Writing Findings and Recommendations

DA Pam 385-40 groups findings into four categories; Present and Contributing, Present but not Contributing, Present and Contributing to the severity of injury/extent of property damage and Suspected Present and Contributing. The most common error in an accident investigation report is an improperly written present and contributing finding. Present and contributing findings are an integral part of the accident reporting process and are imperative in identifying the Task Errors (what happened) and System Inadequacies (why it happened). If the findings author does not clearly identify "why" the accident occurred he/she cannot formulate properly directed recommendations (what to do about it) addressing the root cause of the accident. There are three accident causal factors, human error, materiel failure, and environmental factors.

Present and Contributing findings must be written using the elements described in DA Pam 385-40. For an aviation accident, use the instructions for DA Form 2397-2 and Table 3-1. For ground accidents, use the instructions for block 65 of the DA Form 285 found in paragraph 4-3 and Table 4-2. The elements of a present and contributing finding give the investigator a standardized way to present the finding.

Elements of a Present and Contributing Finding:

Element 1: An explanation of when and where the error, materiel failure, or environmental factor occurred in the context of the accident sequence of events; e.g., "During preflight," "During takeoff," "While employing," etc.

Element 2: Identification of the individual involved by duty position; or the name and part number (PN) or national stock number (NSN) of the part, component, or system that failed; or a description of the environmental factor, as appropriate.

Element 3: For human error, identification of the task or function the individual was performing and an explanation of how it was performed improperly. Refer to Appendix B, Table B-1 for task error categories. The error could be one of commission or omission; e.g., an individual performed the wrong task, incorrectly performed the correct task, or failed to perform a required task or function. In the case of a materiel failure, identify the mode of failure; e.g., corroded, burst, twisted, decayed, etc., refer to Appendix B, Table B-3 and for environmental conditions see Table B-4. *NOTE: Identify only one Task Error per finding.*

Element 4: Identification of the directive, i.e., ATM, SOP, FM or common practice governing the performance of the task or function. In lieu of a written directive, the error may represent performance that is contrary to common practice.

Element 5: An explanation of the consequences of the error, materiel failure, or environmental effect. An error may directly result in damage to equipment or injury/occupational illness to personnel, or it may indirectly lead to the same end result. A materiel failure may have an immediate effect on equipment or its performance, or it may create circumstances that cause errors resulting in further damage/injury or occupational illness inevitable.

Element 6: Identification of the reasons (system inadequacy(ies)) the human, materiel, environmental conditions contributed to the accident. Refer to the list and examples of system inadequacy(ies) provided in Appendix B, Table B-5. *NOTE: The finding may contain multiple System Inadequacies (Training, Individual, Leader, etc.).*

Element 7: A brief explanation of how each reason contributed to the error, materiel failure, or environmental factor.

Present and Contributing human error findings must contain at a minimum the seven elements of information identified above. The first five elements relate to the Task Error, with element six and seven identifying the System Inadequacies. Materiel Failure and Environmental Factors basically contain the same elements as human error finding with a few differences (See examples on pages 5 thru 10 of this document). DA Form 285 ground accident report follows the same element requirements as the aircraft accident report (see examples on pages 13, 14 and 15 of this document).

Human Error - When writing a present and contributing human error finding the two most important elements are the Task Error (element 3 above) and the System Inadequacy (element 6 above). These two elements define the root cause of the accident. The aviation (UAS included) human Task Errors are located in DA Pam 385-40, Appendix B-1 and the ground Task Errors in Appendix B-2. When writing a present and contributing human error finding, use only one of the individual Task Errors. It is not a requirement to use the exact wording of the Task Error in a particular finding, but if there is any doubt which Task Error you are trying to describe, use its basic descriptor, e.g., failed to properly scan (Code P01) or improper use of equipment (Code 06). Again, you may only use one Task Error per finding.

The most overlooked element in a present and contributing finding is the System Inadequacy (element 6 above). Common to both aviation and ground accidents, the System Inadequacy is an essential element of the finding because it tells **why** the individual made the mistake. If an individual failed to scan which is a Task Error, why did he/she fail to scan? One of the five System Inadequacies answers that question: Leader, Training, Standards, Support and Individual. As in the Task Error above, it is not a requirement to use the exact wording of the System Inadequacy in a finding, but if there is any doubt which System Inadequacy you are trying to describe, use the System Inadequacy's basic descriptor, e.g., overconfidence in abilities (code 16). **You may only use one Task Error per finding but the use of multiple System Inadequacies in a single finding is acceptable if more than one System Inadequacy identifies why the individual made the mistake.**

Note: For class A and B accidents, substantiate the findings by analysis, as described in the completion instructions for the DA Form 2397-3 and the DA Form 285 paragraph 4-4.

