REDEFINING CRM

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ABSTRACT

The recent revision (120-51E, dated 1/22/04) to the Crew Resource Management Training Advisory Circular failed to provide a specific definition of CRM. This void is an issue with those who agree with Montaigne when he observed "No wind favors the sailing ship without a destined port." Since its inception over twenty five years ago, CRM has undergone considerable evolution and the industry now finds itself in the seventh or eight "Generation" of CRM training. Interestingly, in the very first Advisory Circular (120-51A) the following statement was made: "The essence of CRM training is to reduce error in the cockpit." In spite of that specific focus, during the last quarter of a century, CRM training has been whatever the program developer wanted it to be and the result has included such diverse subjects as Post Traumatic Stress, Security, Unruly Passengers, Scheduling Issues, and Uniform Codes. The original definition of CRM as "The effective utilization of all available resources including liveware, hardware and software, to achieve safe and efficient flight operations." was a worthy "goal" which unfortunately was more theoretical than practical; and no doubt contributed to why the current AC has no specific definition. Safety and efficiency do not always go hand in hand and therein lies the rub. *It is time the industry put the practical side of the issue first and then back that up with theory*. With that in mind, I make the observation that the industry has failed abysmally to take advantage of the huge resource of line pilot experience. Line pilots who achieves tens of thousands of hours accident and incident free has developed their own "bag of tricks" to stay out of trouble. Academicians, management pilots, and even union members, do NOT adequately represent the line pilot. With that in mind, I offer the following NEW and specific definition of CRM: "Cockpit Resource Management is the comprehensive utilization of all available resources including people, equipment and procedures, to attempt to get the job done correctly while staying out of trouble." There are an infinite number of ways to do this and each annual recurrent training should address some of those techniques. GAIN, ASAP, Line Pilot Reports, FAA violations, Accident and Incident Reports, and the ASRS reporting system are all excellent starting point to gather these techniques. Too much of that data is simply NOT making it to the cockpit. The industry must come to grips with the fact that with each new technological improvement, each new aircraft design and each now operational improvement, more challenges are being faced by the line pilot and CRM training is one way to aid the line pilot in coping wit these challenges. Consequently, CRM training remains a journey and NOT a destination.

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The twenty fifth anniversary since the first international workshop on CRM in 1979, recently passed without much fanfare. What was the reason for that lack of attention? Some might say it is a result of the fact that the aviation industry has adequately achieved what it set out to accomplish twenty-five years ago. Such an attitude is reinforced by the lack of specific CRM training that is taking place today. On the other hand some might believe that the lack of attention given to the passing of a quarter century is because the industry has failed to achieve ALL that it might have accomplished. When one considers the vast amount of time, effort and money that has gone into CRM training during this period, it is not difficult to understand why the industry is not celebrating such a lack of success. These are two very contrasting and contradictory points of view and they lay the foundation for this paper.

Redefining CRM must begin with addressing the need for a new definition. Why redefine CRM if the old definition is adequate?? Put another way, "Does the old definition suffice?" To answer those questions one must ask "What IS the old definition of CRM?" Anyone with any experience in the field is acutely familiar with the Mantra: "CRM is the effective utilization of all available resources including liveware, hardware, and software to achieve safe and efficient flight operations." That is certainly a worthy goal; simultaneously achieving safety and efficiency is the ultimate goal of ALL flight operations regardless of the mission. Airlines, military, corporate, air ambulances, off shore re-supply, etc., have very different missions but they all want to succeed in that mission and they all want to do so safely. No wonder the old definition has lasted as long as it has. The theory is rock solid. So how is the practical application?

To answer that question, one must ask how that practical application will be evaluated? One approach is to simply poll attendees of CRM training and ask if they feel safer than before the training. Another is to compare accident statistics from before and after CRM training. This author finds neither of those approaches acceptable for the following reasons. Self assessment is simply not objective enough and statistics remain too similar to the bikini: what they reveal is enticing but what they cover up is vital. A low accident rate tells NOTHING of what is routinely going on in the cockpit. Aside from the last thirty minutes of the cockpit voice recorder in an accident review, there are only two opportunities for the industry to be exposed to how pilot's function in the cockpit during day to day operations.

One is observing flight crews in the simulator. This author hates to rain on the parade of those who promote the simulator as the panacea for most of the aviation industry's safety ills, but sadly, they are kidding themselves and the industry. While the simulator is an excellent tool for teaching procedures, regardless of the amount of money spent on improving the high technology of motion and visual and regardless of the attempts to make LOFT (Line Oriented flight Training) provide the atmosphere of line operations, the fact remains that the pilot walks into the simulator and he knows that. In the simulator, one

can NOT run out of gas, or be four hours late, or be rushing to beat a curfew, or have VIP's on board, or be actually fatigued after 14 hours on duty, or be hungry or whatever. Other characteristics which decrease the effectiveness of simulators include "glitches" in the software that have the simulator NOT responding like the real aircraft (negative G's being one of the more obvious) and the following war story in which the pilot was right in the middle of his LOFT scenario in which he had a key decision to make when the phone rang and the instructor began dialogue with another instructor as to where they were going out to eat that evening! Acknowledging these facts will provide a key cornerstone to understanding the efficacy (or lack thereof) of the practical application of CRM.

