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Command Training

Edition 1

Guidance Material
and Best Practices



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Foreword

Dear Colleagues,

It is our pleasure to introduce the 1st Edition of the Guidance Material and Best Practices for Command Training.

This innovative guidance proposes the first Competency-Based Training and Assessment (CBTA) approach for the design of pilot development programs with special emphasis on command training.

The CBTA approach to command training is a strategic IATA initiative that sustains the IATA Total Systems Approach, which stands for the application of CBTA across all aviation disciplines in general, and to all modules and roles of a pilot's entire career in particular.

In 2018, IATA estimated that the number of passengers could double to 8.2 billion by 2038. This forecast is expected to cause a rapid fleet expansion which, combined with high retirement rates, will certainly expedite the pilot career path for first officers to upgrade as a commander.

In this context and given the essential contribution of the pilots and commanders to flight safety, it was important to look into the existing command training curricula and propose solutions to enhance globally the level of competency of the commanders. Hence, this manual is dedicated to their training, and its content can be used by operators and by training organizations.

The content of this manual may also be useful for the design of other training programs such as operator conversion courses, cruise relief pilot training, commander recurrent training, etc.

It is our belief that the shared efforts put into the development of this new approach to command training will contribute to achieving our common goal of improving aviation safety worldwide.

We want to acknowledge the valuable work and support provided by the IATA Pilot Training Task Force in the development of this manual. Without their support the publication of this manual would not have been possible.

Best Regards,



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Canadian Aviation Regulations (CARs) and Standards Part IV – Personnel Licensing and Training	As of October 2019
IATA / IFALPA Guidance Material for Instructor and Evaluator Training	1 st Edition
IATA Pilot Aptitude Testing Guidance Material and Best Practices	3 rd Edition, April 2019

Abbreviations and Acronyms

A/C	Aircraft
AC	Advisory Circular
ADDIE	Analyse, Design, Develop, Implement and Evaluate
ANC	Air Navigation Commission
AOC	Air Operator Certificate/ Air Operator Certificate holder (operator)
AQP	Advanced Qualification Program
ATPL	Airline Transport Pilot License
ATC	Air Traffic Control
ATO	Approved Training Organization
ATQP	Alternative Training and Qualification Program
AWO	All Weather Operation
CAA	Civil aviation authority
CAR	Canadian Aviation Regulations
CBT	Computer-Based Training
CBTA	Competency-Based Training and Assessment
CFR	Code of federal regulation
CPL	Commercial Pilot License
CPT	Captain
CRM	Crew Resource Management
EASA	European Aviation Safety Agency
EBT	Evidence-Based training
FAA	Federal Aviation Administration (of the United States of America)
FCL	Flight Crew Licensing
FDA	Flight data analysis
FO	First Officer
FFS	Full Flight Simulator
FSTD	Flight simulation training device
GM	Guidance Material
HF	Human Factors
IATA	International Air Transport Association



ICAO	International Civil Aviation Organization
IE	Instructor and Evaluator
IEC	Instructor and Evaluator Competency
IFALPA	International Federation of Air Line Pilots' Associations
IFR	Instrument flight rules
IOE	Initial Operating Experience
IOS	Instructor Operating Station
ISD	Instructional System Design
ISI	In-seat instruction
JCAB	Japan Civil Aviation Bureau
KSA	Knowledge, skills and attitudes
LAPL	Light Aircraft Pilot License
LCC	Leadership Competence Course
LCD	Leadership Competence Development Program
LIFUS	Line Flying Under Supervision
LOEs	Line Oriented Evaluations
LOFT	Line-oriented flight training
LTC	Line Training Captain (Suitably qualified commanders)
LOSA	Line operations safety audit
MPL	Multi-crew Pilot License
NPRM	Notice to propose rule making
OB	Observable behaviour
OCC	Operator Conversion Course
OEM	Original equipment manufacturer(s)
OM	Operation Manual
OPS	Operations
ORO	Organization Requirements for Air Operations
PA	Public Address announcements
PANS-TRG	Procedures for Air Navigation Services – Training
PAT	Pilot Aptitude Testing
PF	Pilot flying
PM	Pilot monitoring

PPL	Privat pilot license
PC	Pilot-competency
PIC	Pilot in Command
PICUS	Pilot in Command under Supervision
PF	Pilot flying
PM	Pilot monitoring
PPC	Pilot Proficiency Check
PTTF	Pilot Training Task Force (IATA)
RTC	Road to Command
SE	Special emphasis
SFI	Synthetic Flight Instructor (EASA)
SFO	Senior First Officer
SMS	Safety management system
SOP	Standard operating procedure
TA	Trained and assessed
TCCA	Transport Canada Civil Aviation
TEM	Threat and Error Management
TF	Task Force
TM	Training Manager
TRE	Type Rating Examiner
TRI	Type Rating Instructor
UPRT	Upset Prevention and Recovery Training
ZFTT	Zero Flight Time Training

Definitions related to Command Training

Note: For a better understanding, the definitions below are logically grouped and may not be listed in an alphabetical order.

ICAO competency framework. A competency framework, developed by ICAO, is a selected group of competencies for a given aviation discipline. Each competency has an associated description and observable behaviours.

Adapted competency model. A group of competencies with their associated description and performance criteria adapted from an ICAO competency framework that an organization uses to develop competency-based training and assessment for a given role.

Competency. A dimension of human performance that is used to reliably predict successful performance on the job. A competency is manifested and observed through behaviours that mobilize the relevant knowledge, skills and attitudes to carry out activities or tasks under specified conditions.

Note: ICAO describes knowledge, skills and attitude as:

- **Knowledge** is specific information required to enable a learner to develop and apply the skills and attitudes to recall facts, identify concepts, apply rules or principles, solve problems, and think creatively in the context of work.
- A **skill** is an ability to perform an activity or action. It is often divided into three types: motor, cognitive and metacognitive skills.
- **Attitude** is a persistent internal mental state or disposition that influences an individual's choice of personal action toward some object, person or event and that can be learned. Attitudes have affective components, cognitive aspects and behavioural consequences. To demonstrate the "right" attitude, and a learner needs to "know how to be" in a given context.

This manual distinguishes between "*Pilot competencies*" and "*Instructor and Evaluator competencies*".

Pilot competencies. An ICAO competency framework for aeroplane pilots described in Doc 9868.

Instructor and Evaluator competencies. An ICAO competency framework for instructors and evaluators as described in Doc 9868.

Performance criteria. Statements used to assess whether the required levels of performance have been achieved for a competency. A performance criterion consists of an observable behaviour, condition(s) and a competency standard.

Observable behaviour (OB). A single role-related behaviour that can be observed and may or may not be measurable.

Conditions. Anything that may qualify a specific environment in which performance will be demonstrated.

Competency standard. A level of performance that is defined as acceptable when assessing whether or not competency has been achieved.

Assessment. The determination by an instructor or evaluator as to whether a candidate meets a required competency standard under given conditions, by collecting evidence from observable behaviours. Assessment takes place during instruction and evaluation.

Formative Assessment. Formative assessments are a part of the learning process. Instructors provide feedback to the trainees on how they are progressing toward the interim or final competency standard. This type of assessment enables the trainee to progressively build on competencies already acquired and should aid learning by identifying gaps as learning opportunities.

Summative Assessment. Summative assessments provide a method that enables the instructor and evaluator to work with a trainee to collect evidence of the competencies and performance criteria to be demonstrated with respect to the interim or final competency standard(s). Summative assessments are carried out at defined points during the training and/or at the end of the training. During summative assessments, the decision is either “competent” or “not competent” with respect to the interim or final competency standard(s). However, this can be further developed into a more refined grading system with a scale of judgements to improve feedback for the trainee and training personnel.

Competency-based training and assessment. Training and assessment that are characterized by a performance orientation, emphasis on standards of performance and their measurement and the development of training to the specified performance standards.

Error. An action or inaction by the pilot that leads to deviations from organizational or pilot’s intentions or expectations.

Error management. The process of detecting and responding to errors with countermeasures that reduce or eliminate the consequences of errors and mitigate the probability of further errors or undesired aircraft states.

Evaluation. For the purpose of this manual, evaluation means the formal, summative assessment of an individual’s performance or the evaluation of the training system.

Evaluator. A person authorized to conduct the formal and final summative assessment of a trainee’s performance.

Evidence-based training (EBT). Training and assessment based on operational data that is characterized by developing and assessing the overall capability of a trainee across a range of competencies, defined in an adapted competency model, rather than by measuring the performance in individual events or maneuvers.

Facilitation technique. An active training method, which uses effective questioning, listening and a non-judgmental approach and is particularly effective in developing skills and attitudes, assisting trainees to develop insight and their own solutions and resulting in better understanding, retention and commitment.

Flight crew member. A licensed crew member charged with duties essential to the operation of an aircraft during a flight duty period.

Commander. The term ‘commander’ is used in this manual synonymously for both, pilot in command (PIC) and for commander. For the purpose of commercial air transport operations EASA terms the ‘pilot in command’ the ‘commander’.

Note: The term ‘co-pilot’ is used in this manual synonymously for First Officer, Second in Command or Co-pilot.

Instructor. A person authorized to provide practical training to a trainee or student for an aviation license, rating or endorsement.

Inter-rater reliability. Consistency or stability of scores between different instructors or evaluators. It gives a score of how much homogeneity, or consensus, there is in the ratings given by instructors or evaluators (raters).

Note: In the context of EBT implementation the EASA term ‘**Concordance**’ describes the consistency or stability of scores between different EBT instructors. It gives a score (s) of how much homogeneity, or consensus, there is in the ratings given by instructors (raters).

Line-oriented flight scenario. Training and assessment involving a realistic, “real time”, full mission simulation of scenarios that are representative of line operations.

Monitoring. A cognitive process to compare an actual to an expected state.

Note: *Monitoring is embedded in the ICAO competency framework, which serve as countermeasures in the threat and error management model.* It requires knowledge, skills and attitudes to create a mental model and to take appropriate action when deviations are recognized.

Pilot Flying (PF). The pilot whose primary task is to control and manage the flight path. The secondary tasks of the PF are to perform non-flight path related actions (radio communications, aircraft systems, other operational activities, etc.) and to monitor other crewmembers.

Pilot Monitoring (PM). The pilot whose primary task is to monitor the flight path and its management by the PF. The secondary tasks of the PM are to perform non-flight path related actions (radio communications, aircraft systems, other operational activities, etc.) and to monitor other crewmembers.