Manned aircraft Class C, aircraft ground A/B and UAS accidents do not require a formal analysis, support the findings by entering a concise summary of events from the initial onset of the emergency until the aircraft is at rest, to include injuries resulting from the accident. **Specify and discuss in the narrative of the summary the actual Error/Failure/Effects and the Root Causes to support the present and contributing finding(s).**

Human Error System Inadequacy Definitions:

A Leader Failure occurs when leaders fail to monitor mission execution and planning, correct inappropriate behavior, take appropriate action or emphasize correct procedures **that allowed subordinates** to commit task errors or results in a materiel failure. **A leader failure cause factor is identified by the leader failure System Inadequacy (element 6) not by the leader/supervisory errors identified in the (element 3).**

Note: A leader failure **System Inadequacy** does not identify why the leader failed. The leader failure System Inadequacy explains a leader's lack of supervision that allowed a subordinate to make a mistake. If a finding includes a leader failure System Inadequacy there **should** be a follow-on finding on that leader describing how the leader failed to properly supervise a subordinate (see example findings on pages 11 and 12 of this document)**.**

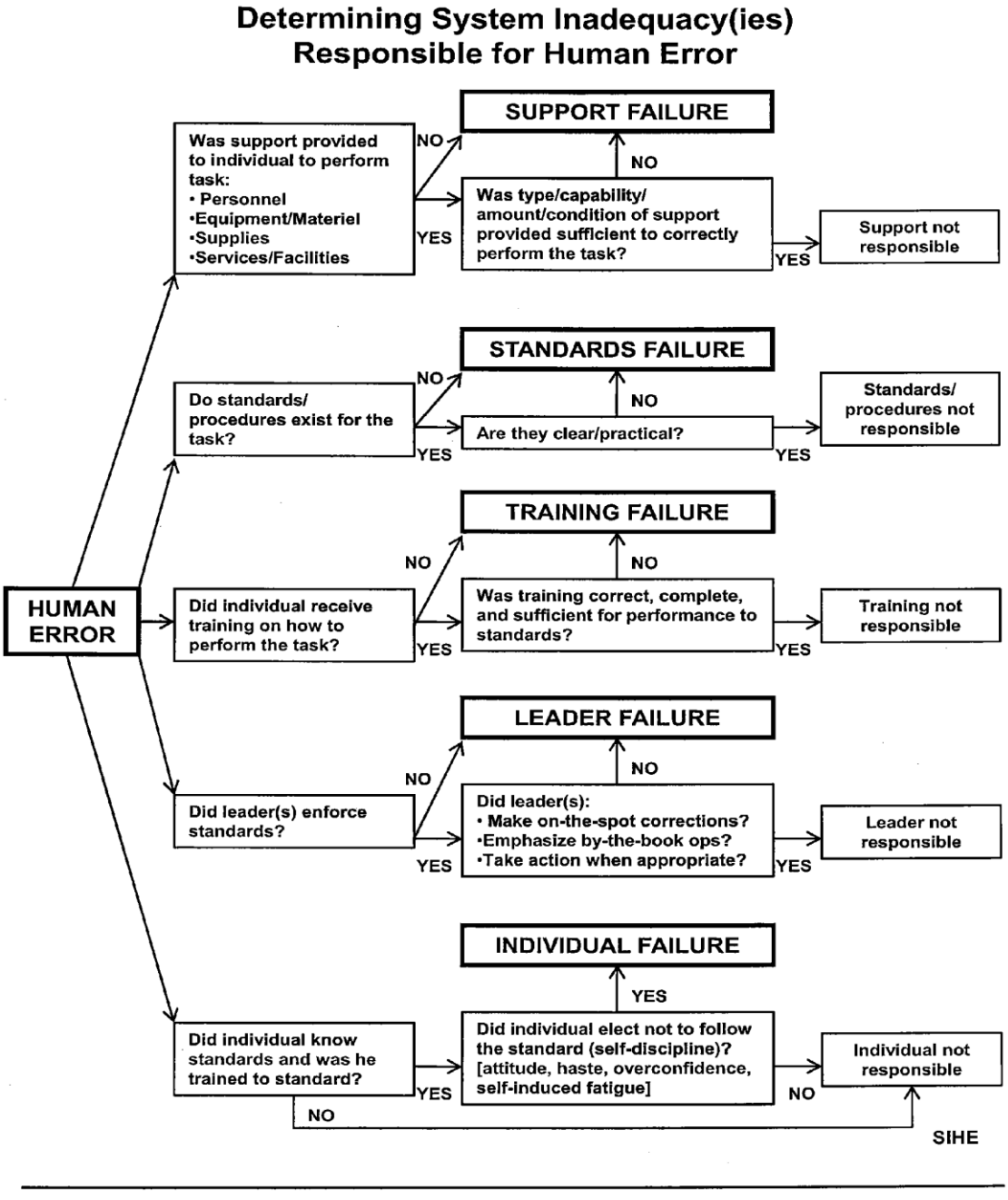
A Training Failure occurs when training is incorrect, incomplete or insufficient for an individual to perform a task to standard. A common mistake is to identify inexperience as an individual failure when DA Pam 385-40, Table B-4, identifies inexperience as a Training Failure.

