Civil Air Patrol Safety Information System
Safety Reviewing Guide

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Reviewing	3. Determine what happened 4. Define the contributing human and non-human factors 5. Select the cause categories and causal factors	*Safety Reviewing Guide* *Factors Analysis Worksheet*
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1. **Overview**. A key component of Civil Air Patrol's Safety Management System is the review of reported safety significant occurrences. The review process provides the means of determining what factors contributed to the outcome and what actions would eliminate a recurrence or reduce the likelihood and/or severity of a negative safety outcome.

    1.1. The review process must focus on determining the contributing factors that led to a safety significant occurrence and not on who is at fault. Assigning blame is counter to an ideal safety culture and leads to loss of participation in safety processes and activities.

Safety Reviewing
1. Determine what happened
2. Define the contributing human and non-human factors
3. Select the cause categories and causal factors

2. **What terms are associated with safety reviewing?** The following terms are used during the safety review process.

    2.1. **Event chain.** A series of events culminating in a safety significant occurrence (SSO). Events are observable snapshots that reflect the facts that describe actions or inactions that led to an SSO.

    2.2. **Contributing factor**. The human and/or non-human factors that contributed to a safety significant occurrence.

    2.3. **Causal factor.** The factor or factors that are primarily responsible for a safety significant occurrence and, if addressed, would reduce its likelihood.

    2.4. **Human factor.** Factors that contributed to an SSO which relate to interactions between humans and the elements of a system.

    2.5. **Non-human factor.** Factors beyond human control such as equipment difficulties, natural disasters, and sabotage that cause damage, injury, or illness.

3. **Who should review safety significant occurrences?** Only those members who have completed the "Reviewing a Safety Significant Occurrence Course" can be assigned to conduct a safety review. This will ensure members have the foundational knowledge and experience to conduct the review and enter the information into CAPSIS.

4. **Is the initial report complete and accurate?.** The review officer must verify all information entered by the reporting member is accurate and complete. Click the "Initial Report is Accurate" button at the bottom of the page. This results in a status change from Initial Reporting to the Reviewing stage.
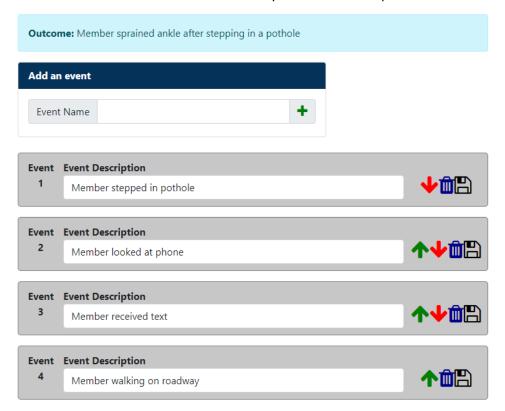
5. **How should a safety review be conducted?** There are three main phases of a safety review: collecting information, constructing the event chain, and determining contributing and causal factors.

   5.1. **Collecting information.** Information is an essential part of the safety review process. It provides the necessary elements for determining what happened, what contributed, and what caused an SSO. Sources of information include, but are not limited to, statements and interviews, records and other documents, and photographs and diagrams.

   5.1.1. Statements and Interviews. Requesting relevant information from individuals involved in or who witnesses an SSO.

   5.1.2. Records and documents. Any relevant photos, records, or documents that support the review process and the conclusions drawn about the contributing and causal factors.

   5.1.3. Photos. Generally, photos should only be taken of damaged equipment. Please, do not upload photos of injuries or individuals.

General	Activity	Individuals	Resources	Attachments

Attachments

Select Files (3MB max file size each)
Or drag files into dashed area.

Search:

File Name	Description	Date Submitted	Uploaded By	
No data available in table				

5.2. Constructing the event chain. This step answers the question, "What happened?" The event chain starts with the outcome and is then preceded by a series of observable events that led up to it. Each event should be described briefly as a series of snapshots.
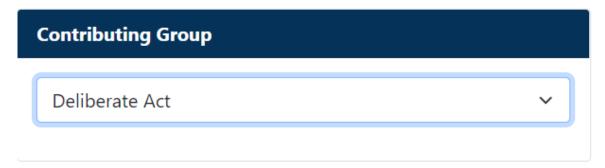
Outcome: Member sprained ankle after stepping in a pothole

Add an event

Event Name   **+**

Event	Event Description	
1	Member stepped in pothole	↓ 🗑 💾
2	Member looked at phone	↑↓ 🗑 💾
3	Member received text	↑↓ 🗑 💾
4	Member walking on roadway	↑ 🗑 💾

5.3. Determining contributing and causal factors. Contributing factors fall into two categories – human and non-human – and are described in Section 6.0 of this guide. Causal factors describe the underlying issues that led to the SSO. Causal factors are described in Section 7.0 of this guide.