Scenario. Relatively independent segment of training made up of several events.

Threat. Events or errors that occur beyond the influence of the pilot, increase operational complexity and must be managed to maintain the margin of safety.

Threat management. The process of detecting and responding to threats with countermeasures that reduce or eliminate the consequences of threats and mitigate the probability of errors or undesired aircraft states.

Training event. Part of a training scenario that enables a set of competencies to be exercised.

Training objective. A clear statement that is comprised of three parts, i.e. the desired performance or what the trainee is expected to be able to do at the end of training (or at the end of particular stages of training), the performance standard that must be attained to confirm the trainee’s level of competence, and the conditions under which the trainee will demonstrate competence.

Unsafe situation. A situation, which has led to an unacceptable reduction in safety margin.

Section 1—Introduction

1.1 Scope of the manual

This manual is intended to provide guidance to Civil Aviation Authorities, Operators (AOCs) and Approved Training Organizations (ATOs) for the design of pilot development programs, with special emphasis on command training, the upgrading course from First Officer to Commander.

Whenever available, the manual integrates ICAO standards and other regulatory provisions, complemented by industry best practices. The content is not specific to one regulatory framework, it may be used by AOCs and ATOs in different regions of the world.

The terminology follows mostly the ICAO standards, differences between EASA and FAA terminology are clarified in the *Notes*.

Note: The term “commander” is used in this manual synonymously for both, pilot in command (PIC) and commander. (For the purpose of commercial air transport operations EASA terms the “pilot in command” the “commander”). ***Upgrading training to PIC or to commander in this manual is termed as “command training”.***

1.2 The concept

Available provisions from ICAO, EASA, FAA, JCAB, TCCA, and various publications from the aviation industry have been collected and compared to identify regulations and best practices, in order to develop useful guidance for command training.

This manual proposes Competency-Based Training and Assessment (CBTA) as the methodology to design state of the art pilot training, including command training. The application of CBTA principles to pilot training is already in force at the licensing level since the Multi-Crew Pilot License (MPL) was adopted by the ICAO Air Navigation Commission (ANC) in November 2006, and is also available as an alternative to traditional recurrent training since the endorsement of Doc 9995, Manual of Evidence-based Training (EBT), by ICAO Secretariat General in 2013.

In 2017, the ICAO Secretariat convened a globally represented, cross-disciplined, Competency-based Training and Assessment Task Force (CBTA-TF), composed of training subject matter experts, in order to align existing provisions to the new competency-based training and assessment methodology introduced with Amendment 5 to PANS-TRG.

The CBTA-TF reviewed existing provisions on Evidence-Based Training (EBT), Threat and Error Management (TEM), Upset Prevention and Recovery Training (UPRT) and Multi-Crew Pilot License (MPL). Moreover, the CBTA-TF proposed a competency set for pilot instructors and evaluators to consistently align it with CBTA.

The IATA Pilot Training Task Force (PTTF) members considered that the transition from “traditional-hour-based” training to CBTA was of upmost importance for the provision of a safe and efficient air transportation system.

As CBTA becomes the guiding principle for the training of pilots during their entire career (from aptitude testing, licensing training, type rating training, operator qualification/recurrent training to instructor and evaluator training), pilot development programs, such as command training, should consequentially further develop the pilot competencies to the level required for commanders.

1.3 Competencies

IATA recommends following the latest ICAO provisions for competency-based training and assessment. The structure of CBTA is based on one standardized competency framework to be applied consistently by all aviation disciplines (e.g., pilots, flight operations officers/dispatchers, air traffic management personnel, aircraft maintenance personnel).

The competency model used in this manual includes the pilot competencies and their description, as well as the performance criteria, consisting of the observable behaviours and the competency assessment (the organization’s final competency standards and conditions of assessment).

The table below shows the elements of the competency model.

Pilot competency (PC)	Description	Performance criteria	
		Observable behaviour (OB)	Competency assessment
PC 0	Description 1	OB 1	Final competency standard Conditions
		OB 2	
		OB n	
PC 1	Description 2	OB 1	
		OB 2	
		OB n	
...		OB 1	
		OB 2	
		OB n	
PC 8	Description 8	OB 1	
		OB 2	
		OB n	

AOCs and ATOs use two sets of competencies:

- **9 Pilot competencies** (8 Pilot competencies as proposed by ICAO and the competency “Application of Knowledge” (see Annex 3 for definition and OBs of this competency) as proposed by EASA for EBT), and
- **5 Instructor/Evaluator competencies** (5 Instructor/Evaluator competencies as proposed by ICAO)

The 9 pilot competencies (PC) are:

- PC 0 Application of Knowledge
- PC 1 Application of Procedures and Compliance with Regulations
- PC 2 Communication
- PC 3 Aeroplane Flight Path Management, automation
- PC 4 Aeroplane Flight Path Management, manual control
- PC 5 Leadership and Teamwork
- PC 6 Problem Solving and Decision Making
- PC 7 Situation Awareness and Management of Information
- PC 8 Workload Management

The 5 instructor/evaluator competencies (IEC) are:

- IEC 1 Pilot competencies (see above)
- IEC 2 Management of the Learning Environment
- IEC 3 Instruction
- IEC 4 Interaction with the trainees
- IEC 5 Assessment and Evaluation

Note: Detailed information can be obtained from the IATA / IFALPA Guidance Material for Instructor and Evaluator Training.

The competencies define the dimensions of pilot and instructor/evaluator performance that are used to reliably predict successful performance on the job. The CRM skills are embedded in the pilot competencies. (The Pilot competencies also define what has been formerly meant by airmanship or professionalism). The OBs of each competency describe the job-related behaviour that can be measured and/or observed.

The proposed competency sets will be subject to a periodic global evaluation process; until then IATA recommends to AOCs and ATOs not to deviate from the proposed sets of competencies. This means, not changing the competencies, their descriptions or observable behaviours (OBs); as deviations would complicate or even jeopardize global analysis of training and safety data and could possibly place an AOC or ATO outside the data collection community.

Note: The latest sets of ICAO Pilot competencies and Instructor/Evaluator competencies are provided in Appendix 3 to this manual.

There is consensus in the industry, that the scope of “work” of a commander is significantly wider compared to a co-pilot’s. However, there is only one single set of competencies for all pilots; there are no separate or additional competencies for commanders. A co-pilot upgraded to commander will continue to apply the same pilot competencies and OBs as during his co-pilot career. However, as the scope of work increases, certain behaviours will gain importance, consequentially requiring special emphasis during command training.

1.4 Threat and Error Management (TEM)

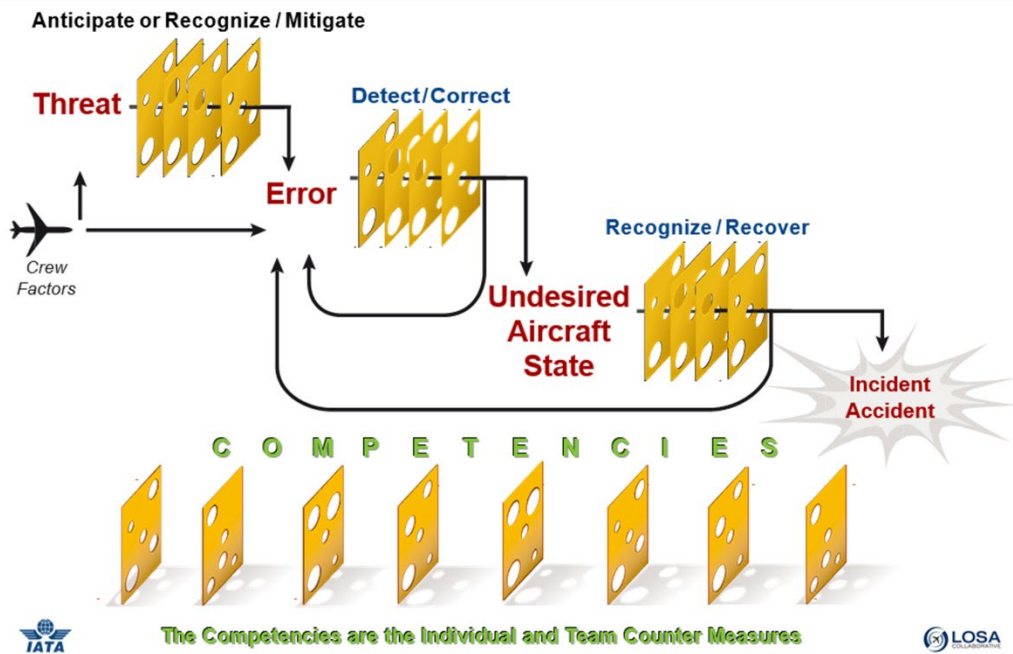
The industry and ICAO have developed a common understanding of the function of the pilot competencies in the TEM model. TEM is the overarching safety concept; the competencies of the approved adapted competency model provide the individual and team countermeasures against threats and errors to avoid undesired aircraft states. CRM skills are embedded in the competencies; CRM training supports the development of the competencies as countermeasures in the TEM concept¹. This shows that TEM, CBTA and CRM are directly connected, and all together form a consistent model.

Pilots use the competencies during operations to perform TEM and, vice versa, training designers use threats and errors in scenarios to train pilots in applying the appropriate competencies.

Anticipation, recognition and mitigation of threats, as well as detection and correction of errors contribute to the successful performance of the commander. He will use all the competencies as countermeasures against the “ever present rain of threats and errors”. Some of the competencies however (e.g., Situation Awareness and Management of Information, Leadership and Teamwork, etc.), are success critical for the commander’s role. Consequentially course designers should structure command training accordingly and place special emphasis on those competencies.

The figure below shows the current TEM model (“Yellow model”). It includes the competencies, which are the individual and team countermeasures against threats, errors and undesired aircraft states. This manual also uses the terminology of the TEM model, e.g., “detect and correct errors”.

¹ ICAO Ref.: *“ICAO Ref.: AN 12/59.1-18/77 of 29 August 2018, Proposals for the amendment of Annex 1 and the PANS-TRG consequential to Amendment 5 to the PANS-TRG”*.



Section 2— Regulatory Requirements

This Section and Appendix 1 address regulatory guidance, from several regulations, relevant to the pilot in command or commander.