A Standards Failure occurs when standards do not exist or they are unclear, impractical, or inadequate. **Failure to follow an established standard does not constitute a Standards Failure.**

A Support Failure occurs when the type, amount, capabilities, condition of the support is insufficient to correctly perform the mission. Support includes personnel, equipment, materiel, supplies, services, or facilities. A piece of equipment that fails because the mechanic did not service it properly because the proper tools were not available would not be a materiel failure. The piece of equipment failed because of Human Error: Support Failure. Additionally, if an individual makes an accident causing mistake due to the way a piece of equipment is manufactured or designed the finding would be classified as a human error on the individual that made the mistake with a Support Failure System Inadequacy. A support failure due to inadequate/improper design (code 11) would exist when an operator intended to use a switch and its location, size, shape, method, or operation is similar to another switch with a different function. **The mere failure of a component or part due to design or manufacture is not a support failure (see materiel failure on page 6).**

An Individual Failure occurs when the individual knows the standard and is trained to standard but elected not to follow the standard.

The chart below may assist in determining System Inadequacies responsible for human Error.



Aviation Example – Present and Contributing Human Error Finding

FINDING (Present and Contributing: Human Error – Individual Failure):	
Required Information	**Example**
1. Explanation of when and where the mistake/error occurred in context of the accident sequence of events.	While conducting day, nap-of-the-earth aircrew training at 50 feet AGL and 10 KIAS…
2. Aircraft and individual involved by duty position.	the Pilot in Command (PC) and Pilot (PI) of the UH-60…
3. Identification of mistake made *(ref aviation-specific mistakes/errors in DA PAM 385-40, Table B-1)* and an explanation of how task/activity was performed improperly. NOTE: Only one Task Error per finding.	improperly scanned. That is, both crewmembers failed to properly scan for obstacles when they both became visually fixated on an animal on the ground…
4. Directive (ATM, SOP, FM, TM, etc.) or common practice governing performance of task/activity.	in contravention of TC 1-237, Task 1026.
5. Consequences of mistake/error.	As a result, the aircraft main rotor blades were damaged when they made contact with a tree at approximately 50 feet AGL. There were no injuries.
6. Identification of reasons (root causes/system inadequacies) for the mistake/error {*ref System Inadequacies in Table B-5 of DA PAM 385-40}.* NOTE: The finding may contain multiple System Inadequacies (Training, Individual, Leader, etc.).	The PC's and PI's actions were a result of overconfidence in each other's ability to clear the aircraft and maintain obstacle clearance.
7. Brief explanation of how each reason (root cause/system inadequacy) contributed to the mistake/error.	The PC and PI allowed the aircraft to fly too close to known obstacles resulting in damage to the main rotor blades.

FINDING 1: (Present and Contributing: Human Error- Individual Failure): While conducting day, nap-of-the-earth aircrew training at 50 feet AGL and 10 KIAS, the Pilot in Command (PC) and Pilot (PI) of the UH-60L improperly scanned. That is, both crewmembers failed to properly scan for obstacles when they both became visually fixated on an animal on the ground in contravention of TC 1-237, Task 1026. As a result, the aircraft main rotor blades were damaged when they made contact with a tree at approximately 50 feet AGL. There were no injuries.

The PC's and PI's actions were a result of overconfidence in each other's ability to clear the aircraft and maintain obstacle clearance. The PC and PI allowed the aircraft to fly too close to known obstacles resulting in damage to the main rotor blades.

Elements of a Present and Contributing Materiel Failure finding:

1. Explanation of when and where the materiel failure/malfunction occurred in the context of the accident sequence of events.

2. Name and part number (PN) or national stock number (NSN) of the part, component or system that failed.

3. Mode of failure (corroded, burst, twisted, decayed, etc.)(*see DA PAM 385-40, Appendix B, Table B-3 for definitions and examples)*NOTE: Only one Task Error failure per finding.

4. Consequences of the materiel failure.

5. Identification of reasons (root causes/system inadequacies) materiel failure/malfunction caused or contributed to accident. NOTE: The finding may contain multiple System Inadequacies (Design, Manufacture, etc.)

6. Brief explanation of how each reason (root cause/system inadequacy) contributed to the materiel failure/ malfunction.

Materiel failure and malfunction causes/system inadequacies. The identification of a materiel failure is of little value until "why" the failure occurred is determined. After the "why" is determined, develop corrective measures to elevate or implement controls reducing the possibility of recurrence. Identify materiel failures/malfunctions in terms of one or more System Inadequacy (ies). DA Pam 385-40 defines materiel System Inadequacy as a tangible or intangible element that did not operate to design specifications and caused, allowed, or contributed to a materiel failure or malfunction. The System Inadequacies associated with materiel failure are Design, Manufacturer, Fair Wear and Tear (FWT) and Maintenance applicable to both aviation and ground accidents.

Design. Equipment design becomes an issue when equipment failure occurs because of inadequate design specifications. A design issue may be the result of inadequate material composition, equipment size, shape, location, or operational characteristics opposite to common practice operation. Accident investigators often overlook design influence on human performance resulting in accidents. Evaluate all possible design issues in order to implement corrective measures.