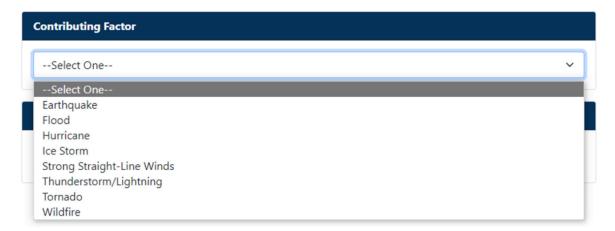**6. Contributing factors.** The two categories of contributing factors include human and non-human factors.

Contributing Group

--Select One--   ⌄

5

6.1. Non-human factors. This category includes equipment difficulties, natural disasters, or sabotage.

6.2. Deliberate Act. Deliberate acts are those that are committed with the full knowledge that they are contrary to established directives or were intended to cause harm or damage. If an SSO is the result of a deliberate act, the matter must be immediately referred to the commander for action. Selecting this option in the SSO review process will close the report.

Contributing Group

Deliberate Act ⌄

6.2.1. Natural disaster. Damage or injury caused by weather or other environment conditions. Examples include tornado, flood, ice storm, hurricane, earthquake, wildfire, blizzard, lightning, etc.

Contributing Group

Natural Disaster ⌄

Contributing Factor

--Select One-- ⌄

--Select One--
Earthquake
Flood
Hurricane
Ice Storm
Strong Straight-Line Winds
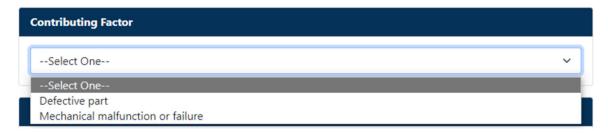Thunderstorm/Lightning
Tornado
Wildfire

6.2.2. Equipment difficulties. The following factors are applicable when equipment is determined to have been a factor in an SSO. Do not use these factors if there was equipment difficulty because of inadequate or non-existent maintenance (these fall under human factors).

Contributing Group

Equipment Difficulty ⌄

Contributing Factor

--Select One-- ⌄
--Select One--
Defective part
Mechanical malfunction or failure

6.2.2.1. Equipment defect. A factor when equipment, components, instrumentation, or software was defective before it was installed.

6.2.2.2. Equipment failure. A factor when a piece of equipment or a component malfunctions or is not operating properly.

6.2.3. Facility. Damage, injury, or illness that resulted because of an unavailable or inadequate facility either because of size or space or because of inadequate maintenance, storage, or organization.
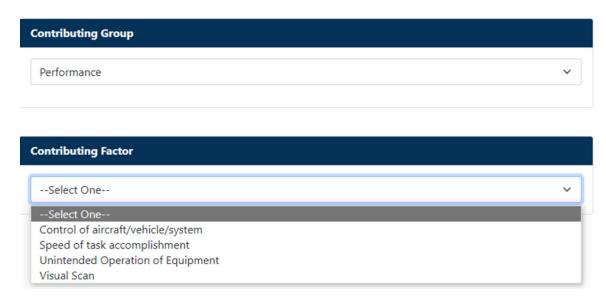
Contributing Group

Facility ⌄

Contributing Factor

--Select One-- ⌄
--Select One--
Improper Use of Facility
Inadequate Facility

6.2.3.1. *Inadequate Facility.* Lack of a facility or lack of adequate size, storage, or organization.

6.2.3.2. *Improper use of facility.* Use of a facility in a manner that was not intended.

6.3. Human Factors. This category includes interfaces between humans and the elements of a system. The basic categories to consider when reviewing each factor include:

6.3.1. Performance. Actions performed in a manner that led to or could have resulted in an unsafe outcome

Contributing Group

Performance ⌄

Contributing Factor

--Select One-- ⌄

--Select One--
Control of aircraft/vehicle/system
Speed of task accomplishment
Unintended Operation of Equipment
Visual Scan

6.3.1.1. *Operation of equipment* is a factor when an individual's movements inadvertently activate or deactivate equipment, controls, or switches when there is no intent to operate the control or device. This action may be noticed or unnoticed by the individual.

