. Set the following personal expectations for what may be found:
    i. People may be emotional – this is as much about managing social process as it is about gathering information
    ii. Some people will have strong ownership of the incident and strong emotions				

13 Check that Team Members do not have a conflict of interest: a. Ensure Team Members do not include those people involved in the immediate circumstances of the incident b. Check you do not have a conflict of interest				
14 Lead Investigator and Team Members free up schedule for investigation work: a. Organise / reschedule family, personal and work commitments b. Block out calendar for doing nothing but this investigation				

1.b. Initial Meeting with Team	P	F	G	Ex
1 Lead Investigator and Team to meet with the site key stakeholders				
2 Identify a suitable room for the Team to meet / work from over the course of the investigation				
3 Allow 1-2 hours for the briefing to set ground rules before starting the data gathering planning process				
4 Thank each Team Member for being prepared to be involved in the Team				
5 Set the expectation for the Team that: a. The Team will not jump to a statement as to "what happened" (the hypothesis) until all interviews, inspections and data collection has been completed b. The Team will not talk about solutions until the incident is understood c. The Team will not judge people's actions early in the investigation d. There is some hard work in front of the Team requiring discipline in thinking e. As understanding progressively develops (and prior to Step 5 – Conduct Essential Factors™ Analysis) the Team will come to understand what predisposed particular aspects of the people / equipment / environment				
6 Discuss Scope from Client				
7 Discuss investigation roles of Team Members				
8 Discuss 8Steps Process: a. Provide Team Members with a copy of the process checklists so the Team is informed as to what to do before commencing and after completing each Step 2 to 8				

1.c. Planning for Data Collection		P	F	G	Ex
1	Identify what is already known: a. Commence to map a timeline based on initial Team briefing and upgrade as understanding increases. Note that this will assist in timeline development for checklist Step 5 but there will be differences to the timeline used in analysis				
2	Identify what is wanted to be known				

3	Identify and list:
	a. People to talk to, and their availability
	b. Equipment/Environment to inspect
	c. Documents to collect:
	     i. Refer to Checklist Step 2.c
	     ii. External research / literature search to undertake, including Taxonomies				

4	Prioritise data collection				
5	Identify whether the Team needs to go to the site for first inspection before members commence interviewing, inspections and data collections: a. If an initial inspection is conducted, get the Team Members to describe and record their observations and then share those observations				
6	Allocate tasks to Team Members (including the Lead Investigator): a. Complete interviews b. Inspect the incident site c. Collect document data d. And record those tasks and names on the list				

1.d. Resources and Logistics		P	F	G	Ex
1	Organise Interview room (if needed)				
2	Source the Inspection kit: a. Identify any specialised equipment needed for investigation				
3	Set the expectation that the Team would meet: a. At the beginning of each day to share learnings b. At other times as considered necessary				
4	Organise how data will be stored (e.g. electronic location)				
5	Arrange administrative assistance (if needed)				
6	Ensure contact information is shared, i.e. mobile phone numbers, email, etc.				
7	Review the assigned task lists, and add new tasks as necessary at the regular meetings				