Manufacture. Equipment manufacture becomes an issue when the failure results from equipment development processes not conforming to design specifications. A manufacture issue may be the result of using substandard materiel, improper assembly, or other anomalies occurring during the manufacturing process.

Fair, Wear, and Tear (FWT). FWT becomes an issue when equipment fails due to use. Any item of equipment exposed to a repetitive motion is subject to failure. FWT can occur in conditional items as well as time between overhaul/change items.

Maintenance. Maintenance becomes an issue when failure or malfunction occurs because of improper maintenance or lack of maintenance. When the Army does not have control or oversight of the maintenance operation and improper maintenance caused the accident, write a

materiel failure finding with maintenance as the system inadequacy. When the Army exercises control of the maintenance operation, classify materiel failures due to improper maintenance as human errors and document them as a human error finding.

Note: For class A and B accidents, substantiate all findings by an analysis, as described in the completion instructions for the DA Form 2397-3 and paragraph 4-4 for the DA Form 285. Manned aircraft Class C, aircraft ground A/B and UAS accidents do not require a formal analysis, support the findings by entering a concise summary of events from the initial onset of the emergency until the aircraft is at rest, to include injuries resulting from the accident. **Specify and discuss in the narrative of the summary the actual Error/Failure/Effects and the Root Causes to support the present and contributing finding(s).**

Aviation Example - Present and Contributing Materiel Failure Finding

FINDING (Present and Contributing: Materiel Failure):

Required Information	Example
1. Explanation of when and where the materiel failure/malfunction occurred in the context of the accident sequence of events.	During engine run-up of the CH-47D with rotor blades turning…
2. Name and part number (PN) or national stock number (NSN) of the part, component or system that failed.	the retention bolts (P/N NAS624H-5) securing the fixed droop stop to the aft rotor system red blade pitch shaft failed.
3. Mode of failure (corroded, burst, twisted, decayed, etc.)(*see DA PAM 385-40, Appendix B, Table B-3 for definitions and examples)* NOTE: Only one failure per finding.	The excessive pressure on the engaged threads allowed the threads to strip from the nuts.
4. Consequences of materiel failure	This failure allowed the fixed droop stop and bolts to separate from the aircraft. As a result, during shutdown, with both engine condition levers at stop and the main rotor blades coasting slowly, the aircraft red main rotor blade contacted the fuselage…
5. Identification of reasons (root causes/system inadequacies) materiel failure/malfunction caused or contributed to accident. NOTE: The finding may contain multiple System Inadequacies (Design, Manufacture, etc.)	The droop stops failed due to improper installation by the manufacturer during aircraft overhaul.
6. Brief explanation of how each reason (root cause/system inadequacy) contributed to materiel failure/ malfunction.	That is, the bolts (P/N NAS624H-5) installed in the separated fixed droop stop, though nearly identical in appearance were 1/8-inch shorter than the bolts (P/N NAS624H-7) required by TM 55-1520-240-23P1.

FINDING 1 (Present and Contributing: Materiel Failure):
During engine run-up of the CH-47D with rotor blades turning, the retention bolts (P/N NAS624H-5) securing the fixed droop stop to the aft rotor system red blade pitch shaft failed. The excessive pressure on the engaged threads allowed the threads to strip from the nuts. This failure allowed the fixed droop stop and bolts to separate from the aircraft. As a result, during shutdown, with both engine condition levers at stop and the main rotor blades coasting slowly, the aircraft red main rotor blade contacted the fuselage, resulting in minor fuselage and main rotor blade damage.

The droop stops failed due to improper installation by the manufacturer during aircraft overhaul. That is, the bolts (P/N NAS624H-5) installed in the separated fixed droop stop, though nearly identical in appearance, were 1/8-inch shorter than the bolts (P/N NAS624H-7) required by TM 55-1520-240-23P1.

Elements of a Present and Contributing Environmental Factor

1. Explanation of when and where the environmental factor occurred in the context of the accident sequence of events.

2. Aircraft and if applicable, the individual(s) involved by duty position.

3. Description of environmental factor encountered (*see DA PAM 385-40, Appendix B, Table B-4 for definitions and examples).*

4. Consequences of environmental effect.

5. Explanation/identification of reason(s) environmental conditions caused the accident.

Environmental factors are those environmental elements or conditions such as noise, illumination, space and weather conditions (For example, precipitation, temperature, humidity, pressure, wind, and lightning) having an adverse effect on the performance of the individual or equipment so that an accident results or could result. Assessment of environmental elements (For example, contaminants, noise, vibration, artificial illumination, acceleration, deceleration, radiation, adequacy of work surface/space, and weather conditions) should be accomplished to determine their influence on human and/or materiel performance. Contaminants (fumes, chemicals) can lead to respiratory problems; noise (radio static, engine, and transmission noise) can distract attention, interfere with effective communications and lead to fatigue. Inadequate illumination can cause reduced visibility. Inadequate work space (cluttered, poorly designed driver compartment) can contribute to procedural errors or limit outside visibility. Knowledge of environmental elements does not eliminate them as factors influencing errors, injuries, or failures.