6.3.1.2. *Control of aircraft/vehicle system* is a factor when an individual responds inappropriately to conditions by either over- or under controlling the aircraft/vehicle/system. The error may be a result of preconditions or a temporary loss of coordination.

6.3.1.3. *Visual scan* is a factor when the individual does not effectively execute visual scan patterns.

6.3.1.4. *Speed of task accomplishment* is a factor when an individual takes a necessary action as dictated by the situation but performs these actions too quickly or too slowly.

6.3.2. Judgement & Decision Making. Choosing and taking a course of action that was inadequate or inappropriate for the situation

Contributing Group

Judgement and Decision Making ⌄

Contributing Factor

--Select One-- ⌄

--Select One--
Choice of Action
Ignored Caution/Warning
Real Time Risk Assessment
Task Prioritization

6.3.2.1. *Real-time risk assessment* is a factor when an individual fails to adequately evaluate the risks associated with a particular course of action and this faulty evaluation leads to inappropriate decision-making and subsequent unsafe situations

6.3.2.2. *Prioritization of tasks* is a factor when the individual does not organize, based on accepted prioritization techniques, the tasks needed to manage the immediate situation

6.3.2.3. *Caution/Warning comprehension* is a factor when a caution or warning is perceived and understood by the individual but is ignored by the individual.

6.3.2.4. *Choice of action during an operation* is a factor when the individual, through faulty logic or erroneous expectations, selects the wrong course of action.

6.3.3. Physical Environment. Environmental conditions such as weather, atmospheric conditions, lighting, or noise affecting an individual's actions
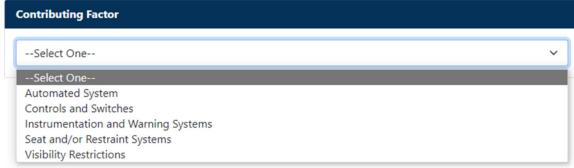
Contributing Group

Physical Environment

Contributing Factor

--Select One--

--Select One--
Cramped Quarters
Heat/Cold Stress
Lighting
Noise Interference
Obscured Visibility
Wet/Slick Conditions

6.3.3.1. *Factors affecting vision* is a factor that includes obscured windows; weather, fog, haze, darkness; smoke, etc.; brownout/whiteout (dust, snow, water, ash or other particulates); or when exposure to windblast affects the individual's ability to perform required duties.

6.3.3.2. *Heat/cold stress* is a factor when the individual is exposed to conditions resulting in compromised performance.

6.3.3.3. *Lights of other vehicle/vessel/aircraft* is a factor when the absence, pattern, intensity, or location of the lighting of other vehicle/vessel/aircraft prevents or interferes with safe task accomplishment.

6.3.3.4. *Noise interference* is a factor when any sound not directly related to information needed for task accomplishment interferes with the individual's ability to perform that task.

6.3.3.5. *Wind (vehicle only)* is a factor when the intensity or direction of wind adversely impacts operation of a vehicle.

6.3.3.6. *Wet/slick conditions* is a factor when wet of slick conditions contribute to vehicle damage or to an injury. NOTE: Do not use this factor for aircraft SSOs.

6.3.4. Equipment and Technology. Automation or design affecting the actions of an individual.

Contributing Group
Equipment and Technology ⌄

Contributing Factor
--Select One-- ⌄

--Select One--
Automated System
Controls and Switches
Instrumentation and Warning Systems
Seat and/or Restraint Systems
Visibility Restrictions

6.3.4.1. *Seat and restraint system* is a factor when the design of the seat or restraint system, the ejection system or seat comfort has poor impact-protection qualities.

6.3.4.2. *Instrumentation and warning system* is a factor when instrument factors such as design, reliability, lighting, location, symbology, size, display systems, auditory or tactile situational awareness or warning systems create an unsafe situation.

6.3.4.3. *Non-weather visibility restriction* is a factor when the lighting system, windshield/windscreen/canopy design, or other obstructions prevent necessary visibility. This includes glare or reflections on the windshield/windscreen/canopy.

