Airborne Law Enforcement Training:
Making Training Relevant To the Error Threat

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ALEA has gone through a great deal of time and effort to provide its membership with a detailed summary of all Law Enforcement accidents for the past thirteen years. This information provides you with an excellent starting point for targeting your training to the most relevant error threats you face.

Recently I heard the quote: "You can't prevent what you can't predict". This article is designed to help you better understand what you can predict. After conducting a detailed analysis of the Law Enforcement accidents for the past thirteen years, I found that human error accounted for more than 90% of the mishaps. That doesn't mean that only the pilot made the mistake. Maintenance human error, manufacturer human error, management human error, etc., should also be considered when we address the issue of human error.

Human error is a recurrent theme but take a minute to think about this. Human error is a normal by-product of human behavior. Four types of error are important to an understanding of the inter-relationship between discipline and safety. These are: human error, negligent conduct, reckless conduct, and intentional rule violations. These categories are presented here because they are the principal labels we use socially and legally, to describe blameworthy conduct. One or more of these behavioral categories will be applied in most mishap investigations and the label often determines when disciplinary sanction is appropriate. Following is a short description of each.

Human Error: Human Error is a social label. It is generally agreed that the individual should have taken an action other than what they took, and in the course of that action inadvertently caused or could have caused an undesirable outcome. Human error is a term that we use to describe our everyday mistakes or behavior – missing a radio call or forgetting to bring a piece of equipment. The threshold for labeling behavior "human error" is very low – we make errors every day with generally minimal consequences. Keep in mind that the consequences of human error are usually insignificant, although they can be catastrophic if the environment is unforgiving. Individuals and organizations often view a serious adverse outcome as more important than a less serious one. This is known as "Outcome Based Behavior." Some organizations and individuals focus on the outcome of the act and not the behavior or the individual. Regardless of the behavior, if

the outcome is favorable, organizations often praise or reward the individual. In another case if the outcome is unsatisfactory we often punish the behavior, even when an honest mistake was made. Consider this: Would you punish a baby for spilling grape juice on an expensive carpet? When we look at the consequences for this behavior remember, punishment is not effective because the behavior is unintentional, it is the normal by product of human behavior. Better policies, procedures, SOPs, training, task selection, and structuring the environment will make errors more unlikely to occur.

Negligent Conduct: Negligence, at least in our social dialogue, is conduct subjectively more culpable than human error. In most cases negligence is defined as failure to exercise the skill, care, and learning expected of a reasonably prudent person. It is the objective determination that a person should have been aware that they were taking a substantial and unjustifiable risk toward causing an undesirable outcome. Negligence is simply the failure to recognize a risk that should have been recognized. Accountability for one's actions is important, however, punishment in this case is usually not as effective as training and increasing awareness so the individual can better assess the risk.

Reckless Conduct: Reckless conduct, alternatively referred to as gross negligence, involves a higher degree of culpability than negligence. Reckless conduct involves a conscious disregard of risk. Reckless conduct differs from negligent conduct in intent. Recklessness is a conscious disregard of a visible, significant risk. Accountability in reckless conduct is critical. Since it involves a conscious disregard of risk, additional training is almost useless. Since the individual makes a conscious decision to disregard the risk, punishment is often warranted and appropriate.

Intentional Rule Violations: Most rules, procedures, and duties will require or prohibit specific behavior. The intentional rule violation occurs when an individual chooses to knowingly violate a rule while he/she is performing a task. This concept is not necessarily related to risk taking, but merely shows that an individual knew of, or intended to violate a rule, procedure, or duty in the course of performing a task. Stopping this behavior is of paramount importance. While it only accounts for approximately 3-5 % of the mishaps investigated, the consequences and the effect on the organization and on the team are serious. These individuals usually have a pattern of anti-authority behavior and often need to find a new line of work. Since there was an intention to violate, punishment is appropriate. Training usually does no good because these individuals are often repeat offenders and must be monitored carefully. Do not hesitate to remove them from the organization.

If you look at the ALEA accidents you will find that very few were the result of reckless conduct and intentional rule violation. That leaves us with human error and negligent conduct to consider. Remember what we said about addressing the consequences of this type of error. Training is the #1 remedy an organization can apply to address this type of error. The primary objective of training should be to help individuals better understand why human error occurs so their awareness increases and the individual can better assess the risks. Individuals need to have a clear understanding of the source of the errors in order to predict what may happen, and then take proactive measures to avoid the error. In most Law Enforcement organizations this training should address pilots, tactical flight officers (TFO's), other crew members, and maintenance personnel. Human Factors training has become an industry standard and is mandatory for all FAR 121 and 135 crews.