The other opportunity to experience the how practically CRM is being applied is through LOSA (Line Oriented Safety Audit) in which fellow crew members or researchers, ride along "just to observe" and note any errors made by the crew. It is pre-briefed that this audit will be "non-judgmental" and the crew is to act as if "they weren't there." Anyone who believes that the presence of an observer has NO impact on how the flight crew functions is VERY naïve. The Heisenberg theory empirically proved that the presence of one body has a definite impact on the movement of another body and nowhere is this truer than in the cockpit. With that acknowledgment, the other measurement of effectiveness of CRM is similarly diluted and that leaves the following and perhaps most legitimate gauge: line pilot observations.

NASA ASRS and ASAP reports provide only the tip of the iceberg. Regardless of the wording in the ASR and ASAP agreement, pilots are understandably not going to divulge all the nuances of the event in these reports. And how much is really learned from cursory facts?? The next best thing to "being there" is hearing about it "from the horses mouth". Pilots love to tell war stories and these spread like wild fire. One sterling example is the TWA upset over Kansas and the alleged pulling of the leading edge device circuit breaker to allow the flaps to be "cracked" without extending the leading edge devices. That story was told in every cockpit of every air carrier across the country. Such war stories, related by line pilots, to fellow line pilots indicate that situations continue to occur which represent a less than sterling success rate for the practical application of CRM. These stories are never made public for obvious reasons but any failure of the aviation industry to acknowledge them does and will leave a large void in the safety structure. And it is that void that precipitates the need for redefining CRM.

The industry has been all too quick to celebrate its successes and all too unwilling to acknowledge any failure. It is extremely ironic to note that some of those who are so quick to criticize a captain for not accepting input from his other crew members, are themselves too unwilling to accept any constructive criticism from others. This author is not suggesting that the industry has necessarily "failed" in its attempt to teach CRM but he does suggest that much more success might have been achieved; particularly when one considers the vast resources applied to CRM over the last twenty five years.

Having established the fact that while the theory of the old definition was sound, its practical application has been lacking, let us address another important reason for redefining CRM. The old definition of CRM made reference to "use of ALL available resources including liveware, hardware and software" and yet for the first sixteen years, all that was focused on was the "liveware" part of the equation. Retired American Airlines Captain, Bob Besco, pointed out that all that was being addressed was "Small Group Dynamics". There was no emphasis on aviation specific issues, just "how the crew got along." This myopic focus lead to the evolution of CRM from "Cockpit Resource Management" to "Crew Resource Management." When the researchers ran out of interactive issues between pilots, instead of addressing pilot-specific issues such as situational awareness, or CFIT (Controlled Flight Into Terrain) or Fuel Management, etc., they simply expanded the size of the "team" and focused on joint training with flight attendants, dispatchers and maintenance personnel.

The philosopher Montaigne once observed that "No wind favors the sailing ship without a destined port." When the industry ran out of interactive "team" concepts, CRM training was indeed adrift at sea and subject matter for CRM training took on any appearance that the program developer desired. Post Traumatic Stress Syndrome, Security, Unruly Passengers, Scheduling Issues and Uniform compliance took the place of legitimate aviation safety issues. One glaring example of this lack of focus was discussion of a flight crew that encountered a severe wind shear that almost caused the airplane to crash. The entire focus of the class was on the after affects (PTSD) of the event on the crew. After listening to the description of the affect of the wind shear on the airframe, one pilot asked, "What angle of bank did the aircraft achieve before you were able to recover?" Not only was his legitimate question NOT answered, the CRM facilitator actually had the gall to declare "We will NOT discuss ANY airplane specific issues here! We are just discussing the success of the Critical Incident Response!" The absurdity of such a statement defies description. If only the industry would apply a fraction of focus on avoiding the accident that it does in intervening with the mishap crew, it would be in far better shape. Without a clear focus on an accurate definition of CRM, the industry will never achieve all the success in avoiding accidents that it might.

PhD's were brought on board at many carriers to train these interactive skills but in some way, the industry was actually doing a disservice to its pilots by over emphasizing that as long as they "got along" and "communicated", they were safe. While good interactive skills were "necessary" for a safe flight, they were by no means "sufficient". The American Airlines accident at Cali was a glaring example that CRM training required much more than small group dynamics. The interactive skills of that particular crew were fine; they just suffered from a classic loss of situational awareness under high workload; one of the many safety concepts ignored while focusing on interactive training with other working groups.