6.3.4.4. *Controls and switches* is a factor when the location, shape, size, design, reliability, lighting or other aspect of a control or switch are inadequate.

6.3.4.5. *Automated system* is a factor when the design, function, reliability, symbology, logic or other aspect of automated systems creates an unsafe situation.

6.3.5. Physiological State. A non-optimal physiological condition that contributes to actions or behaviors that lead to damage or injury/illness.
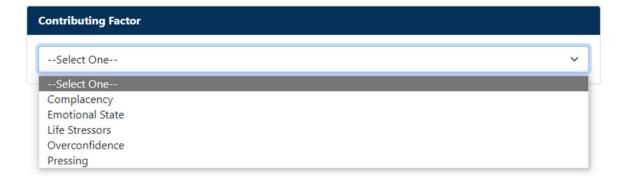
Contributing Group

Physiological State ⌄

Contributing Factor

--Select One-- ⌄

--Select One--
Fatigue
Nutrition/Diet/Hydration
Physical Strength and Coordination
Substance Effects

6.3.5.1. *Substance* effect is a factor when an individual uses legal or illegal drugs, supplements, energy drinks or any other substance with measurable effect that interfered with performance.

6.3.5.2. *Fatigue* is a factor when diminished physical/mental capability resulting from chronic or acute periods of prolonged wakefulness, sleep deprivation, jet lag, shift work or poor sleep habits interfere with performance.

6.3.5.3. *Physical strength and coordination* are a factor when the relative physical strength and/or coordination of the individual not adequate to support task demands.

6.3.5.4. *Nutrition/Diet/Hydration* are a factor when an individual's nutrition, hydration, or dietary practices result in degraded performance.

6.3.6. Mental State. A non-optimal mental or emotional state, condition, or attitude that creates an unsafe situation.
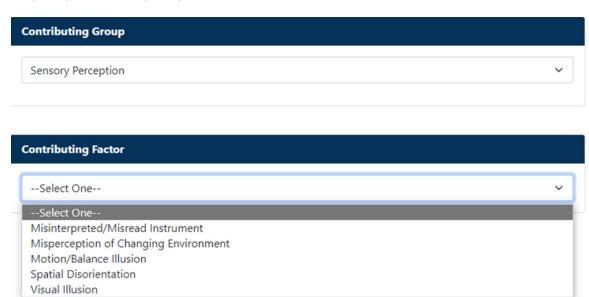
Contributing Group

Mental State ⌄

Contributing Factor

--Select One-- ⌄

--Select One--
Complacency
Emotional State
Life Stressors
Overconfidence
Pressing

6.3.6.1. *Life stressors* are a factor when an individual's performance is affected by stressful life circumstances

6.3.6.2. *Emotional state* is a factor when an individual is under the influence of a strong positive or negative emotion that interfered with a task

6.3.6.3. *Overconfidence* is a factor when an individual overvalues or overestimates personal capability, the capability of others or the capability of aircraft/vehicles or equipment

6.3.6.4. *Pressing* is a factor when an individual knowingly commits to a course of action that excessively presses the individual and/or their equipment beyond reasonable limits (e.g., pushing self or equipment too hard)?

6.3.6.5. *Complacency* is a factor when an individual succumbs to a false sense of security or ignores hazards

6.3.7. Sensory Perception. Degradation of visual, auditory, or vestibular senses that create the misperception or non-perception of a hazard.
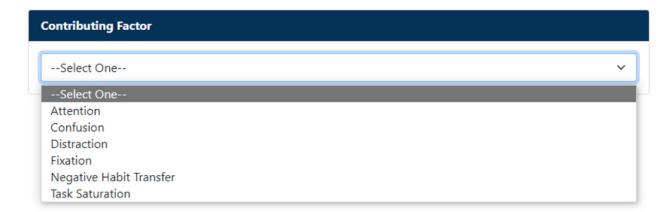
Contributing Group

Sensory Perception ⌄

Contributing Factor

--Select One-- ⌄

--Select One--
Misinterpreted/Misread Instrument
Misperception of Changing Environment
Motion/Balance Illusion
Spatial Disorientation
Visual Illusion

6.3.7.1. *Motion/Balance Illusion* is a factor when physical sensations of the ligaments, muscles, or joints cause an individual to become disoriented.

