

PRECONDITIONS
“Latent Failures or Conditions”

ENVIRONMENT: *The environment surrounding a mishap is the physical or technological factors that affect practices, conditions, and actions of individual(s).*

PHYSICAL ENVIRONMENT (PE100): are factors such as weather, climate, fog, brownout (dust or sand storm) or whiteout (snow storm) that affect the actions of individual.

Environmental Conditions Affecting Vision	PE101
Vibration Affects Vision or Balance	PE103
Heat/Cold Stress Impairs Performance	PE106
External Force or Object Impeded an Individual’s Movement	PE108
Lights of Other Vehicle/Vessel/Aircraft Affected Vision	PE109
Noise Interference	PE110

PE101 Environmental Conditions 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.

PE103 Vibration Affects Vision or Balance: is a factor when the intensity or duration of the vibration is sufficient to cause impairment of vision or adversely affect balance.

PE106 Heat/Cold Stress Impairs Performance: is a factor when the individual is exposed to conditions resulting in compromised performance.

PE108 External Force or Object Impeded an Individual’s Movement: is a factor when acceleration forces greater than one second cause injury or prevent/interfere with the performance of normal duties. Do not use this code to capture G-induced loss of consciousness.

PE109 Lights of Other Vehicle/Vessel/Aircraft Affected Vision: 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.

PE110 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.

TECHNOLOGICAL ENVIRONMENT (PE200): are factors when automation or the design of the workspace affects the actions of an individual.

Seat and Restraint System Problems	PE201
Instrumentation and Warning System Issues	PE202
Visibility Restrictions (not weather related)	PE203
Controls and Switches are Inadequate	PE204
Automated System Creates an Unsafe Situation	PE205
Workspace Incompatible with Operation	PE206
Personal Equipment Interference	PE207
Communication Equipment Inadequate	PE208

PE201 Seat and Restraint System Problems: is a factor when the design of the seat or restraint system, the ejection system or seat comfort has poor impact-protection qualities.

PE202 Instrumentation and Warning System Issues: 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.

PE203 Visibility Restrictions (not weather related): 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. Visibility restrictions due to weather or environmental conditions are captured under PE101.

PE204 Controls and Switches are Inadequate: is a factor when the location, shape, size, design, reliability, lighting or other aspect of a control or switch are inadequate.

PE205 Automated System Creates an Unsafe Situation: is a factor when the design, function, reliability, symbology, logic or other aspect of automated systems creates an unsafe situation.

PE206 Workspace Incompatible with Operation: is a factor when the workspace is incompatible with the task requirements and safety for an individual.

PE207 Personal Equipment Interference: is a factor when the individual's personal equipment interferes with normal duties or safety.

PE208 Communication Equipment Inadequate: is a factor when communication equipment is inadequate or unavailable to support task demands. This includes electronically or physically blocked transmissions. Communications can be voice, data or multi-sensory.

PHYSICAL AND MENTAL STATE: The mental and physical states of individuals are how people know, think, learn, understand, perceive, feel, hurt, guess, recognize, notice, want, wish, hope, decide, expect, remember, forget, imagine, and believe.

PHYSICAL PROBLEM (PC300): are medical or physiological conditions that can result in unsafe situations.

Substance Effects (alcohol, supplements, medications, drugs)	PC302
Loss of Consciousness (sudden or prolonged onset)	PC304
Physical Illness/Injury	PC305
Fatigue	PC307
Trapped Gas Disorders	PC310
Evolved Gas Disorders	PC311
Hypoxia/Hyperventilation	PC312
Inadequate Adaptation to Darkness	PC314
Dehydration	PC315
Body Size/Movement Limitations	PC317
Physical Strength & Coordination (inappropriate for task demands)	PC318
Nutrition/Diet	PC319

PC302 Substance Effects (alcohol, supplements, medications, drugs): is a factor when the individual uses legal or illegal drugs, supplements, energy drinks or any other substance with measurable effect that interferes with performance.

PC304 Loss of Consciousness (sudden or prolonged onset): is a factor when the individual has a loss of functional capacity/consciousness due to G-LOC, seizure, trauma or any other cause.

PC305 Physical Illness/Injury: is a factor when a physical illness, injury, deficit or diminished physical capability causes an unsafe situation. This includes pre-existing and operationally-related medical conditions, over-exertion, motion sickness, etc.

PC307 Fatigue: is a factor causing diminished physical/mental capability resulting from chronic or acute periods of prolonged wakefulness, sleep deprivation, jet lag, shift work or poor sleep habits.