The Cali crash resulted in significant backlash towards CRM training. After much prodding, the industry finally acknowledged that more than just small group dynamics was needed. At a pilot meeting at one of

the major carriers, when the Chief Pilot made the statement that "CRM is dead at XYZ" the pilots cheered and gave him a standing ovation. At another major carrier, the "Next Generation" of CRM training was introduced with the statement "We are going to drain the hot tub in CRM!" While this was certainly a step in the right direction, acknowledging what NOT to do was still not enough. In the very first FAA Advisory Circular on CRM the following statement was made. "The essence of CRM training is to reduce error in the cockpit." How should the industry accomplish that goal? After sixteen years of focusing almost exclusively on interactive skills to reduce error, Cali glaringly pointed out that the emperor has no clothes; and so sixteen years later, the industry finally began to focus on what it had failed to do so from the beginning.

While the intent was good, the result was abysmal. The industry again refused to get into specific aviation issues and instead came up with shallow concepts such as the Volant Model which basically advocates that "If you do everything right, you will not do anything wrong". Malcom Armstrong, Director of Safety for one of the major carriers, succinctly shot holes in that model when he said "Most people do not come to work intending to have an accident. They are trying to do the right thing. Flawed training, improper priorities, and defective procedures are what lead to an accident." The current Threat and Error Management Model is yet another generic attempt that fails to address specific aviation safety issues. Likewise, the goal of "Avoid, manage or mitigate the consequences of error" is yet another theory that sounds great until one attempts a practical application. I have asked many of its proponents for a specific example of "mitigating the consequences of an error" and I have yet to hear one legitimate one. Why didn't the aviation community as a whole ask for such specific examples instead of blindly jumping on the bandwagon?

All of this is water under the bridge. None of the time, money, nor effort can ever be recaptured nor can any of the accidents that have occurred during that last twenty-five years be corrected. It is time for the industry to change by design rather than just by knee jerk reaction to yet more accidents and loss of life. The definition being proposed here begins with going back to the original concept of "Cockpit Resource Management" since the cockpit and aviation should be the focus of the training.

Next, the new definition is given as "Cockpit Resource Management is the comprehensive utilization of all available resources including people, equipment and procedures, to attempt to get the job done correctly while staying out of trouble." The emphasis on "attempt" is the practical acknowledgement that safety and efficiency do not always go hand in hand and sometimes, the job will not always get done. Tenerife and Dryden have been held up as examples of poor CRM in literally thousands of CRM classes. What was the lesson learned from them? From the "Old School" of CRM, the typical answer would be poor communication can lead to an accident and the flight attendants are the last bastion of safety. From the

"New School" of CRM the lesson learned would be that "It is alright to cancel the flight. It is the company's responsibility to put up the passengers, NOT the pilot's."

To put this point across, let me cite the following real world war story from a typical CRM class at one of the major air carriers with a CRM program held up as "Providing the Leading Edge." The class opens with a series of pictures showing aircraft destroyed in accidents. Then the following scenario is provided: You are the First Officer on the flight and during the originating flight pre-flight you discover some snow on the wings. You report this to the captain who tells you not to worry about it because it will blow off the wing. You attempt to express that you are uncomfortable with that but the class facilitator keeps telling you that the captain is not listening. The goal of the class is obviously to see how many ways you can tactfully challenge the captain's decision. After a couple dozen attempts to convince the captain his decision is incorrect, one of your peers says "I'm taking my flight bag and leaving the flight deck!" The facilitator freaks out and begins babbling "No, No, you can't do that. You have to keep attempting to convince the captain that his decision is incorrect." That attitude and curriculum have been the foundation for CRM classes all over the world. That approach is NOT always realistic nor always practical; sometimes you just have to say NO and that's what separates the new CRM from the old.

One critical point here is that in the post 9/11 environment, the role of "efficiency" has taken on a whole new meaning. With airlines in bankruptcy, and careers in jeopardy, pilots are being put in a position of thinking they can "Save" the airline by pushing the envelope a little more. No one in the industry will readliy acknowledge this terrible threat to safety. Chief pilots are caught between attempting to "keep the operation going" and violating procedures and good sense. There is an incredible metamorphosis that occurs when a line pilot moves into management; again, this is not easily addressed but to not address it is to be a token advocate of safety.
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Material for CRM classes should be addressing real world issues and not just something that some committee made up of members from various working groups thought up during a working lunch paid for by the company. Keep the focus on flying and flying issues. GAIN, ASAP, Line Pilot Reports, FAA violations, accident and incident reports, and the ASRS reporting system are all excellent starting points for poignant discussions. Analysis of what was done wrong and right and what might be done differently in the future provides an excellent forum for pilots with tens of thousands oaf of accident free flying hours to share all the tricks of the trade which they have learned over the years to stay out of trouble. Facilitators should have a definite theme for the class and keep the focus of the discussion on that theme. The industry has failed abysmally to take full advantage of this wonderful resource of line pilot experience. Furthermore, each new technological advancement (GPS approaches) or new procedure (Reduced Vertical Separation) brings more challenges to the line pilot and these need to be addressed right along with all the old standard

threats of CFIT and running out of gas. Every day that these issues are not addressed is one day closer to the next accident.