6.3.7.2. *Visual Illusion* is a factor when visual stimuli result in an individual becoming disoriented

6.3.7.3. *Perception of changing environment* is a factor when an individual misperceives or misjudges altitude, separation, speed, closure rate, road conditions, aircraft/vehicle location or other operational conditions.

6.3.7.4. *Misinterpreted/Misread instrument* is a factor when an individual read an instrument indication incorrectly

6.3.7.5. *Spatial disorientation* is a factor when an individual succumbs to forces that resulted in incorrectly sensing position, motion, or attitude of an aircraft/vehicle

6.3.8. Awareness and Vigilance. Attention management affecting individual performance in task accomplishment
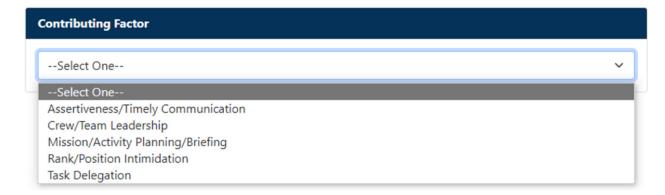
Contributing Group

Awareness and Vigilance	⌄

Contributing Factor

--Select One--	⌄

--Select One--
Attention
Confusion
Distraction
Fixation
Negative Habit Transfer
Task Saturation

6.3.8.1. *Attention* is a factor when an individual's reduced state of alertness or readiness led to a perceived absence of a hazard

6.3.8.2. *Fixation* is a factor when an individual's focus on a limited number of environmental cues to the exclusion of others

6.3.8.3. *Task saturation* is a factor when the quantity of information or activities affect an individual's mental resources available for processing information

6.3.8.4. *Confusion* is a factor when an individual experiences bewilderment, lack of clear thinking, or perceptual disorientation that led to their inability to maintain a cohesive and orderly awareness of events

6.3.8.5. *Habit transfer* is a factor when an individual reverts to a previously learned behavior that was not appropriate for the task or situation

6.3.8.6. *Distraction* is a factor when an individual experience an environment cue that led to an interruption of attention or a redirection of attention

6.3.9. Teamwork. Interactions among individuals, crews, and teams involved in the preparation and execution of a mission/sortie and/or activity that created a hazard.
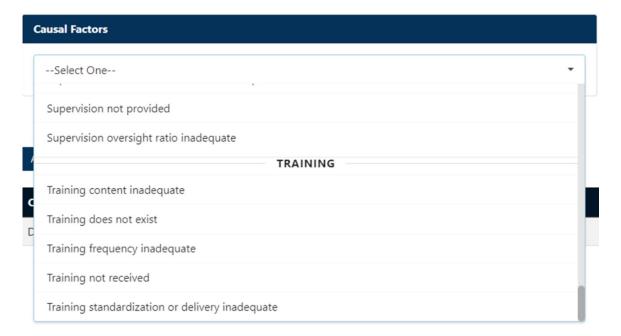
Contributing Group

Teamwork

Contributing Factor

--Select One--

--Select One--
Assertiveness/Timely Communication
Crew/Team Leadership
Mission/Activity Planning/Briefing
Rank/Position Intimidation
Task Delegation

6.3.9.1. *Crew/Team leadership* is a factor when a crew/team leadership's actions or inactions lead to a breakdown in team/crew function or capability.

6.3.9.2. *Task delegation* is a factor when a team's/crew's distribution of tasks lead to overloading on any individual member.

6.3.9.3. *Rank/position intimidation* is a factor when an actual or perceived rank or role intimidation degrades individual or team/crew performance.

6.3.9.4. *Assertiveness* is a factor when an individual's lack of assertiveness, persistence, or untimeliness results in critical information not being conveyed.

6.3.9.5. *Mission/Activity Planning or Briefing* is a factor when an individual's or team's/crew's non-completion of preparatory tasks associated with the planning or briefing of a mission/activity contribute to an unsafe outcome.
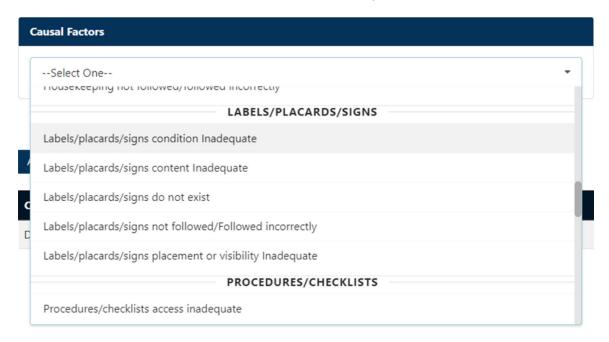
7. **Causal Factors.** Causal factors fall into nine categories: training, labels/placards/signs, equipment/tools, procedures/checklists, communication, regulations/standards/guidance, housekeeping, facility, and supervision.

