COCKPIT RESOURCE MANAGEMENT TRAINING
AT PEOPLE EXPRESS:
An Overview and Summary

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INTRODUCTION

Professional pilots work in an increasingly complex environment composed of interrelated social and technical systems. They exist at the point where the often diverse interests of the aircraft manufacturers, the FAA, the operators and the consumer converge. Among others, flight safety has long been one of the pilot's primary responsibilities and until recently was assumed to be a natural and logical result of flying skill and technical knowledge. Mounting evidence, however, strongly suggests that while "flying the plane" well is an absolutely essential and critical part of the job, it is insufficient by itself to assure safety. Consistently safe and efficient flight operations clearly depend on well-coordinated team work by the entire flightcrew. The pilot is conceptually and practically involved in a process of *flight management* that requires a mix of interpersonal, managerial and technical expertise. Little doubt exists that significant improvements in flight safety and accident prevention will result when aircrews are trained in and practice effective *cockpit resource management* (CRM), and there is general agreement on the fundamental and rather broad principles set forth in any discussion of the subject. The problem still remains to: 1) precisely identify the essential elements of CRM; 2) translate those elements into practical behaviors of procedures; 3) establish clear and realistic performance standards; 4) design effective training programs; and 5) observe, measure and document positive results.

In January 1986 in a continuing effort to maintain and improve flight safety and solve some of the above problems, People Express implemented a new CRM training program. It is a continuously running program, scheduled over the next three years and includes state-of-the-art full-mission simulation (LOFT), semi-annual seminar workshops and a comprehensive academic program authored by Robert W. Mudge of Cockpit Management Resources Inc..

This paper outlines that program and to maximize its contribution to the workshop's goals, is organized to coincide with the working groups' four topic areas.

1) PROGRAM CONTENT: the essential elements of resource management training.

2) TRAINING METHODS: the strengths and weaknesses of current approaches.

3) IMPLEMENTATION: the implementation of CRM training.

4) EFFECTIVENESS: the effectiveness of training.

It is confined as much as possible to concise descriptions of the program's basic components. Brief discussions of rationale are included where needed, however no attempt is made to discuss or review popular CRM tenets or the supporting research.

HISTORICAL PERSPECTIVE

In April, 1981, with a fleet of three Boeing 737 aircraft, People Express Inc. began scheduled passenger service to three Northeast cities from its hub at Newark International Airport, New Jersey. Following five years of unprecedented growth, the organization now operates a fleet of seventy-five Boeing aircraft (22-737's, 45-727's, 8-747's) to fifty cities throughout the continental United States, Canada and Western Europe with a complement of roughly one thousand pilots. To meet the demand for command pilots created by such rapid expansion, the company successfully tapped into the large pool of highly-qualified and experienced professional pilots that were available through late 1984. The typical new-hire during that period was a thirty-five year old college graduate with four thousand hours of turbine time. Approximately seventy percent had prior military flying operations and training experience, with the bulk of the civilian experience coming from corporate and commuter operations. A large number of pilots previously worked for other major carriers and had significant experience in Part 121 operations and training. Additionally, many airmen brought advanced degrees and a wealth of civilian business experience to the company. Teamed with equally well-educated and talented Customer Service and Maintenance Managers, the well-publicized process of building People Express began. The success of that continuing process resulted largely from the hard work and spectacular achievements of these creative young professionals.

Notable among those achievements is the company's training department. All flight crew training is conducted "in house" at two facilities including a new flight simulator center in Totowa, New Jersey featuring a 737, a 747 Phase II, and two 727 simulators. With a few administrative exceptions, *all curriculum development,* as well as classroom, simulator and flight instruction, is conducted by *current and qualified line-flying crewmembers.* Consistent with a long-standing team-oriented management philosophy, high-quality technical training and support are presented in a "resource management" context, stressing the critical importance of effective communication, teamwork and crew coordination.

Beginning with classes in late 1981, Cockpit Resource Management has been an integral part of all pilot training. CRM classes conducted through 1985 were four- to eight-hour seminars scheduled during initial, transition, upgrade and recurrent ground schools. The instructors used a mix of lecture, group discussion and accident analysis to familiarize crews with basic CRM issues such as assertiveness/authority balance, communication and the whole problem of crew coordination. Once the general concepts and goals were understood, there was still a need to design and implement a program

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with clear objectives that gave the pilot an opportunity to learn practical methods for positive and effective *cockpit management.*

Therefore, to further refine and broaden our understanding of CRM concepts and provide crews with relatively simple but effective cockpit management and leadership "tools," the current program was developed.

PROGRAM CONTENT

The academic portion consists of the following twelve study units:

1) About Cockpit Management
2) Attitudes and Skills
3) Communications and Briefings
4) Short Term Strategy
5) Challenge-Response Operational Environment
6) Authority-Assertiveness Balance
7) Cockpit Management Style
8) Workload
9) State of the Cockpit
10) Pilot Error
11) Judgement and Decision-Making
12) Emergencies and General Review of the Program

The first two units examine professional flying and the complex aviation environment. Cockpit Resource Management and safety are discussed and defined and some basic management functions are examined. The captain's role is defined as that of cockpit manager; the first and second officers are his backup and the primary safety monitors. These roles are addressed and refined throughout the course. Several broad issues such as the pilot's responsibilities, the nature of command and the importance of positive attitudes and an open mind in achieving positive results from CRM training are discussed. The balance of the course deals with a number of specific CRM elements. In reality these elements are interrelated parts of the flight management process mentioned earlier. However, much the same as many technical courses break a complex process such as instrument flying or the aircraft itself down into elemental parts for study, the remaining study units systematically examine these elements with three basic objectives in mind. First the pilot must simply *understand* the element and its relationship to the whole flight management process. Particularly important is his understanding of the potential for negative or positive impact on flight safety and the achievement of flight goals. Next he must be aware of and able to *recognize* both the presence and impact of the element in actual operations. Finally, he must *act* to manage the cockpit by controlling these elements, effectively using the appropriate resources and providing strong leadership such that flight goals are consistently, efficiently, and *safely* met in the context of a well-coordinated crew effort.