A comparison between ICAO, EASA, FAA, JCAB and TCA has shown that, in general, regulators specify licensing and experience requirements as well as duties, tasks, maneuvers and topics to be included in ground and flight upgrading training. However, there is minimal guidance on how to:

- develop a flight crew member throughout his career from his first assignment as co-pilot until becoming pilot in command
- structure command training
- measure performance during command training

Note that, in order to shorten the body of this manual and to facilitate a comparison between the main regulatory systems, an overview of provisions from ICAO, EASA, FAA, JCAB and TCA relevant to pilot in command/commander is provided in Appendix 1 of this manual.

Section 3—The Role of the Commander

AOCs normally describe the role of the commander by specifying duties, responsibilities and accountabilities in the Operations Manual (OM), and national and international laws empower the commander to exercise his rights (authority) and provide the legal foundation for his work.

For the purpose of this manual, a comparison between several IATA member airlines' Operations Manuals has been made. This has permitted to demonstrate a high degree of commonality among the different OMs. The following section provides an overview.

3.1 Common topics in the Operations Manuals

The following sub-paragraphs list the most commonly stated topics for command training, which can be grouped into the following three areas:

- Duties, responsibilities, accountability and authority of the commander
- Leadership
- Problem solving and decision making

3.1.1 Duties, responsibilities, accountability and authority of the commander

To comply with the duties, responsibilities and accountabilities stated in the OM, the commander needs to be familiar with the legal implications of his role.

The OM will usually state that the commander:

- Shall comply with the laws, regulations and procedures of the States in which he operates, and which are pertinent to the performance of his duties.
- May delegate duties to qualified personnel but remains always responsible, e.g., the final decision for the quantity of fuel to be carried rests with him.
- Is responsible for ensuring compliance with Flight and Duty Time Limitations and Rest Requirements.
- Has the right to exclude persons and items (baggage and freight) from transportation. It is his duty to do so if the persons or items pose an obvious risk to the safety of the operations.

a) Legal aspects

General authority; the commander:

- Is the final authority as to the operation of the aeroplane. He is responsible for the safety of the aeroplane, its load and the persons on board from the moment he takes control of the aeroplane until the entire crew leaves the aeroplane.

- Represents his airline within the scope of his duties.

Nautical authority

- The commander has the final authority concerning the control of the aeroplane. He shall take all measures necessary to ensure safety during taxiing and from take-off until landing.

On board authority

- The commander shall take the appropriate measures to maintain safety and order on board the aeroplane. In this respect, all persons on board must follow his directions. The directions may, if necessary, be enforced by appropriate force. The commander may order or authorize other crew members to assist him; equally he may authorize passengers, but not order passengers, to assist him.

Emergency authority

- In emergencies requiring immediate decision making, the commander may take the measures he deems necessary under the given circumstances. In such cases, he may deviate from regulations, operational procedures and methods in the interest of safety.

b) Responsibilities

The commander is responsible for the following, but may not be limited to:

- Exercise Threat and Error Management to maintain margins of safety.
- Ensure that all crew members are in possession of their required documentation, for the cockpit crew this includes:
 - the qualifications for special operations, such as low visibility operations
 - aerodrome and route qualification
 - other required qualifications as stated in the Operations Manual
- Mandatory occurrence reporting.
- Flight and weather briefing. He checks the weather reports and evaluates the weather situation. Checks NOTAMs relevant to the planned flight.
- Cabin crew briefing.
- All SOPs and checklists are applied, unless a higher degree of safety dictates an appropriate deviation.
- The required documents are carried on board and remain valid throughout the flight.
- The required preflight inspection has been carried out.
- Assess the technical status of the aeroplane and decide whether or not to accept it.
- The flight is not commenced unless the usable fuel and required fluids are on board the aircraft and are sufficient.
- Take all reasonable steps to ensure that the aeroplane mass and balance is within the calculated limits for the operating conditions.

- The provisions for the transport of Dangerous Goods are complied with.
- Passenger briefing is performed before take-off.
- Adherence to noise abatement procedures.
- A safe, smooth and punctual conduct of the flight.
- Ensure that before take-off and before landing the flight and cabin crew are properly secured in their allocated seats.
- Ensure that whenever the aeroplane is taxiing, taking off or landing, or whenever he considers it advisable (e.g., in turbulent conditions), all passengers are properly secured in their seats, and all cabin baggage is stowed in the approved stowage.
- A debriefing is performed whenever needed.
- Report of all known or suspected defects in the aeroplane to the operator at the termination of the flight.
- The journey logbook or the general declaration is filled out.

3.1.2 Leadership

The leadership requirements are higher for commanders than for co-pilots.

The OM will usually state that:

- from the beginning to the end of a flight, or a series of flights, and the associated absence from the crew's principle place of duty, the commander is the responsible leader of the crew.

He will:

- ensure that the conduct of the entire crew is in accordance with the company policies and promote its reputation.
- report violations of crew against rules or regulations or his instructions. He will inform the crew member concerned about the intended report. In the interest of safety and order on board, the commander may relieve a crew member of his duty responsibilities and, if necessary, exclude the crew member from a flight.
- promote a good working atmosphere by encouraging open communication, team participation, constructive feedback and management of cultural challenges as applicable.

Specific to the cockpit crew, he:

- manages the work of the cockpit crew in accordance with the OM-A and designates the PF and PM.
- supports the development of the co-pilot by encouraging participation and active planning and execution of route legs, under his supervision. He should always be preparing first officers for upgrade. Explaining operational considerations, decision making factors, and lessons learned is an essential function of a captain.
- whenever necessary in the interest of safety, he shall personally take over the control of the aeroplane, or intervene in a timely manner to avoid deviations from the intended flight path; in particular, he shall act as PF,

whenever he deems a take-off, approach or landing very demanding (e.g., weather, crew member experience, demanding airport, non-normal operation, etc.).

- shall not permit any activity during critical phases of flight which could distract any crew member from the performance of his duties or interfere in any way with the proper conduct of those duties.
- shall not permit a flight data recorder to be disabled, switched off or erased during flight nor permit recorded data to be erased after flight in the event of an accident or an incident subject to mandatory reporting.
- shall not permit a cockpit voice recorder to be disabled or switched off during flight unless he believes that the recorded data, which otherwise would be erased automatically, should be preserved for incident or accident investigation, nor permit recorded data to be manually erased during or after flight in the event of an accident or incident subject to mandatory reporting.

Note: Operators under FAA regulations must additionally ensure that commanders comply with the specific regulations related to professionalism and mentoring.

3.1.3 Decision making and safety

The OM will usually state that:

- the commander shall apply the procedure as described in the Operations Manual (e.g., the FORDEC model)² to make decisions.
- when several options are available, he shall always prioritize safety and thereafter consider passenger comfort, economy and punctuality.

3.2 Integration of OM topics and CBTA

The following table illustrates how the OM's topics (3.1 above) are related to the pilot competencies framework.

The individual topics may be reviewed, optimized and redistributed by the ATO/AOC; however, the table shows that CBTA can accommodate the role of the commander as it is presently described by ATOs and AOCs.

² FORDEC is one example of a decision-making tool

Table pilot competencies and OM topics

Competency and description	Observable behaviours	Topics from the comparison of Operation Manuals
<p>Application of procedures and compliance with regulations</p> <p>Identifies and applies appropriate procedures in accordance with published operating instructions and applicable regulations.</p>	<p>OB 1.1 Identifies where to find procedures and regulations</p> <p>OB 1.2 Applies relevant operating instructions, procedures and techniques in a timely manner</p> <p>OB 1.3 Follows SOPs unless a higher degree of safety dictates an appropriate deviation</p> <p>OB 1.4 Operates aeroplane systems and associated equipment correctly</p> <p>OB 1.5 Monitors aircraft systems status</p> <p>OB 1.6 Complies with applicable regulations</p> <p>OB 1.7 Applies relevant procedural knowledge</p>	<p>3.1.1</p> <p>Duties, responsibilities, accountability and authority of the commander</p> <p>Legal aspects</p> <p>Responsibilities</p>
<p>Leadership and Teamwork</p> <p>Influences others to contribute to a shared purpose.</p> <p>Collaborates to accomplish the goals of the team.</p>	<p>OB 5.1 Encourages team participation and open communication</p> <p>OB 5.2 Demonstrates initiative and provides direction when required</p> <p>OB 5.3 Engages others in planning</p> <p>OB 5.4 Considers inputs from others</p> <p>OB 5.5 Gives and receives feedback constructively</p> <p>OB 5.6 Addresses and resolves conflicts and disagreements in a constructive manner</p> <p>OB 5.7 Exercises decisive leadership when required</p> <p>OB 5.8 Accepts responsibility for decisions and actions</p> <p>OB 5.9 Carries out instructions when directed</p> <p>OB 5.10 Applies effective intervention strategies to resolve identified deviations</p> <p>OB 5.11 Manages cultural and language challenges, as applicable</p>	<p>3.1.2</p> <p>Leadership</p>
<p>Problem Solving and Decision Making</p> <p>Identifies precursors, mitigates problems; and makes decisions.</p>	<p>OB 6.1 Identifies, assesses and manages threats and errors in a timely manner</p> <p>OB 6.2 Seeks accurate and adequate information from appropriate sources</p> <p>OB 6.3 Identifies and verifies what and why things have gone wrong, if appropriate</p> <p>OB 6.4 Perseveres in working through problems while prioritizing safety</p> <p>OB 6.5 Identifies and considers appropriate options</p>	<p>3.1.3</p> <p>Decision Making and Safety</p>

	<p>OB 6.6 Applies appropriate and timely decision-making techniques</p> <p>OB 6.7 Monitors, reviews and adapts decisions as required</p> <p>OB 6.8 Adapts when faced with situations where no guidance or procedure exists</p> <p>OB 6.9 Demonstrates resilience when encountering an unexpected event</p>	
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Section 4—Aptitude Testing

The purpose of aptitude testing is to predict future performance on the job. Aptitude testing of candidates comprises two elements, *screening* and *selection*.

Screening eliminates those candidates who do not meet predefined requirements of the organization. Most AOCs/ATOs use formal data, such as affiliation time with the company, seniority, flying hours and personal record to initially screen the applicants for the command training.

Selection refers to the testing of those who meet the screening requirements. This may require specific diagnostics, such as operational abilities, personality traits and social and inter-personal abilities. Interviews and group exercises are often utilized in this phase.

Developing, implementing and running an aptitude testing system should be facilitated from the very beginning in close cooperation among the departments involved (operations, training, human resources and testing agency/consultant if applicable). Ideally, this team will consist of a combination of psychological, methodical, statistical and flight operation expertise. It will develop the “test battery” and ensure reliability, validity and periodic evaluation of the aptitude testing system.