   7.1. **Training.** The preparation or teaching needed to accomplish a mission, activity, or task successfully.

   7.1.1. Training does not exist. The necessary elements for preparing or teaching the individual(s) have not been previously published.

   7.1.2. Training not received/sufficient. The individual(s) involved did not received published required training or the training received was not sufficient for the individual(s).

   7.1.3. Training content inadequate. The current published training does not adequately prepare the individual(s) for a mission, activity, or task.

   7.1.4. Training standardization or delivery inadequate. The training used to prepare the individual(s) is inconsistent or is delivered in an ineffective way.

   7.1.5. Training frequency inadequate. The training used to prepare the individual(s) is delivered or completed often enough to assure mission, activity, or task success.
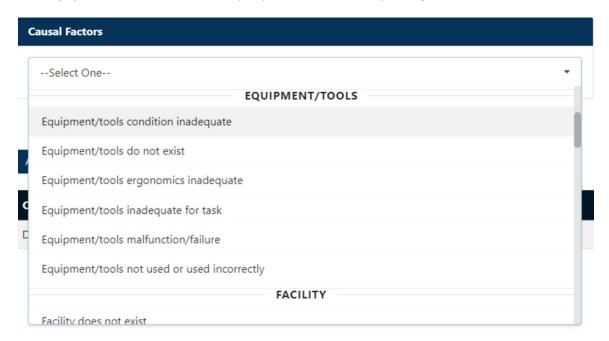
7.2. Labels/Placards/Signs. Physically posted instructions or guidance that should be available, visible, and in sufficient condition to be used effectively.

7.2.1. Labels/placards/signs not followed or were followed incorrectly. Physically posted instructions or guidance were available but were not used or were used incorrectly.

7.2.2. Labels/placards/signs do not exist. Physically posted instructions or guidance were not available but would have reduced the likelihood of the SSO

7.2.3. Labels/placards/signs content inadequate. Physically posted instructions or guidance were available but the instructions or guidance is incomplete.

7.2.4. Labels/placards/signs condition inadequate. Physically posted instructions or guidance were available but their physical condition rendered them unusable or ineffective.

7.2.5. Labels/placards/signs placement or visibility inadequate. Physically posted instructions or guidance were available but posted in a location where they were not visible.
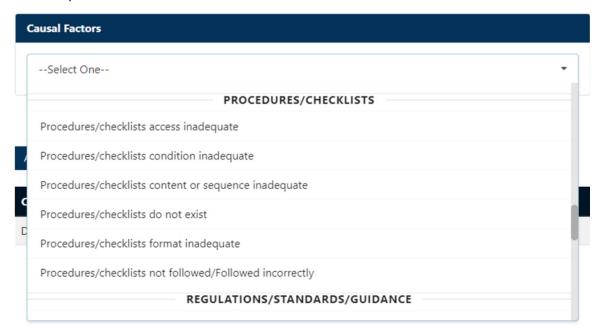
7.3. Equipment/Tools. The necessary implements for accomplishing a task.

7.3.1. Equipment/Tools not used or used incorrectly. Available implements were used in a way that was contrary to instructed or acceptable use and caused or could have caused damage, injury, or illness.

7.3.2. Equipment/Tools do not exist. A necessary implement for accomplishing as task was not available and led an individual to accomplish the task in some other way that caused or could have caused damage, injury, or illness.

7.3.3. Equipment/Tools inadequate for task. Available implements used we not of adequate quality, strength, capacity, etc. to accomplish a task.

7.3.4. Equipment/Tools condition inadequate. Available implements used were not in an adequate state of maintained readiness or repair to effectively accomplish a task.

7.3.5. Equipment/Tools ergonomics inadequate. Available implements were not conducive to fit and comfort to be used effectively or caused or could have caused damage, injury, or illness.