Note: To determine if an environmental factor should be assessed as a casual factor, the central questions to ask are: did this factor adversely influence human and/or equipment performance and was the environmental element unknown or unavoidable at the time of the accident/injury/occupational illness? Environmental factors can be divided into those which could not have been avoided, and those which could have been avoided or precautions implemented to reduce or eliminate its adverse effects on personnel and/or equipment. **An environmental deficiency should not be assessed as a causal factor if it was known and could have been avoided before the accident.**

Aviation Example – Present and Contributing Environment Factor Finding

FINDING (Present and Contributing: Environment):	
Required Information	**Example**
1. Explanation of when and where the environmental factor occurred in the context of the accident sequence of events.	While ground-taxiing to the parking ramp…
2. Aircraft and if applicable, the individual(s) involved by duty position.	the AH-64D…
3. Description of environmental factor encountered (*see DA PAM 385-40, Appendix B, Table B-4 for definitions and examples).*	encountered an unforecast sudden microburst with winds exceeding 80 knots.
4. Consequences of environmental effect.	As a result, the aircraft became airborne in a nose-low condition and subsequently entered a right spin from which the crew was unable to recover.
5. Explanation/identification of reason(s) environmental conditions caused the accident.	Microbursts are environmental events that cannot be seen or forecasted with present meteorological measuring equipment nor are they visible to aircraft crewmembers. They are normally a phenomenon associated with thunderstorms; however, there were no thunderstorms reported or visible in the vicinity.

FINDING 1 (Present and Contributing: Environment):
While ground-taxiing to the parking ramp, the AH-64D encountered an unforecast sudden microburst with winds exceeding 80 knots. As a result, the aircraft became airborne in a nose-low condition and subsequently entered a right spin from which the crew was unable to recover. The aircraft struck the ground causing aircraft damage and injuring one crewmember.

Microbursts are environmental events that cannot be seen or forecasted with present meteorological measuring equipment nor are they visible to aircraft crewmembers. They are normally a phenomenon associated with thunderstorms; however, there were no thunderstorms reported or visible in the vicinity.

Note: For class A and B accidents, all findings will be substantiated by an analysis, as described in the completion instructions for the DA Form 2397-3 and paragraph 4-4 for the DA Form 285.

Manned aircraft Class C, aircraft ground A/B and UAS accidents do not require a formal analysis but will be supported by entering a concise summary of events from the initial onset of the emergency until the aircraft is at rest, to include injuries resulting from the accident. **The actual Error/Failure/Effects and the Root Causes will be specified and discussed in the narrative of the summary in order to support the present and contributing finding(s).**

Example of an Aviation Present and Contributing Findings and Recommendations with Multiple System Inadequacies

You may combine multiple System Inadequacies in one finding but you should only have one Task Error per finding. Please note that a Leader Failure in the second paragraph below (System Inadequacy paragraph) requires an additional Present and Contributing finding on why the leader failed to properly supervise the subordinate. (See Findings 1 and 2 Below)

FINDING 1 (Present and Contributing: Human Error – Training, Individual, and Leader Failure):

While executing an approach to an unimproved LZ in mountainous terrain in a heavily loaded UH-60L, the Pilot (PI), on the flight controls, did not recognize the hazardous conditions. That is, the PI failed to recognize the conditions produced by the combined effects of high gross weight and tail winds at the higher altitude. The PI did not recognize the critical condition and execute a go-around before he lost control of the aircraft as required by TC 1-237, Task 1058. As a result, the aircraft main rotor RPM drooped and the aircraft crashed. The aircraft was severely damaged and two crew members sustained minor injuries.

The Board concluded the PI's actions were a result of his lack of experience operating in this type of environment and overconfidence in his ability to operate in that environment. The PI had executed similar approaches to this LZ days prior to the accident, but not with the conditions present during the accident. The Board also concluded the PI's actions were due to improper supervision by the Pilot in Command (PC).

RECOMMENDATION 1:

a. Unit Level Action: Commander, 1-999th Avn Regt, during simulator periods ensure a scenario is developed and instituted that replicates the high power demands required during mountainous approaches with full CEFS tanks on. Further, develop the scenario to rehearse circumstance where jettisoning the CEFS is the most logical outcome to avoid an accident. This will give crews the experience in what effect jettisoning the CEFS will have on the aircraft.

b. Higher Level Action: None.

c. Army Level Action: None.

Note: The following finding (Finding 2) is the result of finding 1 above identifying why the leader (Pilot in Command) contributed to the Pilot's error.

FINDING 2 (Present and Contributing: Human Error – Individual and Training Failure):

While preparing to land in an unimproved mountainous LZ in a heavily loaded UH-60L, the PC did not properly conduct in-flight planning. That is, the PC did not modify the approach and landing plan based on the environmental conditions IAW Training Circular (TC) 1-237, Task 1058, Perform Visual Meteorological Conditions Approach. The PC did not use the tabular data or evaluate the winds accurately. As a result, as the PI executed the approach, the aircraft's main rotor drooped and the aircraft crashed. The aircraft was severely damaged and two crew members sustained minor injuries.