Step 2: Collect Information / Data

	2.a. Collect Interview Data	**P**	**F**	**G**	**Ex**
1	Before the Team members commence interviewing (in pairs) get the Team to list: a.　What must be done well in an interview? b.　What could go wrong? c.　Refer to Reference Manual				
2	Have the Team make a list of what information they may seek to understand from the different interviewees				
3	Limit the Interview Teams to preferably 2 people (3 maximum)				
4	Ensure that people to be interviewed are not Team Members				
5	Establish if interviews had been already completed by statutory authorities / others				
6	After interviews review with Team as to whether: a.　Interviews explored predisposing factors by asking "why?" & "and" many, many times b.　Interview Teams did not enter into the interview already having decided what happened (the hypothesis) and so miss possible opportunities c.　Interview questions were not framed in undesirable terms of "safe, unsafe, mistake, violation" etc. versus "what people did do / did not do; know / not know; skills present /absent" d.　The language of the findings of the interviews were not egocentric and value judgmental e.　The primary objective in interviewing was to gain an understanding of the incident versus establishing possible violations f.　Interviews attempted to have a conversation / taking notes / obtaining sketches etc. versus taking the less desirable path of formal statements g.　The Team demonstrated compassion / empathy during interviewing				
7	Ensure that the Team is satisfied they understand comprehensively the immediate circumstances of the incident				
8	Ensure that the Team is satisfied that each interview establishes the context of the immediate circumstances of the incident				
9	Determine if all appropriate people have been interviewed				
10	Determine if the Team needs to redo / follow up any interviews				
11	Ensure that detailed findings of each interview are being reported back to the Team				
12	Ensure all interviewing is complete before commencing Checklist Step 5				

	2.b. Collect Physical Data	**P**	**F**	**G**	**Ex**
1	Establish if there are any time pressures to reinstate the scene back to production				
2	Establish if the Team has a camera with flash of sufficient size to illuminate the scene				
3	Establish the need to video the scene (slowly)				
4	Establish the need to engage a phenomena / technical expert to assist / guide data collection, e.g. metallurgist, geotechnical engineer, traffic accident investigator				
5	Establish if the scene was secured				
6	Establish if the scene had been disturbed				
7	Establish if the Emergency Response Team collected / measured data, disturbed the scene				
8	Secure process data early in the investigation, e.g. logs, computer files, etc.				
9	Obtain phone records, if deemed relevant				
10	For area / aspect of accountability obtain: a.　All relevant parameters, angles, slopes, weights, velocities, distances, light levels: 　　i.　Complete "big picture" measurements, e.g. location of incident relative to other features b.　An accurate drawing of people and objects				
11	When gathering information remain doubly open to new ideas, suggestions, hypotheses etc.				
12	Give surveyor context / scope in briefing them (CPQQRT model)				
13	Capture enough good quality photos to describe / explain the incident, i.e. context photos & detail photos				
14	Establish the need to complete any re-enactments / trials / tests				
15	Ensure that those who collected data provide a detailed report back to the Team				
16	Review with Team that we remained "doubly open" during the observation / information gathering process				

2.c. Collect Documented Data	P	F	G	Ex
1	Ensure the Team understands the context of this incident in the pattern of fatalities and non-fatal permanent damage, i.e. is it represented in Taxonomies				
2	Identify the need to have someone assigned to complete a literature review of information external to the organisation				
3	Identify the need to have someone assigned to interrogate the organisational database for similar incidents (possibly (a) non-fatal, (b) high potential incidents)				
4	Establish relevant site documentation: a. Induction records b. Training records c. Competencies d. Semi-Quantitative Risk Assessments (SQRAs) e. Audits f. Risk registers g. Hours worked h. Maintenance records i. Operation and maintenance manuals j. Relevant schematics k. General arrangement drawings l. Equipment specifications m. Purchasing specifications				
5	Establish relevant National Standards / International Standards / Legislation				
6	Establish relevant organisational / site standards				
7	Identify what data collection occurs on the site that may be useful / relevant and possibly overwritten quickly: a. Two-way radio records b. Tritronics c. Gatehouse entry / exit d. PLC records e. Video equipment f. In Vehicle Monitoring Systems (IVMS)				
8	Establish if there is any relevant data that may be held off site, e.g. head office				
9	If the incident is health related obtain any monitoring records, medical records				
10	If the incident involved environmental or community damage, generate a list of possible documents				
11	Ensure the detailed findings from gathered documentation is reported back to the Team				