7.3.6. Equipment/Tools malfunction/failure. A piece of equipment, component of an aircraft or vehicle, or system malfunctioned or failed, leading to damage, injury, illness, or a near miss.
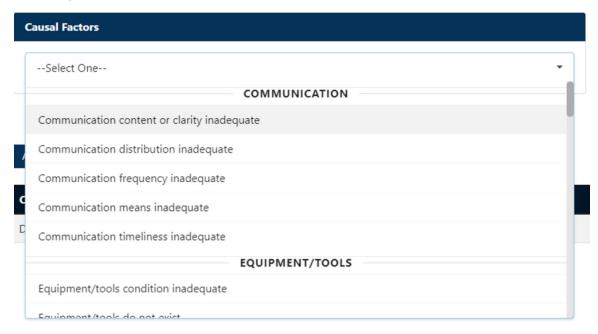
7.4. **Procedures/Checklists.** Published and accessible documents that contain important instructions, steps, or process guidance in order to successfully perform an operation or complete a task.

Causal Factors

--Select One-- ▾

PROCEDURES/CHECKLISTS

Procedures/checklists access inadequate

Procedures/checklists condition inadequate

Procedures/checklists content or sequence inadequate

Procedures/checklists do not exist

Procedures/checklists format inadequate

Procedures/checklists not followed/Followed incorrectly

REGULATIONS/STANDARDS/GUIDANCE

7.4.1. Procedures/Checklists not followed/Followed incorrectly. Published and accessible documents were available but were not used or were used incorrectly.

7.4.2. Procedures/Checklists do not exist. Published and accessible documents were not developed and available but would have reduced the likelihood of the SSO.

7.4.3. Procedures/Checklists access inadequate. Documents were developed and published but were not accessible when needed to accomplish an operation or task.

7.4.4. Procedures/Checklists content or sequence inadequate. Published and accessible documents were available, but their confusing content or poor sequencing rendered them unusable or ineffective.

7.4.5. Procedures/Checklists format inadequate. Published and accessible documents were available but formatting, such as font size, shape, etc. rendered them unusable or ineffective.

7.4.6. Procedures/Checklists condition inadequate. The physical condition of the published and accessible documents rendered them unusable.
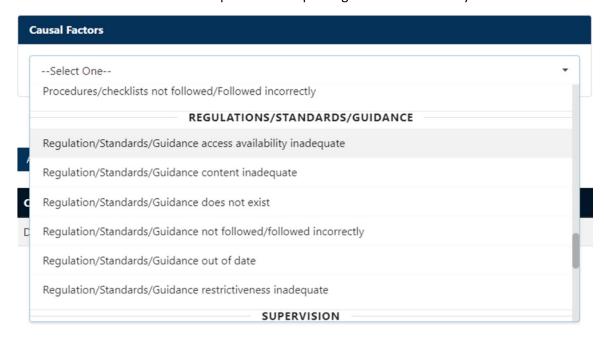
7.5. **Communication.** The written or verbal conveying of relevant information necessary to conduct an operation or task.

7.5.1. Communication content or clarity inadequate. The content or clarity of communications was degraded to such a degree that the information was not understood or followed.

7.5.2. Communication timeliness inadequate. The conveying of relevant information occurred at a time that was too early or too late to be understood and used effectively.

7.5.3. Communication frequency inadequate. Relevant information is not conveyed frequently enough to be remembered and used.

7.5.4. Communication means inadequate. The means for conveying relevant information does not reach its necessary audience.

7.5.5. Communication distribution inadequate. The audience receiving relevant information is not broad enough or is incorrect.
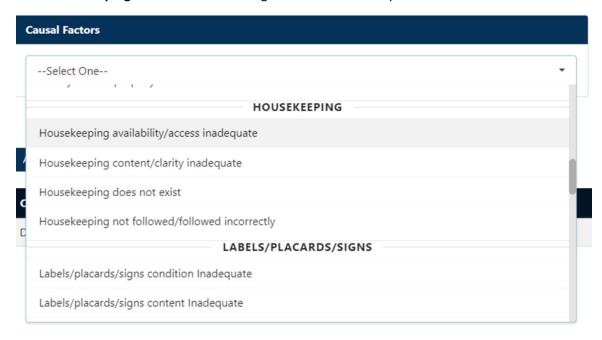
7.6. Regulations/Standards/Guidance. Published policy, standards, or non-directive publications that should be referenced as part of accomplishing a mission or activity.