The Board concluded the PC's actions were a result of his overconfidence in the pilot's (PI) ability to safely conduct the approach and landing, his overconfidence in his ability to correct any error the PI might make, and improper mountain training conducted by the unit standardization instructor pilot.

RECOMMENDATION 2:

a. Unit Level Action: Commander, 1-999th Avn Regt, utilize High Altitude Army Aviation Training Site, Mountain Training Course, and trained instructor pilots, to serve as unit trainers to train other unit instructor pilots on mountain, pinnacle, ridgeline, and terrain flight in mountainous environments.

b. Higher Level Action: Commander 999 CAB, forecast and fund one slot per year to allow an instructor pilot from 1-999th Avn Regt to attend the Army High Altitude Army Aviation Training Site approved Mountain Flying Course.

c. Army Level Action: PEO-Avn, ensure tabular data in the operator's checklist (Technical Manual 1-1520-237-CL) includes Hover High Drag Configuration Tables, to assist in ease of tabular computation with High Drag Configuration in flight.

Ground Example Present and Contributing Human Error Finding

FINDING 1 (Present and Contributing: Human Error - Training):	
Required Information	**Example**
1. Explanation of when and where the error occurred in context of the accident sequence of events.	While receiving driver's training on an unimproved road during New Equipment Training (NET) at the Yankee Training Center,
2. Identification of individual involved by duty position and equipment involved (if applicable).	the student driver of an M1117 Armored Security Vehicle (ASV)...
3. Identification of mistake/error made *(ref ground-specific mistakes/errors in DA PAM 385-40, Table B-2)* and an explanation of how task/activity was performed improperly. Only one Task Error per finding.	over-steered the vehicle. That is, while descending a hill on a dirt/gravel road, he made abrupt and excessive steering inputs causing the vehicle to swerve uncontrollably from one side of the road to the other …
4. Directive (SOP, FM, TM, etc.) or common practice governing performance of task/activity or function.	in contravention of AR 385-10, AR 600-55 and TC 21-305.
5. Consequences of mistake/error.	Consequently, the vehicle departed the roadway, slid into a ditch, pivoted and rolled four times, coming to rest in an upright position. The vehicle sustained substantial damage. The gunner and passenger were critically injured when they were ejected from the vehicle during the rollover sequence. The driver and senior occupant received minor injuries.
6. Reason(s) {root cause(s)/ system inadequacy(s)} for the mistake/error *{ref System Inadequacies in Table B-5 of DA PAM 385-40}May contain multiple System Inadequacies per finding.*	The student driver's actions were the result of inadequate unit training and inexperience.
7. Brief explanation of how each reason (root cause/system inadequacy) contributed to the error.	The unit failed to ensure the student driver received the required prerequisite training, testing and a learner's permit for the ASV before allowing him to attend NET and operate the vehicle on an unimproved road. Due to the student driver's lack of experience, he was unfamiliar with the handling characteristics of the ASV and over-steered the vehicle causing loss of control.

Note: *When 'Leader' is identified as a system inadequacy/root cause, this will probably lead to a second finding, in which case a mistake/error will be assigned to the leader/command and the root cause(s)/system inadequacy(s) for that mistake will be identified. When a finding is written on a leader/command, it is important to determine **why** that mistake/error was made so that, if necessary, the problem can be brought to the attention of senior Army leadership. For example, if inadequate risk management is identified, was it due to a support problem (lack of sufficient resources), a standards problem, etc.*

Narrative Example for Table 7-2

FINDING 1 (Present and Contributing: Human Error – Training):

While receiving driver's training on an unimproved road during New Equipment Training (NET) at the Yankee Training Center, the student driver of an M1117 Armored Security Vehicle (ASV) over-steered the vehicle. That is, while descending a hill on a dirt/gravel road, he made

abrupt and excessive steering inputs causing the vehicle to swerve uncontrollably from one side of the road to the other in contravention of AR 385-10, AR 600-55 and TC 21-305. Consequently, the vehicle departed the roadway, slid into a ditch, pivoted and rolled four times, coming to rest in an upright position. The vehicle sustained substantial damage. The gunner and passenger were critically injured when they were ejected from the vehicle during the rollover sequence. The driver and senior occupant received minor injuries.

The student driver's actions were the result of inadequate unit training and inexperience. The unit failed to ensure the student driver received the required prerequisite training, testing and a learner's permit for the ASV before allowing him to attend the NET and operate the vehicle on an unimproved road. Due to the driver's lack of experience, he was unfamiliar with the handling characteristics of the ASV and over-steered the vehicle causing loss of control.