If, for some reason, candidates have been tested but cannot begin command training, a decision must be taken as to how long positive or negative test results remain valid.

Note: The IATA Guidance Material and Best Practices for Pilot Aptitude Testing is available for further reference on our website at iata.org/pilot-training-licensing.

Some AOCs with strong ab-initio cultures and substantial historic aptitude testing data can prove that the success rate in command training can be predicted in the initial Pilot Aptitude Testing (PAT) of the ab-initio candidate; they have included specific command aptitude diagnosis in their PAT system. Consequentially, except for the formal screening for command training they do not perform further selection testing.

Other operators have implemented screening and multi-stage selection procedures, for example:

- Command Suitability Assessment (CSA)

The CSA program of this operator assesses if a First Officer meets the required company standard to commence command training. It follows the principles of CBTA and its clearly defined OBs. CSA contains a screening and a selection part.

Screening:

- a) a minimum time spent in the company as First Officer,
- b) a minimum number of total sectors, including a minimum number of sectors flown as PF and acting as pilot in command under supervision of the captain, and

- c) completion of the two modules A and B, of a command development program which consist of flights, LOEs and online learning modules covering both, technical and non-technical topics. The program is delivered to First Officers after their 4th (A) and 7th (B) year in the company, the technical parts of the online learning module must be passed with a defined score.

Selection:

- a) A minimum of 6 Flights and 2 Line Oriented Evaluations (LOEs)

At completion of the CSA program, candidates are rated as either “Meet Requirements” or “Need Further Development”. Candidates who “Meet Requirements” are eligible for command training.

- Commander Candidate Assessment

This operator collects personalized data through a line operation feedback system. Those data are used for an initial assessment of the First Officer’s procedural compliance, professionalism and level of flight discipline. The final selection process is composed of an assessment during a simulator session and a competency-based interview.

- Evaluation Stage of the Management Training for Pilots

This operator uses the final stage of a development program for First Officers (Management Training for Pilots) to select applicants for command training. The selection consists of a written OM-A examination and two evaluation flights in the simulator where the candidate is required to perform according to the defined competency standards of the company.

- Evaluation Stage of the Road to Command

At the end of the various training stages of the command development program, the candidates enter the evaluation stage. During this procedure they are required to demonstrate the defined company standard in the following selection stages: Management Evaluation Flight, Psychometric, Pre-Command Operational Knowledge and an Interview. Further details can be found in Appendix 2 of this manual.

Section 5—Competency-Based Training to Command

5.1 Concept

This manual describes a competency-based approach to command training. Following the ICAO ADDIE³ model a program for command training should include the five following components and related outputs:

No.	Component	Output
1	Analysis of the training need	Training specification
2	Design of the competency model including performance criteria	a) Competency model b) Assessment and training plans
3	Development of the training and assessment materials	Training materials, assessments, examinations
4	Conduct of the course	Competent commanders
5	Evaluation of the course including the assessment and training plans	Course report

The purpose of the training program is to train and assess all pilot competencies in order to enable the future commander to perform his duties as required and described in the documentation of the AOC/ATO.

5.2 Preparing the command training program

The first step (No. 1 above) of the ADDIE model is to thoroughly analyze the training need resulting in a training specification. The resulting training specification should provide answers to questions regarding the purpose of the training, the tasks associated with the purpose, the operational environment, the technical, regulatory and organizational requirements.

For command training these questions can be answered by referring to the existing documentation of the AOC/ATO.

Output a) to No.2 requires the design of the competency model, including the *performance criteria* (the competency *standards* and *conditions*). For the command training it is assumed that the competency model of the AOC/ATO is already in place, and that the commander will apply the same competencies he applied as a co-pilot.

³ ICA Ref.: AN 12/48-16/35, „Analyse, design, develop, implement and evaluate (ADDIE)“

Standards: The final competency standard can normally be retained from the existing recurrent training and assessment scheme. Most AOCs/ATOs use a uniform final competency standard for commanders and co-pilots; they do not distinguish between commanders and co-pilots in their grading systems. However, a commander must meet the final competency standard within his wider scope of work, in comparison to the co-pilot.

Note: Transport Canada requires the commander to perform to a higher standard than the co-pilot.

Conditions: The conditions under which the competencies of the trainees will be assessed (nature and complexity of the operational and environmental context; tools and systems/equipment) comprise the given operating environment of the AOC/ATO.

Development of the assessment and training plans (Output b) to No. 2), and the training materials (No. 3) is based on the training specification, which will include any special emphasis of the program.

5.2.1 Special emphasis

The future commander needs to be trained and assessed in all 9 pilot competencies to the organization's final competency standard. However, the course will put special emphasis on those competencies that are success critical for a commander; because they are related to his additional scope of work.

An analysis of the pilot competencies and the Observable Behaviours relevant for the commander showed that the majority of behaviours that are critical for the commander belong to the following three competencies:

- Leadership and Teamwork
- Problem Solving and Decision Making
- Workload Management

Consequentially this manual suggests putting special emphasis on those three competencies.

However, all other competencies remain important and contain OBs relevant for command training. Based on the nature of the operation, company culture and other factors, each organization may determine its individual training focus.

The table below shows all pilot competencies (PCs) to be trained and assessed (TA) during command training and those requiring special emphasis "**TA-SE**".

Pilot competencies to be trained during command training		
PC 0	Application of knowledge	TA
PC 1	Application of procedures and compliance with regulations	TA
PC 2	Communication	TA
PC 3	Aeroplane Flight Path Management, automation	TA
PC 4	Aeroplane Flight Path Management, manual control	TA
PC 5	Leadership and Teamwork	TA-SE
PC 6	Problem Solving and Decision Making	TA-SE
PC 7	Situation awareness and management of information	TA
PC 8	Workload Management	TA-SE

Once the training specification and the design of the competency model, including the performance criteria, are completed, the remaining steps are:

- prepare the assessment and training plans, develop the training materials, and
- prepare the course evaluation.

Section 6—Sample Command Training

6.1 Assessment and training plans, training materials

The following table shows one example to structure assessment and training plans.

Step	Modules	Training content	Assessment	
			Formative assessment	Summative assessment /evaluation
1	Aptitude testing (if applicable)			Decision and feedback
2	Invitation for command training			
3	Ground training and Flight training in FSTDs	Foundational training in preparation for line training under supervision <ul style="list-style-type: none"> • Principles of CBTA • CRM (as part of the PCs) • OM training • Mentoring* • Operational training in various levels of FSTDs 	Verbal and/or written feedback after all exercises	Formal written feedback at milestones
5	Proficiency check			Operator prof. check and licensing skill test if required
6	Line flying under supervision	Line flying as commander under supervision	Continuous Verbal and/or written feedback	
7	Line check as commander			Evaluation /Line check
8	Certificate as commander of the organization			

* Mentoring training is required under the FAA

6.2 Developing ground and flight training

During ground and flight training all 9 pilot competencies are trained and assessed (**TA**) to prepare the future commander for his role; special emphasis (**TA-SE**) is put on:

- Leadership and Teamwork
- Problem Solving and Decision Making
- Workload Management

The description and the observable behaviours of the respective competency can be used to define the training objectives; content and training materials are then developed to meet the training objectives.

6.2.1 Developing training objectives, content and materials

To train a certain competency the ATO/AOC may use the following methodology:

- a) Identify the OBs that are of critical importance for the commander
- b) Use the identified OBs to define training objectives
- c) Identify source material, e.g., documentation of the organization and from regulations, describing or stipulating the desired behaviour
- d) Develop suitable training content and materials

As an example, many organizations use innovative ways to train *Leadership and Teamwork*. One operator offers a three-day outdoor adventure in the outback of the country. In small teams the applicants solve numerous challenging tasks requiring Leadership and Teamwork. The exercises have been designed with scientific advice and the teams are coached by competent instructors.

One of the exercises is based on:

OB 5.2, "*Demonstrates initiative and provides direction when required*"

another exercise aims at:

OB 5.6, "*Addresses and resolves conflicts and disagreements in a constructive manner*"

another one provides a scenario suitable to address:

OB 5.8, "*Accepts responsibility for decisions and actions*"

Applying the methodology of using the description of a competency and its detailed OBs as a starting point to formulate the training objectives enables course designers to easily develop appropriate training content and chose suitable materials.

The following tables show how this methodology can be applied to all competencies. The first three tables show the methodology applied as a flow pattern from left to right to the TA-SE competencies. The TA competencies are addressed thereafter.

Within the competency, those OBs that have been identified by an expert group as critical for the commander are highlighted in **bold letters**. Each table contains suggestions for training tasks, events and scenarios, as well as a suitable training media. Course designers are encouraged to build their own set of tasks, events and scenarios using, as an example, the following sources:

- Operations manual
- Existing training programs, e.g., AQP or EBT
- Guidance material from the regulator and the industry
- Feedback from the training department (“inner loop”)
- Feedback from the “outer loop”, AOC safety department, international safety data

To maintain the validity of the content, the tables should be adapted and periodically updated based on the operational needs of the AOC/ATO and international safety evidence.