7.6.1. Regulation/Standards/Guidance not followed/followed incorrectly. Published policy, standards, or non-directive publications were available but were not used or were used incorrectly

7.6.2. Regulation/Standards/Guidance does do not exist. Policy, standards, or non-directive publications do not currently exist but would reduce the likelihood of an SSO if they were.

7.6.3. Regulation/Standards/Guidance content inadequate. Published policy, standards, or non-directive publications contained confusing or missing content that rendered them unusable or ineffective.

7.6.4. Regulation/Standards/Guidance restrictiveness inadequate. Published policy, standards, or non-directive publications were not restrictive enough and are contributing to increased likelihood of an SSO.

7.6.5. Regulation/Standards/Guidance access availability inadequate. Published policy, standards, or non-directive publications were not accessible when needed.

7.6.6. Regulation/Standards/Guidance out of date. Published policy, standards, or non-directive publications are not current.
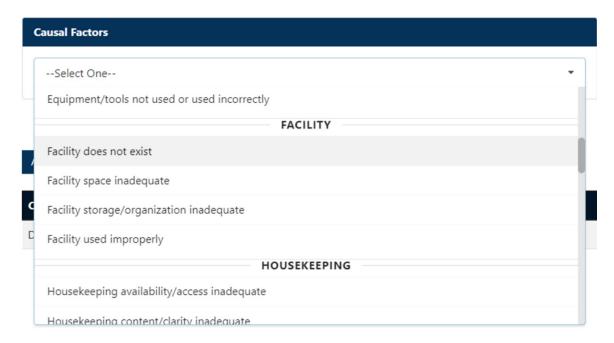
7.7. Housekeeping. The cleanliness or organization of a used space.

7.7.1. Housekeeping not followed/followed incorrectly. The known or published protocols for effective cleanliness and organization were not followed or were followed in a way that led to an unsafe outcome.

7.7.2. Housekeeping does not exist. Protocols for effective cleanliness and organization are not known or are not published but would reduce the likelihood of an SSO if they were.

7.7.3. Housekeeping content/clarity inadequate. Known or published protocols for effective cleanliness or organization are confusing or missing relevant information to be used effectively.

7.7.4. Housekeeping availability/access inadequate. The known or published cleanliness protocols are not conveyed or available for effective use
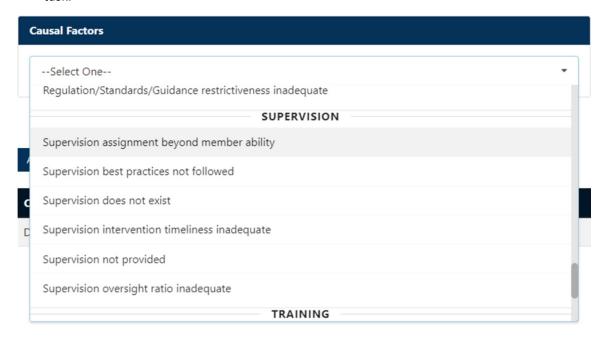
7.8.   Facility. A building or indoor/outdoor accommodation needed for a mission, activity, or task.

7.8.1. Facility does not exist. A needed facility did not exist and contributed to an SSO.

7.8.2. Facility space inadequate*. The size of a facility was not sufficient.

7.8.3. Facility storage/organization inadequate. The storage or organization available within the facility were not sufficient.

7.8.4. Facility used improperly. Protocols or instructions involving the use of a facility were not properly followed or the facility was used in a way it was not intended.

7.9. Supervision. The oversight or management of a mission, activity, or task or providing instruction or an evaluation of a team or individual in the accomplishment of an operation or task.

7.9.1. Supervision not provided. Supervisor(s) available but were not scheduled or not present.

7.9.2. Supervision does not exist. Requirements for supervision are not documented.

7.9.3. Supervision best practices not followed. Acceptable supervision practices were not accomplished.

7.9.4. Supervision oversight ratio inadequate. The available number of supervisors is not adequate to cover the range of participants.

7.9.5. Supervision intervention timeliness inadequate. Supervisor(s) permitted an action or behavior to continue beyond a point to ensure a safe outcome.

7.9.6. Supervision assignment beyond member ability. Supervisor(s) assigned a task that was not appropriate for a member's mental or physical capability.