Ground Example Present and Contributing Materiel Failure Finding

FINDING 1 (Present and Contributing: Materiel Failure)	
Required Information	**Example**
1. Explanation of when and where the materiel failure/malfunction occurred in context of the accident sequence of events.	While traveling on an interstate highway at approximately 55 mph, …
2. Name and part number (PN) or national stock number (NSN) of the part, component or system that failed.	the left front tire (NSN 2610-01-214-1344) of a M925A2…
3. Mode of failure (*see DA PAM 385-40, Appendix B for definitions and examples).* NOTE: Only one failure per finding.	failed (burst).
4. Consequences of materiel failure.	As a result, the vehicle veered sharply to the left, striking a guardrail. The impact caused the driver to strike his head on the steering wheel and he received minor injuries. The left front and side of the vehicle received substantial damage.
5. Identification of reasons (root causes/system inadequacies) materiel failure/malfunction caused or contributed to accident. *NOTE: The finding may contain multiple System Inadequacies per finding* (Design, Manufacture, etc.).	The cause of the tire failure was inadequate quality control by the manufacturer. That is, a defect (weak spot) in the tire wall was not detected during the manufacturer's inspection process.
6. Brief explanation of how each reason (root cause/system inadequacy) contributed to the materiel failure/ malfunction.	The inadequate quality control allowed a defective tire to be distributed and placed in service. During normal operation the tire failed causing personal injuries and equipment damage.

FINDING 1 (Present and Contributing: Materiel Failure):
While traveling on an interstate highway at approximately 55 mph, the left front tire (NSN 2610-01-214-1344) of a M925A2 failed (burst). As a result, the vehicle veered sharply to the left, striking a guardrail. The impact caused the driver to strike his head on the steering wheel and he received minor injuries. The left front and side of the vehicle received substantial damage.

The cause of the tire failure was inadequate quality control by the manufacturer. That is, a defect (weak spot) in the tire wall was not detected during the manufacturer's inspection process. The inadequate quality control allowed a defective tire to be distributed and placed in service. During normal operation the tire failed causing personal injuries and equipment damage.

Ground Example - Present and Contributing Environment Finding

FINDING 1 (Present and Contributing: Environment):

Required Information	**Example**
1. Explanation of when and where the environmental factor occurred in context of accident sequence of events.	At approximately 1915 hours, a severe thunderstorm passed through ...
2. Identification of individual involved by duty position and/or equipment involved.	the heliport in Camp Doha, Kuwait, …
3. Description of environmental factor.	with estimated sustained winds of 40 mph and gusts to 60 mph.
4. Consequences of environmental effect.	As a result, two temporary sunscreen shelters were destroyed and four helicopters that were secured on the ramp were damaged. One UH-60A was damaged as the temporary shelter under which it was parked was destroyed. One destroyed shelter was blown into and damaged another UH-60A secured on the ramp. The high winds also overcame the main rotor blade tie downs for two AH-64 aircraft, causing extensive damage due to excessive blade flapping.
5. Explanation of reason(s) environmental conditions caused/ contributed to accident.	The property damage was caused by an abrupt, rapidly developing thunderstorm that was neither forecasted nor expected. The exposed aircraft were secured on the ramp in accordance with established policy.

FINDING 1 (Present and Contributing: Environment):

At approximately 1915 hours, a severe thunderstorm passed through the heliport in Camp Doha, Kuwait, with estimated sustained winds of 40 mph and gusts to 60 mph. As a result, two temporary sunscreen shelters were destroyed and four helicopters that were secured on the ramp were damaged. One UH-60A was damaged as the temporary shelter under which it was parked was destroyed. One destroyed shelter was blown into and damaged another UH-60A secured on the ramp. The high winds also overcame the main rotor blade tie downs for two AH-64 aircraft, causing extensive damage due to excessive blade flapping.

The property damage was caused by an abrupt, rapidly developing thunderstorm that was neither forecasted nor expected. The exposed aircraft were secured on the ramp in accordance with established policy.

Additional Example of a Ground Present and Contributing Finding and Recommendations

FINDING 1 (Present and Contributing: Environmental):

While conducting a daytime interdiction mission, area reconnaissance of the northwest Area of Operation (AO) Falcon, the third vehicle in a three-vehicle patrol, an M1114 Up-armored High Mobility Multipurpose Wheeled Vehicle (HMMWV), rolled into an irrigation canal when the road collapsed into the canal. That is, the Board concluded that the road was saturated with water due to 3 days of constant rain prior to the day of the mission. When the roadway collapsed, the vehicle rolled into the canal and came to rest inverted. As a result, one Soldier received fatal injuries and the vehicle received significant damage.

The Board determined that the driver's actions did not cause or contribute to the accident. The Board concluded that the right side of the road collapsed due to being saturated from previous days of heavy rainfall. It is also possible that the other two vehicles weakened the road to the point of collapsing.

RECOMMENDATION 1:

a. Unit Level Action: Commander, Company D, 2d Battalion, 9999th Infantry Regiment, brief all assigned and attached personnel on the facts and circumstances surrounding this accident. Emphasize the guidance in GTA 55-03-030, GTA 55-03-031, and Safety of Use Message (SOUM) 050004 prior to all missions.

b. Higher Level Action: Commander, 2d Brigade Combat Team, brief all assigned and attached personnel on the facts and circumstances surrounding this accident. Emphasize the guidance in GTA 55-03-030, GTA 55-03-031, and SOUM 050004 during these briefings. Recommend usability surveys of all unimproved roads.

c. Army Level Action: Commander, U.S. Army Combat Readiness Center, disseminate the facts and circumstances surrounding this accident.

