

INTRODUCTION

Human Factors is:

- A synonym for human performance.
 - We are prone to errors, yet open to learning.
 - There is generally a better way to do/not do things.
 - Understanding why you do something wrong is a totally different skill set than knowing how to do the same task right.
- Cognitive in nature
 - Human performance can be learned just as other fields of study.
 - Requires constant exposure and repetition to master.
- Greater group synergy, performance
 - Unequivocal research identifies beneficial results.
 - Cross cultural in nature.
- Reduced error rates (individual/collective)
 - Solid metric results via reduced error rates, also smaller degree of deviation from expected standards due to heightened awareness.

Human Factors is NOT:

- A substitute for technical performance
 - You must know your specific field of study.
 - You must be proficient at you particular/specific tasks.
- “ The Personality police”
 - Not meant to fix someone incapable or unwilling of working with others.
 - Most likely will not help an individual/group who does not believe in its intrinsic value, and is not willing to adapt appropriately.
 - In order to maximize the results, this new paradigm shift in operational philosophies and methodologies requires the full support of every level within an organization. Most importantly it starts at the top.

DECISION MAKING

Knowing/understanding (why & how) you are doing something (a task) WRONG is an entirely different skill set than knowing/understanding

how to do the same task RIGHT. We spend a great deal of time/effort on how to do something right.... If we do not know why/how we are doing something wrong we will – A) not really learn/understand correct base principles B) under stress –we will continue to make the same mistakes. Teaching why/how a task is performed incorrectly is a skill set that is seldom – if ever done. Take the time – make the effort - to develop the skill of figuring out why/how something is being done wrong.

Don't hide mistakes. Create a culture which does not make error recognition a cardinal sin. Work at announcing errors at the earliest convenience. Early detection and communicating of errors does two things; A) there is more time to fix the mistake before serious consequences occur, B) The deviance from accepted/expected performance will be smaller. "Early detection – early correction – smaller deviation".

If you are working with others, make it your first priority to invite the participation of all who have a vested interest. "We are in this together". Make the statement – "Your opinion is important to me, I promise I will hear you" (I may not agree with you, but I will listen). While this certainly will work in a peer-peer situation, or even an "upstream" – conversation (where some less experienced is conversing with someone who has a much greater degree of experience to the task at hand), it is really cogent when a leader sets the tone/makes that specific statement to those who may feel less experienced. It fosters the open flow of communication. People want to be heard, to be listened to.

If you are working or flying with someone, ask/request in a respectful manner the opportunity to speak up if you see something that makes you concerned or uncomfortable.

NASA ASRS (aviation reporting system) data decisively identifies two major flaws in post-accident analysis. For pilots – the major problem area lies in "poor decision making skills". In other words, pilots were not effective in making proper/timely decisions; they lacked the skills set to do so. As a pilot, work at whatever skills are necessary to improve your decision-making abilities. For group members, their "*mia culpa*" centered on their failure to speak up. As an observer, or perhaps an additional pilot in the glider, work on skills centered on advocacy and assertion. In order to keep open communication within the group, be pro-active and discuss this philosophy with the individual involved before you speak up. Mutual efforts at keeping these

avenues of communication open will ensure maximum effectiveness, which in turn will reduce error rates.

The pilot in command needs to recognize the valuable input that someone may have when indeed they do speak up. They, as PIC's....need to specifically say *"If you see something, say something"*.

Often times we ask ourselves...*"Do I/we have the big picture"*... How do we frame our minds to such a concept(s)? Either as a pilot, someone riding in as a second pilot, or as a group member simply observing the actions, answer these questions (once - or as many times as required once situation changes). You (and your group) will be in a much better position to assess *"the big picture"*. Here is the SHARED MENTAL MODEL (NASA derivative):

- What is happening?
- *"Do I (we) have an accurate picture of the situation"?*
- Where are the land mines?
- *"What will failed scenarios look like? Why"?*
- What am I going to do?
- *"Do I understand my individual role"?*
- How will it be done?
- *"What specific procedures and sequence will be followed"?*
- Who does what?
- *Clear role assignment*

Keeping up with not only what is happening in our changing scenarios – but also what has happened and what most likely will happen occupies a great deal of our working memory as we fly. That ability to do so is called situational awareness. Here are some *"landmines"* that may affect how we frame our thoughts...

- *Ambiguity - 2 sources of information disagree*
- *Confusion – Uncertainty with what to do next. The leading cause for confusion is the lack of procedural knowledge. Want to minimize this? Learn your procedures cold!*
- *Preoccupation -Fixation on one task at the expense of others*
- *Not communicating - Not talking / not listening*
- *Rushing - Unexpected pace / presence of shortcuts*
- *Distraction – Departure from current need or plan / broken habit pattern*
- *Violation of corporate SOP/FARs – Non compliance (4 phase)*
- *Failure to meet targets – Technical / human factors*
- *Not addressing discrepancies – Ignorance / apathy / CYA*

- Presence of stress/fatigue - #1 casual factor in error chain
- Presence of 1st error – *Where there is one.... others likely*

Eventually, we must make decisions, and making those decisions is “where the rubber meets the road”. Just like learning to land in a cross-wind, decision making skills are cognitive in nature, the more you practice – the better you get at it. Here are some highlights of effective decision making techniques.

CLUE: In the presence of *fatigue*, the most common pitfall is to *defer*

- Gather data
 - Build frame of the situation
- Get inputs and recommendations
 - Ask for input BEFORE giving your opinion
 - *Don't poison the water in the well. If you are in a position of authority, and you are the first to state your preference, those who look up to you may not feel inclined to share theirs – especially if it is different than yours.*
 - *Once publically stated – married to postulate. Once we "speak" – we subconsciously attach ourselves to our ideas.*
 - How do you ask for input first?
 - *What do you feel comfortable with?*
 - *What would you do, if you were I?*
- Provide a recap of options
 - *Which one is best and why?*
- Look for not only what is there/present – seek to find what is NOT there/what is missing.
- Before you trust your “gut feeling” or that of someone else’s ask yourself two questions.
 - *How familiar am I (them) with the issue at hand?*
 - *How many times in the recent past have I (them) specifically solved this issue?*
 - Research shows that if an individual is not familiar with (through experience or currency) with a dilemma, then his “gut feeling” decision is no more accurate than the flip of a coin.
- While establishing a timeline, investigate doubts, questions, or concerns (land mines).
- Make and clearly announce the decision

- Brief the game plan - Use of Shared Mental Model (previously discussed/5 questions).....*What is happening? ...Where are the landmines?....What am I going to do?.....How will it be done.....Who does what?*

Most Common Decision Traps

Frame blindness: Setting out to solve the wrong problem

Lack of frame control: Failing to concisely define the problem in more ways than one

Confirmation/Availability bias: Using other's actions/beliefs/results to confirm your decision. First one available is good enough

Plunging in: Acting before thinking about the crux of the issue. Recall that the perception of being challenged by time constraints is just that – we often are the ones that rush ourselves.

Overconfidence in your judgment: Failure to collect key info because you are too sure of your assumptions

Shortsighted shortcuts: Anchoring on convenient facts

Shooting from the hip: "Winging It", rather than following a systematic processw

Group failure: Assuming smart people automatically make good choices

Fooling yourself about feedback: Failing to interpret evidence from past outcomes for what it really says

Not keeping track: Failure to keep and analyze records

Failure to audit your decision process: Failure to create an organized approach to own decision making +/-