Leadership and Teamwork					
Competency (and description)	Observable behaviours (OB)	Source	Training content, events and materials	Competency assessment	
				Final Competency standard	Conditions
Leadership and Teamwork (Influences others to contribute to a shared purpose Collaborates to accomplish the goals of the team)	OB 5.1 Encourages team participation and open communication OB 5.2 Demonstrates initiative and provides direction when required OB 5.3 Engages others in planning OB 5.4 Considers inputs from others OB 5.5 Gives and receives feedback constructively OB 5.6 Addresses and resolves conflicts and disagreements in a constructive manner OB 5.7 Exercises decisive leadership when required OB 5.8 Accepts responsibility for decisions and actions	<ul style="list-style-type: none"> • CRM • OM-A • AOC/ATO guidance material 	Instruction Case studies Videos Role plays FSTDs Line training	Evaluation in accordance to the AOC/ATO defined final competency standard for commanders	<u>Context:</u> Complexity and presentation of the operational context is gradually increased during the course <u>Equipment:</u> Progression from classroom, distance learning, computer-based training to various levels of FSTDs <u>Level of Support by instructor/evaluator:</u> Adaptation of instructional methods (i.e. from instruction to facilitation), gradual decrease of support along the course. No support for evaluation.
	OB 5.9 Carries out instructions when directed OB 5.10 Applies effective intervention strategies to resolve identified deviations OB 5.11 Manages cultural and language challenges, as applicable				

Problem Solving and Decision Making					
Competency (and description)	Observable behaviours (OBs)	Source	Training content, events and materials	Competency assessment	
				Final Competency standard	Conditions
Problem Solving and Decision Making (Identifies precursors, mitigates problems; and makes decisions)	OB 6.1 Identifies, assesses and manages threats and errors in a timely manner OB 6.2 Seeks accurate and adequate information from appropriate sources			Evaluation in accordance to the AOC/ATO defined final competency standard for commanders	<u>Context:</u> Complexity and presentation of the operational context is gradually increased during the course <u>Equipment:</u> Progression from classroom, distance learning, computer-based training to various levels of FSTDs <u>Level of Support by instructor/evaluator:</u> Adaptation of instructional methods (i.e. from instruction to facilitation), gradual decrease of support along the course. No support for evaluation.
	OB 6.3 Identifies and verifies what and why things have gone wrong, if appropriate OB 6.4 Perseveres in working through problems while prioritizing safety OB 6.5 Identifies and considers appropriate options OB 6.6 Applies appropriate and timely decision-making techniques OB 6.7 Monitors, reviews and adapts decisions as required	<ul style="list-style-type: none"> • OM A/B • Decision making models of the AOC/ATO 	Instruction Case studies Videos Role plays FSTDs Line training		
	OB 6.8 Adapts when faced with situations where no guidance or procedure exists OB 6.9 Demonstrates resilience when encountering an unexpected event				

Workload Management					
Competency (and description)	Observable behaviours (OBs)	Source	Training content, events and materials	Competency assessment	
				Final Competency standard	Conditions
Workload Management (Maintains available workload capacity by prioritizing and distributing tasks using appropriate resources)	OB 8.1 Exercises self-control in all situations OB 8.2 Plans, prioritizes and schedules appropriate tasks effectively				<u>Context:</u> Complexity and presentation of the operational context is gradually increased during the course <u>Equipment:</u> Progression from classroom, distance learning, computer-based training to various levels of FSTDs <u>Level of Support by instructor/evaluator:</u> Adaptation of instructional methods (i.e. from instruction to facilitation), gradual decrease of support along the course. No support for evaluation.
	OB 8.3 Manages time efficiently when carrying out tasks OB 8.4 Offers and gives assistance OB 8.5 Delegates tasks OB 8.6 Seeks and accepts assistance, when appropriate OB 8.7 Monitors, reviews and cross-checks actions conscientiously OB 8.8 Verifies that tasks are completed to the expected outcome	<ul style="list-style-type: none"> • OM A/B • Guidance material of the AOC/ATO 	Instruction Case studies Videos Role plays FSTDs Line training	Evaluation in accordance to the AOC/ATO defined final competency standard for commanders	
	OB 8.9 Manages and recovers from interruptions, distractions, variations and failures effectively while performing tasks				

Application of Knowledge

There is no specific distinction in behaviour between co-pilots and commanders regarding the competency Application of Knowledge. Application of Knowledge will be refined to the final competency standard of the AOC during all events in the course.

Instructors in each phase, especially during FSTD and line flying under supervision, observe, assess and provide feedback regarding the performance to the trainees.

Evaluation takes place during the operator proficiency check / licensing skill test and line check.

Application of Procedures and Compliance with Regulations

While both, the co-pilot and the commander are expected to apply appropriate procedures in accordance with published operating instructions and applicable regulations, certain OBs contain aspects especially relevant during command training:

- OB 1.1 Identifies where to find procedures and regulations
- OB 1.2 Applies relevant operating instructions, procedures and techniques in a timely manner
- OB 1.3 Follows SOPs unless a higher degree of safety dictates an appropriate deviation
- OB 1.6 Complies with applicable regulations
- OB 1.7 Applies relevant procedural knowledge

Evaluation takes place during the operator proficiency check / licensing skill test and line check.

Aeroplane Flight Path Management, automation and Aeroplane Flight Path Management, manual control

There is no specific distinction in behaviour between co-pilots and commanders with regards to Aeroplane Flight Path Management. The two competencies will be refined to the final competency standard of the AOC during all events in the course.

Nevertheless, the trainee needs to adapt to flying and controlling the aircraft in the left-hand seat. Related training will take place in the FFS and during line training. During FSTD and line training, the instructor observes, assesses and provides feedback regarding the performance to the trainees.

Evaluation takes place during the operator proficiency check / licensing skill test and line check.

Communication

Communication, through appropriate means, in the operational environment, in both normal and non-normal situations, applies to both, the commander and the co-pilot. However, two OBs may be especially relevant for command training:

OB 2.2 Selects appropriately what, when, how and with whom to communicate, and

OB 2.7 Uses appropriate escalation in communication to resolve identified deviations

Evaluation takes place during the operator proficiency check / licensing skill test and line check.

Situation Awareness and Management of Information

Most observable behaviours of this competency are equally important for co-pilots and commanders. Some OBs, however, require to be focused on during command training, since they are directly related to the duties and responsibilities of the commander:

OB 7.3 Monitors and assesses the general environment as it may affect the operation

OB 7.5 Maintains awareness of the people involved in or affected by the operation and their capacity to perform as expected

OB 7.6 Develops effective contingency plans based upon potential risks associated with threats and errors

Related training should be provided in several phases of the command training.

Instructors, especially during FSTD and line training, observe, assess and provide feedback regarding their performance to the trainees.

Evaluation takes place during the operator proficiency check / licensing skill test and line check.

6.3 Assessment plan

In the assessment plan the course designer will specify how performance is assessed during command training. This may include, but is not limited to:

- A list of formative and summative assessments
- When assessments should take place (e.g., at milestones)
- Specification of interim and final competency standards
- Tools used to collect evidence during assessment

6.4 Line flying as commander under supervision, line check

During line flying under supervision all pilot competencies are trained and continuously assessed in accordance with the existing competency standard of the AOC/ATO.

The line check as a commander concludes the command training.

6.5 Evaluation of the command training

Evaluation of the command training should be performed at regular intervals. It is a part of the overall training system performance of the AOC/ATO.

“At the end of a period of training, feedback on performance on the job from trainees, instructors, assessors and employers is gathered to determine the effectiveness of the course in supporting the progression of learning towards competence in the workplace. Evaluation of the training and assessment plans should be based on valid and reliable evidence. This evaluation may lead to changes or improvements being made to the course”.⁴

⁴ ICAO Ref.: AN 12/48-16/35 9 September 2016

Section 7—Pilot Development Programs

Today AOCs take various approaches to prepare First Officers throughout their career for the upgrade to commander. An evaluation of existing pilot development programs in various regions of the world showed that some airlines have only minimal events in place, while others have implemented highly advanced programs.

This big spread is mainly related to the AOCs recruitment systems. In some regions of the world, carriers used to employ only experienced First Officers, many of them already with previous command experience in civil or military aviation; in other regions carriers build on ab-Initio systems to recruit their FOs. Consequentially the level and type of experience within the AOCs' FO population differs substantially and influences the FO development programs.

Since the demand for both, commanders and first officers, is increasing with the rapid growth in aviation, recruitment of FOs with high experience or even with previous command experience has come to a limit and the number of available applicants is declining.

Therefore, carriers will have to recruit an increasing number of less experienced personnel; hence the need and importance to develop programs to prepare FOs for their future role as commander will increase.

The FAA has reacted with proposed rulemaking and additional guidance for air carrier training, to include mentoring as well as enhancements to upgrade training, e.g., to include leadership and command training.

The evaluation of existing development programs also showed that their structure and content vary considerably. Since all AOCs showed similar success rates during upgrade training, it is not possible to recommend one specific program over the others.

Some AOCs base their development steps on flight hours collected during the time within the airline, whereas others assign training to their FOs based on years of experience within the company.

AOCs involve different departments as process owners (flight operations, training, human resources) to setup, develop and maintain the program, including the objectives, content and amount of training and checking.

Almost every program leads to a point where the FO has to pass a written examination on company rules and regulations as, for example, contained in the OM-A. Some AOCs test their candidates in the FFS. Here the FO should demonstrate appropriate behaviour, either in the pilot competencies or in similar performance dimensions defined by the AOC.

What is common in all existing programs is that to develop the following topics, a major part is delivered as ground training:

- Management skills
- CRM skills⁵

⁵ In CBTA the CRM-skills are embedded in the pilot competencies



- Pilot competencies of special emphasis for commanders
- Compliance with rules and regulations

A smaller part of the training program is delivered in the FFS, emphasizing Application of Procedures, Compliance with Regulations and Leadership and Teamwork.

Additionally, some AOCs offer work experience days in different departments within the company, such as dispatch or operations control center, as well as with third-party service providers related to the flight operations, such as ATC, airport services, etc.

Appendix 2 shows four examples of existing development programs that were analyzed.

Appendices

Appendix 1— Regulations

To enable training managers to compare various existing regulatory systems, Appendix 1 provides an overview of provisions from ICAO, EASA, FAA, JCAB and TCA relevant to upgrading training.

1. ICAO

ICAO Annex 1 - Personnel Licensing

Definitions:

Pilot-in-command. The pilot designated by the operator, or in the case of general aviation, the owner, as being in command and charged with the safe conduct of a flight.

Pilot-in-command under supervision. Co-pilot performing, under the supervision of the pilot-in-command, the duties and functions of a pilot-in-command, in accordance with a method of supervision acceptable to the Licensing Authority.

ATPL

2.6.2 Privileges of the holder of the licence and the conditions to be observed in exercising such privileges

2.6.2.1 Subject to compliance with the requirements specified in ...the privileges of the holder of an airline transport pilot licence shall be:

- a) to exercise all the privileges of the holder of a private and commercial pilot licence in an aircraft within the appropriate aircraft category and, in the case of a licence for the aeroplane and powered-lift categories, of the instrument rating; and
- b) to act as pilot-in-command, in commercial air transportation, of an aircraft within the appropriate category and certificated for operation with more than one pilot.

2.6.2.2 When the holder of an airline transport pilot licence in the aeroplane category has previously held only a multi-crew pilot licence, the privileges of the licence shall be limited to multi-crew operations unless the holder has met the requirements established in ... as appropriate. Any limitation of privileges shall be endorsed on the licence.

Note: Certain privileges of the licence are curtailed by 2.1.10 for licence holders when they attain their 60th and 65th birthdays.