To help us better target our training let's take a more in-depth look at the root cause factor of the law enforcement accidents for the past thirteen years. This analysis does not include those accidents that are still under review with cause factors pending. The primary cause factors for the accidents reviewed are provided below. Due to multiple cause factors in some incidents, the total is greater than 100%. Remember I am dealing with multiple cause analysis. For example: Management may fail to properly supervise maintenance – Maintenance may use an improper procedure – A material failure may result from the faulty procedure – The pilot may not react properly to the emergency. All four factors would be considered in the analysis.

Pilot Human Factors: 68%

- Judgment Error: 51%
- Flight Skill Error: 33%
- Non-Compliance Error: 5%
- Supervision Error: 5%
- Procedural Error: 3%
- Controlled Flight Into Terrain (CFIT): 5%
- Spatial Disorientation (SD): 5%
- Loss of Tail Rotor Effectiveness (LTE): 9%

Pilot Human Factors Key Points:

- While it accounts for 33% of the human factor mishaps, this figure is deceiving. Most flight skill errors result from a judgment error which puts the pilot/aircraft in a situation that makes recovery difficult with normal skills. Most of us have been involved in a traffic mishap. It's not because we had deficient driving skills, it was related to something else entirely. Therefore you won't fix the problem by seeking a driver training program. We already spend a great deal of our budget on skill training. Skill training is obviously important, but consider targeting some of your budget on those areas that represent the greatest risk.
- Most of the non-compliance errors reviewed go beyond simple human error as defined earlier.
- Most controlled flight into terrain and spatial disorientation mishaps start with a judgment error to proceed into marginal conditions and the pilot does not have a plan or skill to recover.
- Most loss of tail rotor effectiveness mishaps start with a judgment error that puts the aircraft in a situation which requires too much power from which to recover.
- Most supervision mishaps occur during training where the instructor fails to properly supervise the student or allows them to exceed A/C limits, making recovery difficult.

Material Failure: 33%

- Loss of Engine Power: 10%
- Component Failure: 15%

Material Failure Key Points:

- Most loss of engine power mishaps occurred in military aircraft. Since 1999 54% were in certificated aircraft. In most cases the cause was not determined and when tested the engines ran fine (scary). All pilots, but especially those flying military surplus aircraft should be prepared at all times with a plan for a forced landing area. This is an obvious problem with law enforcement surveillance missions and tracking suspects. If possible it is always advisable to try to avoid out of envelope flight conditions.
- Component failures are balanced between maintenance related causes and just plain material failure.

Maintenance Human Factors: 9%

- Procedural Error & Failure of Quality Assurance Checks

Maintenance Human Factors Key Points:

- These are mostly caused by not following approved procedures and failure of a good quality assurance check after maintenance has been performed.

Management Human Factors: 11%

- Failure to monitor and properly supervise flight operations

Management Human Factors Key Points

- This is a tough area to evaluate because the NTSB/Investigating Authority does not always go deep enough into root cause.
- Management is responsible for planning, organizing, directing, controlling, and staffing of the entire flight operation. Clearly, in 11% of the mishaps management failed in these responsibilities.
- I personally feel that this cause factor is significantly higher. In many cases management of LE Aviation Agencies is performed by non-pilots and by default those management functions reside with the line pilots.
- A Safety officer is the manager's best tool in this area. They can keep management up to date on problems and a good Safety Program can provide the Commander with the tools to effectively manage the unit even if they are not pilots.

Manufacturer Human Error: 4%

- Improper Documentation

Manufacturer Human Error Key Points:

- This usually results from inadequate documentation for maintenance personnel. When in doubt about a procedure check it out thoroughly before proceeding.

With this data at hand we are now ready to look at training that can address the relevant error threat. The most effective training program I have found to address these issues includes the following areas:

1. Accident Causation – Root Cause Analysis

2. Threat & Error Management
3. Information Processing
4. Stress & Performance
    a. Low Stress vs. Moderate Stress vs. High Stress
5. Fatigue
6. Situational Awareness
    a. Developing A Mental Model
    b. Interruptions & Distractions
    c. Habit Patterns (Automaticity)
    d. Deferred Tasks
    e. Sidetracking
    f. Preoccupation
    g. Channeled Attention to Fixation
    h. Behavior Triggers
7. Decision Making
    a. Skill based Decisions
    b. Rule based Decisions
    c. Knowledge Based Decisions
8. Effective Communication
    a. Inquiry
    b. Advocacy
    c. Assertiveness
    d. Effective Listening
    e. Conflict Resolution
    f. Effective Critique & Feedback

The goal of Human Factors Threat & Error Management training is to better help our team members predict, detect, avoid and recover from error. It accomplishes this by helping individuals better understand why human error occurs so their awareness increases and the individual can better employ human error risk management

strategies. I hope that Law Enforcement Managers and Safety Officers will take the opportunity to address the training needs of their team members in this critical area.