PC310 Trapped Gas Disorders: is a factor when gasses in the middle ear, sinuses, teeth or intestinal tract expand or contracts.

PC311 Evolved Gas Disorders: is a factor when inert-gas evolves in the blood causing an unsafe situation. This includes chokes, CNS, bends, paresthesias or other conditions caused by inert-gas evolution.

PC312 Hypoxia/Hyperventilation: is a factor when the individual has insufficient oxygen supply to the body and/or breathing above physiological demands causes impaired function.

PC314 Inadequate Adaptation to Darkness: is a factor when the normal human limitation of dark-adaptation rate affects safety, for example, when transitioning between aided and unaided night vision.

PC315 Dehydration: is a factor when the performance of the individual is degraded due to dehydration as a result of excessive fluid losses due to heat stress or due to insufficient fluid intake.

PC317 Body Size/Movement Limitations: is a factor when the size, strength, dexterity, mobility or other biomechanical limitations of an individual creates an unsafe situation. It must be expected that the average individual qualified for that duty position could accomplish the task in question.

PC318 Physical Strength & Coordination (inappropriate for task demands): is a factor when the relative physical strength and/or coordination of the individual is not adequate to support task demands.

PC319 Nutrition/Diet: is a factor when the individual's nutritional state or poor dietary practices are inadequate to fuel the brain and body functions resulting in degraded performance.

STATE OF MIND (PC200): are factors when an individual's personality traits, psychosocial problems, psychological disorders or inappropriate motivation creates an unsafe situation.

Psychological Problem	PC202
Life Stressors	PC203
Emotional State	PC204
Personality Style	PC205
Overconfidence	PC206
Pressing	PC207
Complacency	PC208
Motivation	PC209
Mentally Exhausted (Burnout)	PC215

PC202 Psychological Problem: is a factor when the individual met medical criteria for a psychiatric disorder.

PC203 Life Stressors: is a factor when the individual's performance is affected by life circumstance problems (includes relationship issues, financial stressors, recent move, etc.).

PC204 Emotional State: is a factor when the individual is under the influence of a strong positive or negative emotion and that emotion interferes with duties.

PC205 Personality Style: is a factor when the individual's personal interaction with others creates an unsafe situation. Examples are authoritarian, over-conservative, impulsive, invulnerable, submissive or other personality traits that result in degraded performance.

PC206 Overconfidence: is a factor when the individual overvalues or overestimates personal capability, the capability of others or the capability of aircraft/vehicles or equipment.

PC207 Pressing: is a factor when the 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).

PC208 Complacency: is a factor when the individual has a false sense of security, is unaware of, or ignores hazards and is inattentive to risks.

PC209 Motivation: is a factor when the individual's motivation to accomplish a task/mission is excessive, weak, indecisive or when personal goals supersede the organization's goals.

PC215 Mentally Exhausted (Burnout): is a factor when the individual has the type of exhaustion associated with the wearing effects of high operational and/or lifestyle tempo in which operational requirements impinge on the ability to satisfy personal requirements and leads to degraded effectiveness.

SENSORY MISPERCEPTION (PC500): are factors resulting in degraded sensory inputs (visual, auditory or vestibular) that create a misperception of an object, threat or situation.

Motion Illusion – Kinesthetic	PC501
Turning/Balance Illusion – Vestibular	PC502
Visual Illusion	PC503
Misperception of Changing Environment	PC504
Misinterpreted/Misread Instrument	PC505
Misinterpretation of Auditory/Sound Cues	PC507
Spatial Disorientation	PC508
Temporal/Time Distortion	PC511

PC501 Motion Illusion – Kinesthetic: is a factor when physical sensations of the ligaments, muscles or joints cause the individual to have an erroneous perception of orientation, motion or acceleration. (If this illusion leads to spatial disorientation you must code PC508.)

PC502 Turning/Balance Illusion – Vestibular: is a factor when stimuli acting on the balance organs in the middle ear cause the individual to have an erroneous perception of orientation, motion or acceleration. (If this illusion leads to spatial disorientation you must code PC508.)

PC503 Visual Illusion: is a factor when visual stimuli result in an erroneous perception of orientation, motion or acceleration. (If this illusion leads to spatial disorientation you must code PC508.)

PC504 Misperception of Changing Environment: is a factor when an individual misperceives or misjudges altitude, separation, speed, closure rate, road/sea conditions, aircraft/vehicle location within the performance envelope or other operational conditions.

PC505 Misinterpreted/Misread Instrument: is a factor when the individual is presented with a correct instrument reading but its significance is not recognized, it is misread or is misinterpreted.