When to use a Suspected Present and Contributing finding– A suspected present and contributing finding is used when the accident investigation board cannot positively determine or reasonably conclude what caused the accident. In these cases, the board must develop a hypothetical explanation for why an accident occurred. Using whatever evidence is available, it is acceptable for the accident investigation board to deduce that a certain event could have been or was the most likely cause of the accident. The discussion in the analysis must be very detailed and must discount any other plausible explanations of why the accident occurred and support the cause the board suspects actually caused the accident. For example, an aircraft is found crashed in an area in which there were known to be thunderstorms around the time of the accident, but the crew did not survive the accident and there were no witnesses. Radar showed the aircraft was in vicinity of the thunderstorm area, but not close to or in any storm at the time of the accident. The impact appeared to have a significant vertical component. Teardown analysis and records reviews show no problems with the aircraft components or maintenance and the engine

appeared to be operating normally. All aircraft components were found to be attached and appeared fully functional at impact. The board may suspect the aircraft was involved in a downburst event, based on the physical evidence at the scene, the weather report and radar tracks of thunderstorms in the vicinity, and the lack of any evidence indicating otherwise.

Present and Contributing to the Severity of Injury/Extent of Property Damage. This type of finding covers factors that did not cause the accident, but contributed to the severity of the injuries or extent of damage. Personnel injuries attributable to defects in life support equipment, personal protective clothing/equipment, or aircraft/vehicle crashworthiness design should also be summarized as findings in this category. These findings should be written in the same format as the Present and Contributing finding using the applicable elements for the 3 causal factors (human, materiel and environmental). These findings should be preceded by the following statement.

THE FINDING(S) LISTED BELOW DID NOT DIRECTLY CONTIBUTE TO THE CAUSE FACTORS INVOLVED IN THIS ACCIDENT; HOWEVER, IT/THEY DID CONTRIBUTE TO THE SEVERITY OF INJURIES OR ACCIDENT DAMAGE

Present but not Contributing findings (PBNC). These findings did not cause the accident but in the opinion of the investigator(s) if they are not corrected they could adversely affect the safety of future operations. Present but not contributing findings will not be written using the elements in a Present and Contributing finding. These findings should be preceded by the following statement.

THE FINDINGS LISTED BELOW DID NOT DIRECTLY CONTRIBUTE TO THE CAUSAL FACTORS IN THIS ACCIDENT; HOWEVER, IF NOT CORRECTED, THEY COULD ADVERSELY AFFECT THE SAFETY OF FUTURE OPERATIONS.

FINDING 5 (Present But Not Contributing):

The accident crews failed to complete pre-mission planning requirements by departing with an expired weather briefing void time. The Accident Investigation Board investigating another recent CAB, 22ID, accident noted that the accident crew also departed with an expired weather briefing void time. Furthermore, the Board reviewed flight briefings for the week of 31 December 2005 through 5 January 2006 and noted that 74 flights took off with an expired weather briefing void time. Although the Board concluded that weather conditions did not contribute to this accident, these uncorrected weather planning deficiencies could jeopardize the safety of future flights.

RECOMMENDATION 5:

a. Unit Level Action: Commander, 1-22th Attack Reconnaissance Battalion, Combat Aviation Brigade, 22th Infantry Division, enforce rules and regulations regarding weather briefing requirements.

b. Higher Level Action: Commander, Combat Aviation Brigade, 22th Infantry Division, enforce rules and regulations regarding weather briefing requirements.

c. Army Level Action: None.

Writing Recommendations

Each present and contributing finding will be followed by recommendations having the best potential for correcting or eliminating the reasons (System Inadequacy(ies)) for the error, materiel failure, or environmental factor that caused or contributed to the accident. Additionally, recommendations will follow each finding that was present but not contributing to the accident, i.e., a factor that could adversely affect the safety of continued operations if left uncorrected. Recommendations will not focus on punitive steps addressing an individual's failure in a particular case. To be effective at preventing accidents in the future, state recommendations in broader terms. Refer to the list of remedial measures in Appendix B-6 for both ground and aviation accidents. The board should not allow existing budgetary, material, or personnel restrictions to influence their recommendations. In developing the recommendations, the board should view each recommendation in terms of its potential effectiveness. For example, design improvement of a part that has a history of recurring failure is a better solution than recommending procedures to accommodate the deficiency. Direct each recommendation at the unit, command, or activity having proponency for and which is best capable of implementing the actions contained in the recommendation. The actions required at "Unit Level" (company, troop, battalion), "Higher Level" (brigade, division, corps, Army Headquarters), and "DA Level" (to include Army Headquarters with Army-level proponency) will be addressed by each recommendation. If one or more of these three command levels had no action requirement, a negative report is required. For example, "DA Level Action: None." Examples of recommendations are located on pages 11, 12, 16 and 17 of this document.

Revised 21 April 2015