Specific elements covered in the course are listed below:

1) Problem Identification
2) Short-Term Strategy
3) Briefings and Communications
4) Challenge-Response Operational Environment and Monitoring
5) Management Style
6) Leader-Follower relationships
7) Management Actions
8) Authority-Assertiveness Balance
9) Judgement and Decision-Making
10) Subtle Coercion
11) Workload
12) State of the Cockpit
13) Use of Resources
14) Standard Operating Procedures
15) Pilot Errors
16) Flight Warnings
17) Irrelevant Communications

In each case, simple effective methods to improve performance are provided. For example, *short term strategy* provides a systematic way to identify problems; formulate plans; validate them with other crewmembers and modify if needed; activate the plans and then monitor and control their progress. Within the framework of that strategy, the pilot would do other specific things such as *recognizing* and *reducing* errors. That process would entail specific actions and behaviors and so it goes.

The *Management Style* unit examines in detail the issue of goal vs. team-oriented management styles. The characteristics of each style are discussed and arguments favoring a "balanced style" are presented. The hands-on project for this unit leads the pilot through a series of questions and observations to help him learn more about his style. He is asked to assess the positive and negative results of it and is given suggestions and guidelines for change and improvement.

TRAINING METHODS

The program consists of three basic parts: 1) Self-Study Academic Course; 2) Workshop Seminars; and 3) LOFT (full-mission simulation). Each part is described below.

SELF-STUDY ACADEMIC COURSE

Each study unit consists of a printed *Text* and two audio cassette *Tapes*. The *Text* uses a workbook format and contains the following parts: title page; abstract; workbook--used interactively with the lecture tape; text; self-evaluation flash cards; hands-on observation check sheet; discussion questions; study unit critique; and

supplemental reading.

The *Tapes* are: 1) A *Lecture Tape* used interactively with the workbook section of the *text,* and 2) A *Panel Discussion Tape* (several well known aviation experts discuss and debate various CRM issues).

WORKSHOP SEMINARS

Every six months, after completing two study units, the pilots meet for a one-day workshop. The following format is used. 1) Group discussions of the *Text* material, the *Discussion Questions,* and the *Hands-on* project. 2) Selected technical and CRM video tapes are viewed and discussed. 3) An NTSB accident report is studied and an analysis completed using a detailed five-part format. When certain study units are covered such as *Management Style,* selected exercises will be included in the workshop and specific self-assessment instruments administered.

LOFT

Full-mission simulation is the focal point of the entire program. Simulators and classrooms are equipped with state-of-the-art audio-visual systems. The scenarios are designed to maximize the crews' opportunities to apply and practice CRM methods and behaviors to realistic operational problems.

It is important to note here that the same line captains responsible for designing and implementing this entire program are currently training additional instructors, training the check-airmen in all three aircraft, developing additional courses for new instructors and new pilots and conducting all the classroom and simulator instructions. Continual refinement and improvement are explicit parts of the over-all program design.

IMPLEMENTATION

Each crewmember will complete two study units and a workshop every six months. Annual recurrent training already includes a half-day CRM seminar, and since January 1986, an additional eight-hour workshop is scheduled for each pilot. That additional workshop will occur five or six months opposite the individual's recurrent training month to coincide with and precede the LOFT. Captains will receive LOFT training during each PT cycle. Current plans are to schedule first and second officers for an annual LOFT ride in addition to the normally-scheduled simulator training.

At the conclusion of each workshop, Part A of the next study unit and the accompanying lecture tape are handed out. Each month thereafter for three months the balance of the study units are distributed to the individual through company channels. This cycle will repeat every six months for the three years this phase of training is scheduled.

EFFECTIVENESS

Various individuals and groups are working with the company on the difficult problem of measuring the effectiveness of CRM training. Among others, Helmreich, Hackman, Wilhelm, Foushee, Russini, Benson, and Chidester have helped establish a large personality, attitude, and performance data base for use in future measurement projects.

Several other methods are being used to determine and improve the program's effectiveness. Primary among those is the *behavioral* approach to the design of the course. The academic portion is based on the pilot learning specific behaviors. So each unit has *Specific Behavioral Objectives* (SBO's). Workshop themes reflect those SBO's and obviously the LOFT performance criteria are based on the same ones. The SBO's themselves reflect clear operational leadership/management requirements and are carefully designed to be simple, clearly identifiable, relevant and effective. For detailed discussions of the SBO design, the reader is referred to R.W. Mudge and CMR Inc.

The check airmen on all three aircraft are taking accelerated CRM courses designed specifically for supervisory pilots. Thus, as the entire program progresses, annual line checks and simulator training sessions will be increasingly conducted and debriefed in the *cockpit resource management* context.