2.d. Collect Culture / Systems Data	P	F	G	Ex
1	Ensure the Team understands the norms of behaviour of the: a. Work group as it applies to this incident b. Management chain as it applies to this incident				
2	Understand what symbols (events, leadership behaviours, physical things) could have predisposed this incident				
3	Challenge any belief within the Team that the behaviour of involved persons (worker / manager) in the incident is extreme and not normal				
4	Establish whether the documented systems are matching behaviour / practices				
5	Understand if systems / standards / procedures are authorised / unauthorised, and productive / non-productive				
6	Establish "the drivers" of relevant unauthorised behaviours				
7	Establish that if production pressures are emerging, are these: a. Self-imposed b. External to the person or group c. Implied by leaders but not intended				
8	Establish any KPIs that may be drivers of behaviour				
9	Establish whether management is cognisant of the possible negative consequences of the KPIs				
10	Ensure that the Team interviewed appropriate key stakeholders to understand behaviours / systems / symbols issues				

Step 3: Form and Test Hypothesis

	3. Form and Test Hypothesis	P	F	G	Ex
1	Ensure that the Team formally tests hypotheses where needed, e.g. test supporting and rejecting information				
2	Determine whether the incident requires more than 1 hypothesis and therefore possibly more than 1 analysis				
3	Ensure you can describe observations which do not fit the final hypothesis				

Step 4: Write Incident Description

	4. Write Incident Description	P	F	G	Ex
1	Ensure that all of the activity of data collection has given the Team a comprehensive understanding of the incident				
2	Identify whether the Team is ready to proceed to analysis. For example: a. The Team understands in detail how the damage occurred to the person/s b. The Team understands in detail the interaction of elements (people, equipment, environment) leading to the incident c. The Team understands in detail what predisposed these interactions				
3	Ensure the Team forms and writes an appropriate hypothesis (description) before starting analysis				
4	Ensure the Team has written a complete, specific, factual and legible description				
5	Ensure the Team includes a comprehensive timeline				
6	Ensure the Team has captured observations, e.g. notes and photographs				
7	Determine whether photographs can be given titles / names / grouped				

Step 5: Conduct Essential Factors™ Analysis Checklist

	5. Conduct Essential Factors™ Analysis Checklist	P	F	G	Ex
1	Ensure that all Team Members contribute to the analysis process				
2	Ensure the leader does not abdicate leadership to the facilitator during analysis				
3	Identify the need to break the incident up into appropriate time zones during the analysis, i.e. slow down the incident				
4	Ensure the analysis identifies and captures information relevant to each element involved in the incident				
5	Ensure there is an appropriate balance between people factors and equipment / environment factors				
6	Identify whether the analysis identified the potential for mitigation of damage once the situation was out of control				
7	Identify that factors are essential or contributory only. Neutral factors (observations & additional learnings) to be removed from analysis				

Step 6: Identify and Short List Controllable Factors

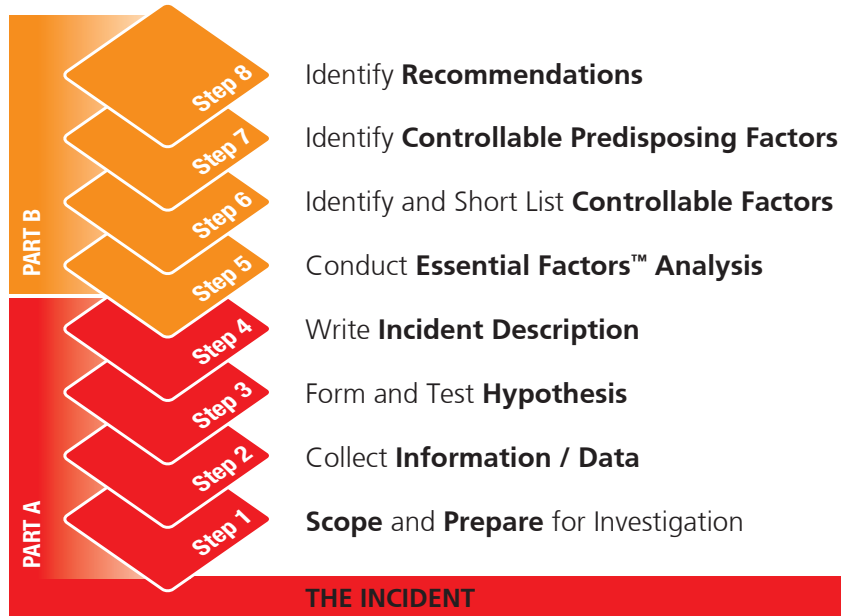| 6. Identify and Short List Controllable Factors	P	F	G	Ex
1	Test the identified controllable essential factors against the definition of an essential factor				
2	Identify whether the management of identified controllable essential factors would have changed the outcome				