2.6.3 Specific requirements for the issue of the aeroplane category rating

2.6.3.1 Experience

2.6.3.1.1 The applicant shall have completed not less than 1500 hours of flight time as a pilot of aeroplanes. The Licensing Authority shall determine whether experience as a pilot under instruction in a flight simulation training device is acceptable as part of the total flight time of 1500 hours. Credit for such experience shall be limited to a maximum of 100 hours, of which not more than 25 hours shall have been acquired in a flight procedure trainer or a basic instrument flight trainer.

2.6.3.1.1.1 The applicant shall have completed in aeroplanes not less than:

- a) 500 hours as pilot-in-command under supervision or 250 hours, either as pilot-in-command, or made up by not less than 70 hours as pilot-in-command and the necessary additional flight time as pilot-in-command under supervision;
- b) 200 hours of cross-country flight time, of which not less than 100 hours shall be as pilot-in-command or as pilot-in-command under supervision;
- c) 75 hours of instrument time, of which not more than 30 hours may be instrument ground time; and
- d) 100 hours of night flight as pilot-in-command or as co-pilot.

2.6.3.1.2 When the applicant has flight time as a pilot of aircraft in other categories, the Licensing Authority shall determine whether such experience is acceptable and, if so, the extent to which the flight time requirements of 2.6.3.1.1 can be reduced accordingly.

ICAO Annex 6 - Operation of Aircraft

Definitions:

Crew member. A person assigned by an operator to duty on an aircraft during a flight duty period.

Pilot-in-command. The pilot designated by the operator, or in the case of general aviation, the owner, as being in command and charged with the safe conduct of a flight.

4.2.11 Crew

4.2.11.1 *Pilot-in-command.* For each flight, the operator shall designate one pilot to act as pilot-in-command.

4.5 Duties of pilot-in-command

4.5.1 The pilot-in-command shall be responsible for the safety of all crew members, passengers and cargo on board when the doors are closed. The pilot-in-command shall also be responsible for the operation and safety of the aeroplane from the moment the aeroplane is ready to move for the purpose of taking off until the moment it finally comes to rest at the end of the flight and the engine(s) used as primary propulsion units are shut down.

- 4.5.2 The pilot-in-command shall ensure that the checklists specified in ... are complied with in detail.
- 4.5.3 The pilot-in-command shall be responsible for notifying the nearest appropriate authority by the quickest available means of any accident involving the aeroplane, resulting in serious injury or death of any person or substantial damage to the aeroplane or property.
- 4.5.4 The pilot-in-command shall be responsible for reporting all known or suspected defects in the aeroplane, to the operator, at the termination of the flight.
- 4.5.5 The pilot-in-command shall be responsible for the journey log book or the general declaration containing the information listed in 11.4.1.
- 9.4.1 Recent experience - pilot-in-command and co-pilot
- 9.4.1.1 The operator shall not assign a pilot-in-command or a co-pilot to operate at the flight controls of a type or variant of a type of aeroplane during take-off and landing unless that pilot has operated the flight controls during at least three take-offs and landings within the preceding 90 days on the same type of aeroplane or in a flight simulator approved for the purpose.
- 9.4.1.2 When a pilot-in-command or a co-pilot is flying several variants of the same type of aeroplane or different types of aeroplanes with similar characteristics in terms of operating procedures, systems and handling, the State shall decide under which conditions the requirements of 9.4.1.1 for each variant or each type of aeroplane can be combined.
- 9.4.3 Pilot-in-command area, route and aerodrome qualification
- 9.4.3.1 The operator shall not utilize a pilot as pilot-in-command of an aeroplane on a route or route segment for which that pilot is not currently qualified until such pilot has complied with 9.4.3.2 and 9.4.3.3.
- 9.4.3.2 Each such pilot shall demonstrate to the operator an adequate knowledge of:
- a) the route to be flown, and the aerodromes which are to be used. This shall include knowledge of:
 1. the terrain and minimum safe altitudes;
 2. the seasonal meteorological conditions;
 3. the meteorological, communication and air traffic facilities, services and procedures;
 4. the search and rescue procedures; and
 5. the navigational facilities and procedures, including any long-range navigation procedures, associated with the route along which the flight is to take place; and
 - b) procedures applicable to flight paths over heavily populated areas and areas of high air traffic density, obstructions, physical layout, lighting, approach aids and arrival, departure, holding and instrument approach procedures, and applicable operating minima.

Note. That portion of the demonstration relating to arrival, departure, holding and instrument approach procedures may be accomplished in an appropriate training device which is adequate for this purpose.

- 9.4.3.3 A pilot-in-command shall have made an actual approach into each aerodrome of landing on the route, accompanied by a pilot who is qualified for the aerodrome, as a member of the flight crew or as an observer on the flight deck, unless:
- a) the approach to the aerodrome is not over difficult terrain and the instrument approach procedures and aids available are similar to those with which the pilot is familiar, and a margin to be approved by the State of the Operator is added to the normal operating minima, or there is reasonable certainty that approach and landing can be made in visual meteorological conditions; or
 - b) the descent from the initial approach altitude can be made by day in visual meteorological conditions; or
 - c) the operator qualifies the pilot-in-command to land at the aerodrome concerned by means of an adequate pictorial presentation; or
 - d) the aerodrome concerned is adjacent to another aerodrome at which the pilot-in-command is currently qualified to land.
- 9.4.3.4 The operator shall maintain a record, sufficient to satisfy the State of the Operator of the qualification of the pilot and of the manner in which such qualification has been achieved.
- 9.4.3.5 The operator shall not continue to utilize a pilot as a pilot-in-command on a route or within an area specified by the operator and approved by the State of the Operator unless, within the preceding 12 months, that pilot has made at least one trip as a pilot member of the flight crew, or as a check pilot, or as an observer in the flight crew compartment:
- a) within that specified area; and
 - b) if appropriate, on any route where procedures associated with that route or with any aerodromes intended to be used for take-off or landing require the application of special skills or knowledge.
- 9.4.3.6 In the event that more than 12 months elapse in which a pilot-in-command has not made such a trip on a route in close proximity and over similar terrain, within such a specified area, route or aerodrome, and has not practiced such procedures in a training device which is adequate for this purpose, prior to again serving as a pilot-in-command within that area or on that route, that pilot must requalify in accordance with

2. EASA

Commission Regulation EU 1178/2011 (Civil aviation aircrew) – Annex I (Part FCL)

Definitions:

Pilot-in-command (PIC) means the pilot designated as being in command and charged with the safe conduct of the flight.

Pilot-in-command under supervision (PICUS) means a co-pilot performing, under the supervision of the pilot-in-command, the duties and functions of a pilot-in-command.

FCL.505 ATPL — Privileges

- a) The privileges of the holder of an ATPL are, within the appropriate aircraft category, to:
 - 1. exercise all the privileges of the holder of an LAPL, a PPL and a CPL;
 - 2. act as PIC of aircraft engaged in commercial air transport.
- b) Applicants for the issue of an ATPL shall have fulfilled the requirements for the type rating of the aircraft used in the skill test.

FCL.520.A ATPL(A) — Skill test

Applicants for an ATPL(A) shall pass a skill test in accordance with Appendix 9 to this Part to demonstrate the ability to perform, as PIC of a multi-pilot aeroplane under IFR, the relevant procedures and manoeuvres with the competency appropriate to the privileges granted.

The skill test shall be taken in the aeroplane or an adequately qualified FFS representing the same type.

Commission Regulation (EU) No 965/2012 (Air operations) – Annex III (Part ORO)

ORO.FC.105 Designation as pilot-in-command/commander

- a) In accordance with 8.e of Annex IV to Regulation (EC) No 216/2008, one pilot amongst the flight crew, qualified as pilot-in-command in accordance with Annex I (Part-FCL) to Regulation (EU) No 1178/2011, shall be designated by the operator as pilot-in-command or, for commercial air transport operations, as commander.
- b) The operator shall only designate a flight crew member to act as pilot-in-command/commander

if he/she has:

- 1. the minimum level of experience specified in the operations manual;
- 2. adequate knowledge of the route or area to be flown and of the aerodromes, including alternate aerodromes, facilities and procedures to be used;
- 3. in the case of multi-crew operations, completed an operator's command course if upgrading from co-pilot to pilot-in-command/commander.

ORO.FC.205 Command course

- a) For aeroplane and helicopter operations, the command course shall include at least the following elements:
 - 1. training in an FSTD, which includes line-oriented flight training (LOFT) and/or flight training;
 - 2. the operator proficiency check, operating as commander;
 - 3. command responsibilities training;
 - 4. line training as commander under supervision, for a minimum of:

- (i) 10 flight sectors, in the case of aeroplanes; and
 - (ii) 10 hours, including at least 10 flight sectors, in the case of helicopters;
5. completion of a line check as commander and demonstration of adequate knowledge of the route or area to be flown and of the aerodromes, including alternate aerodromes, facilities and procedures to be used; and
6. crew resource management training.

GM1 ORO.FC.220(d) Operator conversion training and checking

LINE FLYING UNDER SUPERVISION

...

The following minimum figures for details to be flown under supervision are guidelines for operators to use when establishing their individual requirements:

1. turbo-jet aircraft
 - (i) co-pilot undertaking first operator conversion course:
 - a) total accumulated 100 hours or minimum 40 flight sectors;
 - (ii) co-pilot upgrading to commander:
 - a) minimum 20 flight sectors when converting to a new type;
 - b) minimum 10 flight sectors when already qualified on the aeroplane type.

3. FAA

14CFR Part 121

§121.385 Composition of flight crew.

...

- c) The minimum pilot crew is two pilots and the certificate holder shall designate one pilot as pilot in command and the other second in command.

§121.400 Applicability and terms used.

...

- d) Upgrade training. The training required for crewmembers who have qualified and served as second in command or flight engineer on a particular airplane type, before they serve as pilot in command or second in command, respectively, on that airplane.

§121.415 Crewmember and dispatcher training program requirements.

...

- e) Upgrade training as specified in §§121.419 and 121.424 for a particular type airplane may be included in the training program for crewmembers who have qualified and served as second in command pilot or flight engineer on that airplane.

§121.419 Pilots and flight engineers: Initial, transition, and upgrade ground training.

- a) Except as provided in paragraph (b) of this section, initial, transition, and upgrade ground training for pilots and flight engineers must include instruction in at least the following as applicable to their assigned duties:

...

§121.424 Pilots: Initial, transition, and upgrade flight training.

