Critique and Proposed Revision of Crew Resource Management (CRM):
A New Paradigm

Ronald John Lofaro, FAA (ret.), USA
Kevin M. Smith, United Airlines (ret.) & USNR (ret.), USA

ABSTRACT

It is well over 30 years since the first (then called) cockpit resource management (CRM) training, now called crew resource management was introduced. It is a shibboleth, a sacred cow as it were, despite many issues, concerns, and changes over the years. Some 20 years ago, 1992, an Air Transport Association (ATA)/Federal Aviation Association (FAA) sponsored Workshop was convened in an attempt to deal with some specific CRM issues. Yet the issues and needs as articulated in Workshop, and some newer ones, remain. Thus, this Chapter is 20 years overdue, leading to the questions: why now and is it still relevant? Why now? As said, some needs, issues, concerns remain. The relevancy is that we present both a critique of civil aviation CRM on many levels and a look/comparison with current USAF, USCG, and USN CRM. The authors include a proposed skeleton/template for a long-overdue revision of civil aviation CRM.

Keywords: Cockpit Displays, Crew Resource Management (CRM), Decision Making, Federal Aviation Association Advisory Circular (FAA-AC), Group Dynamics, Social Psychology, Type-Rating

FOREWORD

While this article may seem specific to U.S. civil and military operations and training, it is doubly generalizable. First, much of foreign pilot training is modeled on the U.S. and many pilots flying for other flag carriers were trained in U.S. Secondly, what we will present has generic aspects and can be modified to fit planes and types of operations/missions not in the U.S. military and/or U.S. flag carriers milieu.

INTRODUCTION

Civilian CRM, by the mid-1990’s, had continually encountered such problems that the “Big 3” (Delta, American, and United Airlines) US flag air carriers almost completely revamped and re-named their CRM programs; basically focusing on human factors. These sea changes received little publicity; we shall later look at some reasons why. Currently, CRM is now mandated in one Federal Aviation Regulations (FAR) for aircrew training using an optional training methodology (AQP); all the US mili-
tary services have developed their own CRM, initially modeled on the civilian paradigm.

Since 1993, the authors have worked together on developing, publishing and presenting a paradigm for flightcrew risk identification/management for operational decision making (ODM), the arena that we still recognize as most needed in terms of crew training, evaluation, performance and safety. At this point in time, the author’s works on risk identification and management in flight are both in print and have been the subject of international participant Workshops. That said, little has really changed in current CRM, a training arena we have consistently said has long needed to be revised and expanded. Since that effort seemingly has not been considered by others, we now see it is incumbent on us to provide both a critique of that particular flight training technique and to provide the overhaul, with indications for a new model. So, we have returned to what we acknowledge should have been done, circa 1993.

BACKGROUND

CRM training was first developed in the late 1970’s/early 1980’s after a series of disastrous and fatal air carrier accidents; accidents where perfectly functioning planes crashed; beginning with the Eastern Airlines L-1011 in 1972 that crashed on an approach to Miami, killing 104 persons and culminating, so to speak, with the 1978 United DC-8 which ran out of fuel, after circling for an hour, approaching Portland, OR. That pilot repeatedly ignored verbal input from crew members that they were to the point of not having enough fuel on board to reach their destination. Indeed and sadly, this was true and the plane crashed. Fortunately very few (10 out of 189) people perished. But, that accident that was seized on as paradigmatic; the pilot’s attitude and actions were somehow seen as relatively endemic to airline Captains. Nothing could be further from the truth...this type of Captain were anomalies. Perhaps 1% to 2% of airline Captains acted in such a manner; after all who wants to die? Captain Smith, in his 34 years of flying with United, as line pilot, check airman and flight training center time, has verified that what that pilot did was egregious, but also not typical. Yet, why was this accident allowed to become a cornerstone for CRM? Why indeed?

The flying public wanted assurances that something was being done to counteract the root causes of those highly-publicized 1970-1980’s accidents. The air carriers were extremely concerned about the impact of negative publicity on their bottom line. The Federal Aviation Administration (FAA) regulates aviation in the United States (U.S.). The federal regulations covering aviation are all found in Combined Federal Regulations (CFR), Title 14, Aeronautics and Space; these are commonly referred to as the FARs. These are divided into parts and each part has a descriptive title and is a specific and detailed regulation. A major example is CFR 14, Part 121 is the FAR titled Operating Requirement: Domestic Flight and Supplemental Operations, usually referred to simply as Part 121. Remember that back then the FAA’s stated mission was to ensure flight safety AND promote airline travel; difficult if not oxymoronic.

To reassure the flying public, the FAA approached the NASA Ames Research Center to help with this problem of eroding public confidence. NASA Ames in conjunction with some in academia developed a new type of training, and then called cockpit resource management (CRM) training. The developers were grounded in social psychology and a related discipline, I/O (organizational and industrial psychology). So, it was natural that these CRM developers focused on 2 factors, group dynamics and communication. The United Air Lines Portland accident was indeed a model of terrible group dynamics and ignored communications; ergo, it was trumpeted as the rationale for the new training as if all the controlled flight into terrain (CFIT) accidents, and others, were caused by interaction and communication shortfalls.

And, the FAA wanted the air carriers to implement this new flight crew training, i.e.,
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