Step 7: Identify Controllable Predisposing Factors

7. Identify Controllable Predisposing Factors	P	F	G	Ex
1	Ensure the analysis includes cultural, system, design, training, etc. factors that predisposed the immediate circumstances of the incident				
2	Ensure the predisposing factors meet the definition of "essential" and "contributory" factors				
3	Ensure the analysis does not list predisposing factors which are emotionally attractive, but are not essential to the incident				
4	Ensure the analysis includes any KPIs that may be drivers of behaviour in the immediate circumstances of the incident				
5	Is our understanding of what predisposes a controllable Essential Factor limited, requiring: a. Further data collection? b. Discussions with the Client				

Step 8: Identify Recommendations

8. Identify Recommendations	P	F	G	Ex
1	Ensure that recommendations are not strongly administrative with respect to hierarchy of controls				
2	Ensure that recommendations are not just about more procedures, training, administrative controls but are also gutsy, quality sustainable, achievable outcomes				
3	Ensure that some recommendations are specific to the immediate circumstances of the incident				
4	Ensure that some recommendations are specific to cultural, systemic, industry norms, engineering norms relevant to the incident				
5	Ensure that some recommendations address damage mitigation				
6	Ensure that recommendations satisfy the VAACS criteria. They are "effective" if they are: a. Viable - practical & does not create a new & unacceptable level of risk b. Affordable - affordable within the constraints of capital / cash flow / business viability c. Acceptable - accepted / owned by the end users / owners d. Compatible - compatible with risk being managed e. Sustainable - sustainable over time for medium and high risk situations				
7	Ensure Team Members do not just accept the proposed recommendations so that we could all go home				
8	Be satisfied that the recommendations will control / mitigate the potential for this type of incident into the future				
9	Ensure recommendations address the Scoping Document's requirements, e.g. people of interest, tasks of interest, etc.				

The 8Steps of Effective Incident Investigation™

PART	Step	Description
PART B	Step 8	Identify **Recommendations**
	Step 7	Identify **Controllable Predisposing Factors**
	Step 6	Identify and Short List **Controllable Factors**
	Step 5	Conduct **Essential Factors™ Analysis**
PART A	Step 4	Write **Incident Description**
	Step 3	Form and Test **Hypothesis**
	Step 2	Collect **Information / Data**
	Step 1	**Scope** and **Prepare** for Investigation

THE INCIDENT

VAACS Criteria

Viable — Practical, workable, no new risks and removes the factor

Affordable — Within the constraints of capital / cash flow / business viability

Acceptable — To the end users / owners / maintainers

Compatible — With the level of damage being managed (high levels of damage require higher levels of control)

Sustainable — Over time for medium to high levels of damage

The ART-T™ Model for Understanding Incidents

Labels: PEOPLE, ENVIRONMENT/PEOPLE, PEOPLE/EQUIPMENT, ENVIRONMENT, EQUIPMENT, EQUIPMENT/ENVIRONMENT; 8 STABLE, 7 REPAIR, 6 GETTING TO REPAIR CENTRE, 5 DAMAGE, 4 UNSTABLE, 3 METASTABLE, 2 STABLE, 1 PREDISPOSING FACTORS