- a) Initial, transition, and *upgrade training* for pilots must include the following:
 - 1. Flight training and practice in the maneuvers and procedures set forth in the certificate holder's approved low-altitude windshear flight training program and in appendix E to this part, as applicable; and
 - 2. Extended envelope training set forth in §121.423.
- b) The training required by paragraph (a) of this section must be performed inflight except—
 - 1. That windshear maneuvers and procedures must be performed in a simulator in which the maneuvers and procedures are specifically authorized to be accomplished;
 - 2. That the extended envelope training required by §121.423 must be performed in a Level C or higher full flight simulator unless the Administrator has issued to the certificate holder a deviation in accordance with §121.423(e); and
 - 3. To the extent that certain other maneuvers and procedures may be performed in an airplane simulator, an appropriate training device, or a static airplane as permitted in appendix E to this part.
- c) Except as permitted in paragraph (d) of this section, the initial flight training required by paragraph (a)(1) of this section must include at least the following programmed hours of inflight training and practice unless reduced under §121.405;
 - 1. Group I airplanes—
 - i. Reciprocating powered. Pilot in command, 10 hours; second in command, 6 hours; and
 - ii. Turbopropeller powered. Pilot in command, 15 hours; second in command, 7 hours.
 - 2. Group II airplanes. Pilot in command, 20 hours; second in command, 10 hours.
- d) If the certificate holder's approved training program includes a course of training utilizing an airplane simulator under §121.409 (c) and (d) of this part, each pilot must successfully complete—
 - 1. With respect to §121.409(c) of this part—



- i. Training and practice in the simulator in at least all of the maneuvers and procedures set forth in appendix E to this part for initial flight training that are capable of being performed in an airplane simulator without a visual system; and
 - ii. A flight check in the simulator or the airplane to the level of proficiency of a pilot in command or second in command, as applicable, in at least the maneuvers and procedures set forth in appendix F to this part that are capable of being performed in an airplane simulator without a visual system.
2. With respect to §121.409(d) of this part, training and practice in at least the maneuvers and procedures set forth in the certificate holder's approved low-altitude windshear flight training program that are capable of being performed in an airplane simulator in which the maneuvers and procedures are specifically authorized.
- e) Compliance with paragraphs (a)(2) and (b)(2) of this section is required no later than March 12, 2019.

§121.434 Operating experience, operating cycles, and consolidation of knowledge and skills

§121.436 Pilot Qualification: Certificates and experience requirements.

- a) No certificate holder may use nor may any pilot act as pilot in command of an aircraft (or as second in command of an aircraft in a flag or supplemental operation that requires three or more pilots) unless the pilot:
 1. Holds an airline transport pilot certificate not subject to the limitations in § 61.167 of this chapter;
 2. Holds an appropriate aircraft type rating for the aircraft being flown; and
 3. If serving as pilot in command in part 121 operations, has 1,000 hours as second in command in operations under this part, pilot in command in operations under § 91.1053(a)(2)(i) of this chapter, pilot in command in operations under § 135.243(a)(1) of this chapter, or any combination thereof. For those pilots who are employed as pilot in command in part 121 operations on July 31, 2013, compliance with the requirements of this paragraph (a)(3) is not required.
- b) No certificate holder may use nor may any pilot act as second in command unless the pilot holds an airline transport pilot certificate and an appropriate aircraft type rating for the aircraft being flown. A second-in-command type rating obtained under § 61.55 does not satisfy the requirements of this section.
- c) For the purpose of satisfying the flight hour requirement in paragraph (a)(3) of this section, a pilot may credit 500 hours of military flight time obtained as pilot in command of a multiengine turbine-powered, fixed-wing airplane in an operation requiring more than one pilot.
- d) Compliance with the requirements of this section is required by August 1, 2013. However, for those pilots who are employed as second in command in part 121 operations on July 31, 2013, compliance with the type rating requirement in paragraph (b) of this section is not required until January 1, 2016.

Subpart Y - Advance Qualification Program (AQP)

AC 120-54A, 3.5 b. Upgrade Curriculum

This curriculum is for an employee who has been previously trained and qualified as either a SIC or flight engineer for the certificate holder and is being assigned as either a PIC or SIC, respectively, for the same aircraft type in which he or she was previously trained and qualified.

Elements or training modules for this curriculum may be found in all three primary curriculums. In upgrade training, the same qualification standards apply as found in the qualification curriculum. However, the training received may be abbreviated, based on an analysis of the training/validation/evaluation requirements of the qualification and continuing qualification curriculums compared to an assessment of the currency, knowledge, skills, and qualifications of the individual.

For example, if the individual is a current first officer instructor/evaluator already type-rated in the aircraft, the training/validation/evaluation requirements of continuing qualification followed by operating experience might be appropriate.

Another example, if the individual is current in the aircraft as an SIC, proficiency in training modules such as systems, FMS, and emergency drills may be validated through testing. Other training such as seat dependent training, command authority, and CRM may be trained and evaluated using a combination of classroom and LOS methodology.

Pilot Professional Development - Notice to Proposed Rule Making (NPRM)

81 Fed. Reg. 69908, (October 7, 2016).

"The proposed requirements would most affect air carrier training for pilots in command. The proposed requirements would also affect air carrier qualification for newly employed pilots. Additionally, this proposed rule would require air carriers to establish and maintain a pilot professional development committee to develop, administer, and oversee formal pilot mentoring programs"

Related to the NPRM there are 2 Advisory Circulars in a draft state as of the date of publication of this manual:

Draft AC Air Carrier Pilot Mentoring

Draft AC Leadership and Command Training for Pilots in Command

4. Transport Canada

Canadian Aviation Regulations (CARs) and Standards

Part IV – Personnel Licensing and Training

Division VIII — Airline Transport Pilot License

Aeroplanes — Privileges

401.34 (1) Subject to subsection (2), the holder of an airline transport pilot license — aeroplane may exercise the privileges of a private pilot license — aeroplane and a commercial pilot license — aeroplane.

(2) The holder of an airline transport pilot license — aeroplane endorsed with a Group 1 instrument rating may, while engaged in providing a commercial air service by means of an aeroplane of a class and type in respect of which the license is endorsed with a rating, act as

- a) pilot-in-command of the aeroplane, if the minimum flight crew document for that aeroplane specifies a minimum flight crew of two pilots; or
- b) co-pilot of the aeroplane.

DIVISION VIII - AIRLINE TRANSPORT PILOT LICENCE

421.34 Aeroplanes – Requirements

(4) Experience

An applicant shall have met the training requirements for the issue of a Commercial Pilot License - Aeroplane that is not restricted to daylight flying and completed a minimum of 1500 hours total flight time of which a minimum of 900 hours shall have been completed in aeroplanes. The total flight time shall include a minimum of: (amended 2000/09/01; previous version).

- a) 250 hours pilot-in-command flight time in aeroplanes which shall include where applicable, a maximum of 100 hours pilot-in-command under supervision flight time completed in accordance with Section 421.11. The pilot-in-command and/or pilot-in-command under supervision flight time shall include a minimum of 100 hours cross-country flight time of which a minimum of 25 hours shall have been by night;
- b) 100 hours night flight time as pilot-in-command or as co-pilot of which a minimum of 30 hours shall have been acquired in aeroplanes;
- c) 100 additional hours cross-country flight time as pilot-in-command or 200 hours as co-pilot or any combination thereof, with flight time calculated in accordance with section 421.10. Flight time as pilot-in-command may be part of the 250 hours pilot-in-command flight time specified in paragraph (a); and (amended 2005/12/01; previous version)
- d) 75 hours instrument flight time of which a maximum of 25 hours may have been acquired in approved instrument ground trainers and a maximum of 35 hours may have been acquired in helicopters. Instrument ground time shall not be applied toward the total 1500-hour flight time requirement.

(5) Skill

- a) Within the 12 months preceding the date of application for the licence, an applicant shall demonstrate in a multi-engined aeroplane with no central thrust configuration and fitted with instruments and equipment suitable for IFR flight in controlled airspace, familiarity with and the ability: (amended 1999/03/01; previous version)
 - i. to perform both normal and emergency flight procedures and maneuvers appropriate to the aeroplane in which the flight test is conducted; and
 - ii. to execute all maneuvers and procedures set forth in Division XIV for issue of a Group 1 instrument rating.

- b) For issue of the Airline Transport Pilot License - Aeroplane, the Minister shall only endorse a Group 1 Instrument Rating on the license.

Division VII — Personnel Requirements

Designation of Pilot-in-command and Second-in-command

705.103 An air operator shall designate for each flight a pilot-in-command and a second-in-command.

Pilot Qualifications

705.106 (1) Subject to subsection (3), no air operator shall permit a person to act and no person shall act as the pilot-in-command, second-in-command or cruise relief pilot of an aircraft unless the person

- a) holds the license, ratings and endorsements required by Part IV;
- b) within the previous 90 days,
 - i. has completed at least three take-offs and three landings as the pilot at the controls and one sector assigned to duty as a flight crew member in an aircraft of that type,
 - ii. has completed five sectors assigned to duty as a flight crew member in an aircraft of that type, or
 - iii. has fulfilled the training requirements set out in the Commercial Air Service Standards;
- c) has successfully completed a pilot proficiency check, the validity period of which has not expired, for that type of aircraft, in accordance with the Commercial Air Service Standards;
- d) has successfully completed or is undergoing a line check or line indoctrination training, the validity period of which has not expired, for that type of aircraft, in accordance with the Commercial Air Service Standards; and
- e) has fulfilled the requirements of the air operator's training program.
 - 1. A pilot who does not meet the requirements of subparagraph (1)(b)(i) or (ii) shall regain competency in accordance with the Commercial Air Service Standards.
 - 2. An air operator may permit a person to act and a person may act as the pilot-in-command or second-in-command of an aircraft where the person does not meet the requirements of subsection (1), if
 - a) the aircraft is operated on a training, ferry or positioning flight; or
 - b) the air operator
 - i. is authorized to do so in its air operator certificate, and
 - ii. complies with the Commercial Air Service Standards.
 - 3. A pilot shall, on successful completion of a pilot proficiency check, meet the requirements of the consolidation period in accordance with the Commercial Air Service Standards.

725.106 Pilot Qualifications

...