PC507 Misinterpretation of Auditory/Sound Cues: is a factor when the auditory inputs are correctly interpreted but are misleading/disorienting or when the inputs are incorrectly interpreted and cause an impairment of normal performance.

PC508 Spatial Disorientation: is a factor when an individual fails to correctly sense a position, motion, or attitude of the aircraft/vehicle/vessel or of oneself. Spatial Disorientation may be unrecognized and/or result in partial or total incapacitation.

PC511 Temporal/Time Distortion: is a factor when the individual experiences a compression or expansion of time relative to reality. This is often associated with a “fight or flight” response.

MENTAL AWARENESS (PC100): are factors of an attention management or awareness failure that affects the perception or performance of individuals.

Not Paying Attention	PC101
Fixation	PC102
Task Over-Saturation/Under-Saturation	PC103
Confusion	PC104
Negative Habit Transfer	PC105
Distraction	PC106
Geographically Lost	PC107
Interference/Interruption	PC108
Technical or Procedural Knowledge Not Retained after Training	PC109
Inaccurate Expectation	PC110

PC101 Not Paying Attention: is a factor when there is a lack of state of alertness or a readiness to process immediately available information. The individual has a state of reduced conscious attention due to a sense of security, self-confidence, boredom or a perceived absence of threat from the environment. This may often be a result of highly repetitive tasks.

PC102 Fixation: is a factor when the individual is focusing all conscious attention on a limited number of environmental cues to the exclusion of others.

PC103 Task Over-Saturation/Under-Saturation: is a factor when the quantity of information an individual must process exceeds their mental resources in the amount of time available to process the information.

PC104 Confusion: is a factor when the individual is unable to maintain a cohesive and orderly awareness of events and required actions and experiences a state characterized by bewilderment, lack of clear thinking or (sometimes) perceptual disorientation.

PC105 Negative Habit Transfer: is a factor when the individual reverts to a highly learned behavior used in a previous system or situation and that response is inappropriate for current task demands.

PC106 Distraction: is a factor when the individual has an interruption of attention and/or inappropriate redirection of attention by an environmental cue or mental process.

PC107 Geographically Lost: is a factor when the individual is at a different location from where one believes they are.

PC108 Interference/Interruption: is a factor when an individual is performing a highly automated/learned task and is distracted by another cue/event that results in the interruption and subsequent failure to complete the original task or results in skipping steps in the original task.

PC109 Technical or Procedural Knowledge Not Retained after Training: is a factor when the individual fails to absorb/retain required information or is unable to recall past experience needed for safe task completion.

PC110 Inaccurate Expectation: is a factor when the individual expects to perceive a certain reality and those expectations are strong enough to create a false perception of the expectation.

TEAMWORK (PP100): factors refer to interactions among individuals, crews, and teams involved with the preparation and execution of a task/mission that resulted in human error or an unsafe situation.

Failure of Crew/Team Leadership	PP101
Inadequate Task Delegation	PP103
Rank/Position Intimidation	PP104
Lack of Assertiveness	PP105
Critical Information Not Communicated	PP106
Standard/Proper Terminology Not Used	PP107
Failed to Effectively Communicate	PP108
Task/Mission Planning/Briefing Inadequate	PP109

PP101 Failure of Crew/Team Leadership: is a factor when the crew/team leadership techniques failed to facilitate a proper crew/team climate, to include establishing and maintaining an accurate and shared understanding of the evolving task and plan on the part of all crew/team members.

PP103 Inadequate Task Delegation: is a factor when the crew/team members failed to actively manage the distribution of tasks to prevent the overloading of any individual member.

PP104 Rank/Position Intimidation: is a factor when the differences in rank of the team/crew caused the task performance capabilities to be degraded. Also, conditions where formal or informal authority gradient is too steep or too flat across a crew/team and this condition degrades collective or individual performance.

PP105 Lack of Assertiveness: is a factor when an individual failed to state critical information or solutions with appropriate persistence and/or confidence.

PP106 Critical Information Not Communicated: is a factor when known critical information was not provided to appropriate individuals in an accurate or timely manner.

PP107 Standard/Proper Terminology Not Used: is a factor when clear and concise terms, phrases, hand signals, etc. per service standards and training were not used.

PP108 Failed to Effectively Communicate: is a factor when communication is not understood or is misinterpreted as the result of behavior of either sender or receiver. Communication failed to include backing up, supportive feedback or acknowledgement to ensure that personnel correctly understood announcements or directives.

PP109 Task/Mission Planning/Briefing Inadequate: is a factor when an individual, crew or team failed to complete all preparatory tasks associated with planning/briefing the task/mission.