(2) Pilot Proficiency Check (refers to paragraph 705.106(1)(c) *Canadian Aviation Regulations*)

- a) The pilot proficiency check (PPC) shall be conducted in accordance with Schedule I, Schedule II or Schedule III of this Section.
- b) All of the maneuvers required to satisfy renewal of an Instrument Rating shall be part of the pilot proficiency check.
- c) A pilot proficiency check shall be conducted in a manner that enables the pilot to demonstrate the knowledge and the skill respecting:
 - i. the air operator's aeroplane, its systems and components;
 - ii. proper control of airspeed, direction, altitude, attitude and configuration of the aeroplane, in accordance with normal, abnormal and emergency procedures and limitations set out in the aeroplane flight manual, aeroplane operating manual, (if applicable), the air operator's standard operating procedures, the check list, and any other information relating to the operation of the aeroplane type;
 - iii. departure, enroute and arrival instrument procedures and other applicable procedures; and
 - iv. adherence to approved procedures.
- d) Initial and recurrent Pilot Proficiency Checks shall be conducted on a combination of a Flight Training Device certified to Level 4 or higher and a Full Flight Simulator or a combination of a Flight Training Device certified to Level 6 or higher and the aeroplane, if a simulator is available in North America.
- e) For turbo-jet aeroplanes of 50 or more seats initial and recurrent Pilot Proficiency Checks shall be conducted on a Full Flight Simulator or a combination of a Full Flight Simulator and a flight training device certified to Level 4 or higher. Location of the synthetic training device will not be considered in applying this standard.
- f) The synthetic training device level of checking shall be part of the training program approval for each aeroplane type. Checking procedures not approved for the synthetic training device shall be completed in the aeroplane. The configuration of the flight training device shall closely resemble that of the aeroplane used by the air operator.
- g) A proficiency check of a pilot-in-command shall be completed in the seat normally occupied by the pilot-in-command and a check of a second-in-command shall be completed in the seat normally occupied by the second-in-command. The pilot proficiency check shall consist of a demonstration of both pilot flying (PF) duties and pilot not flying (PNF) duties.
- h) The PPC shall not be conducted as an isolated group of emergency procedures and drills. It shall be constructed with minimum disruption in a logical continuous flow reflecting a normal flight profile. Normally the pilot proficiency check is a pre-programmed activity; however, the person conducting the check may require any manoeuvre or procedure from the appropriate Schedule, necessary to determine the proficiency of the crew and to confirm that the crew can operate the aeroplane safely.

- i) Where a pilot successfully completes the pilot proficiency check, the pilot is considered as having successfully completed the flight check requirements for the renewal of the applicable instrument rating.
- j) The PPC may be transferred from one air operator to the other when the conditions of subsection 725.124(28) of the training program, Transportability of Pilot Proficiency Check - Training Required, are met.

...

(7) Consolidation Period (refers to subsection 705.106(4) of the *Canadian Aviation Regulations*)

- a) The consolidation period shall take place in accordance with the time limits from the following sliding scale and shall begin upon successful completion of an initial Pilot Proficiency Check on each aeroplane type: (amended 2000/06/01)
 - i. 50 hours in 60 days;
 - ii. 75 hours in 90 days; or
 - iii. 100 hours in 120 days.
- b) If the consolidation period is not completed within 120 days, an extension to 150 days is permitted, at the air operator's discretion, under the following conditions:
 - i. on or before the 120th day, the air operator shall make a ground evaluation of the pilot's level of proficiency;
 - ii. when the pilot is assessed as not possessing a satisfactory level of competence, the pilot shall undergo additional training, followed by a supervised line operating flight, after which the consolidation period may be extended to 150 days; and
 - iii. when the pilot's proficiency is judged satisfactory, the pilot shall be observed in a supervised line operating flight, after which the consolidation period may be extended to 150 days.
- c) If at any time before the consolidation period ends a pilot is assigned to another aeroplane type, the pilot shall undergo refresher training with a training pilot or check pilot before resuming the consolidation process.
- d) If the pilot fails to complete the consolidation requirements in the maximum time of 150 days allowed, the complete line indoctrination and consolidation period requirements must be repeated.

725.124

(17) Upgrade Training and Checking

- a) Upgrade training and checking for pilots who are qualified as a second-in-command on that aeroplane type shall include the following:
 - i. successfully complete simulator maneuvers training, and training as a pilot-in-command in all areas of aeroplane handling that are specific to the pilot-in-command seat position;
 - ii. command and decision making;
 - iii. successfully complete specialized operations qualification training; (e.g. lower take-off limits, etc.)
 - iv. successfully complete on that type of aeroplane the initial pilot proficiency check outlined in Schedule I or Schedule II, conducted by a Transport Canada - Civil Aviation inspector or an approved check pilot; and

- v. initial line indoctrination for a pilot in command, followed by a line check.
- b) Upgrade training and checking for pilots whose PPC as second-in-command on that aeroplane type has expired within the previous 24 months shall consist of completion of regaining competency requirements specified in paragraphs 725.124(16)(a) or (b), as applicable, as well as the requirements of paragraph 725.124(17)(a) above.
- c) Pilots who have not held a valid PPC on that aeroplane type as second-in-command for a period greater than 24 months shall be given a complete initial aeroplane type training course as well as the requirements of paragraph 725.124(17)(a) above.

5. Japan Civil Aviation Bureau

Civil Aeronautics Act (translated)

Article 72

1. No person shall board, as pilot in command, an aircraft used for air transport services specified by Ordinances of the Ministry of Land, Infrastructure, Transport and Tourism, unless he/she has obtained the approval of the Minister of Land, Infrastructure, Transport and Tourism with regard to the required knowledge and skill for pilot in command as may be specified by Ordinances of the Ministry of Land, Infrastructure, Transport and Tourism.
2. The Minister of Land, Infrastructure, Transport and Tourism shall examine on a regular basis whether or not any person who has obtained approval set forth in the preceding paragraph maintains the required level of knowledge and skill under the same paragraph.
3. The Minister of Land, Infrastructure, Transport and Tourism shall, whenever he/she deems it necessary, examine from time to time whether or not any person who has obtained an approval under paragraph (1), maintains the knowledge and skill under the same paragraph.

Ordinance for Enforcement of the Civil Aeronautics Act

(Requirements of Pilot in Command on Board an Aircraft Used for Air Transport Services)

Article 163

1. Aircraft prescribed by Ordinance of the Ministry of Land, Infrastructure, Transport and Tourism under paragraph (1) of Article 72 of the Act shall be aeroplane whose maximum take-off weight exceeds 5,700 kg and rotorcraft whose maximum take-off weight exceeds 9,080 kg in weight (excluding the aircraft listed below).
 - i. Aircraft operated by persons under paragraph (1) of Article 4 of the Act used for air transport services.
 - ii. Aircraft operated by an entrustee who receives permission under paragraph (1) of Article 113-2 of the Act, where the consignee is such a person who falls under any item of paragraph (1) of Article 4 of the Act.
 - iii. Aircraft operated by an entrustee who is a Pilot in Command on board who is approved under paragraph (5) of Article 72 of the Act, when the entrustee is a designated domestic air carrier with permission under paragraph (1) of Article 113-2 of the Act, where the consignee is a person who falls under any item of paragraph (1) of Article 4 of the Act.

2. Knowledge and skill prescribed by Ordinance of the Ministry of Land, Infrastructure, Transport and Tourism under paragraph (1) of Article 72 of the Act shall cover the matters listed below:
 - i. The following matters related to the operation of aircraft
 - a) Pre-take-off checks
 - b) Dispatcher's approval of aircraft departure and changes to flight plan.
 - c) Supervision of flight crew-members and cabin crew-members
 - d) Safety management of aircraft operations including measures to deter safety-threatening behaviour, etc., and crisis measures.
 - ii. Aircraft maneuvers and measures in normal and non-normal conditions.

Article 163-2

Approval under paragraph (1) of Article 72 of the Act shall be limited by aircraft type.

Article 164

1. Any person intending to apply for the approval under the provision of Article 72 paragraph (1) of the Act shall submit a written application describing the matters listed below to the Minister of Land, Infrastructure, Transport and Tourism.
 - i. Name and address
 - ii. Name and address of the domestic air carrier
 - iii. The competence certification qualification, restriction and number and aviation medical certification number
 - iv. Aircraft type pertaining to the approval
 - v. Total flight time and the flight time of a pilot-in-command
 - vi. Other matters for reference
2. The approval pursuant to Article 72 paragraph (1) of the Act shall be conducted by means of oral examination and practical examination. However, when deemed unnecessary by the Minister of Land, Infrastructure, Transport and Tourism, part or whole of the oral examination or practical examination may be disposed of.
3. The practical examination prescribed in the preceding paragraph shall be conducted by allowing one or more personnel appointed by the Minister of Land, Infrastructure, Transport and Tourism to be on board of an aircraft of the same type as that of the aircraft on which the person intending to receive said approval, or by using aircraft simulator or flight training devices of the same aircraft pertaining to the approval.

Appendix 2 — Examples of Pilot Development Programs

The four examples below show consolidated extracts of programs that airlines have implemented to prepare FOs for their role as future commanders.

1. Airline A – mainly recruiting ab-Initio pilots

The program is called “Leadership Competence Development Program” (LCD)

All ab-Initio and direct-entry candidates are assessed through a staged pilot aptitude testing system (PAT), which includes assessment of the future potential as a commander. During their career FOs receive the following ground training modules in preparation for the upgrading to commander:

Name of module	Objectives	Duration (days)
LCD 1	Human Behaviour Situational Leadership	3
LCD 2	Field placement Argumentation techniques	2
LCD 3	Leadership (simulation game)	2
LCD 4	SFO/PICR duties and responsibilities Communication Conflict Management	2
Development interview	Exchange of expectations and requirements for the upcoming Command Training	1

During the Leadership Competence Course (LCC) modules the FO is assigned to field placements in various departments of flight operations and third-party service providers.

There is no assessment during the LCD program nor at the beginning of the command course.

Content of the modules

LCC 1

- Meaning and form of behaviour training
- Basis of human behaviour
- Meaning of verbal and non-verbal communication
- Basic components of leadership behaviour
- Reflection about self- and interpersonal perception

LCC 2

- History of the airline
- The change of the First Officer role during the last decades
- Exchange of experiences during the field placements
- Procurement and training of pursuing techniques for argumentation
- Constructive handling of conflict management in the future role as leader
- Case study to bring the social and technical competencies together

LCC 3

Soft skill simulation game where participants can practice leadership during complex and dynamic situations. You are acting in a team, but you have to change positions, so you can practice leadership from different perspectives.

LCC 4

- Role of the SFO/PICR
- Duties and responsibilities of the SFO/PICR
- Motivation as management task
- Impact of motivating and demotivating behaviour
- Differentiation of constructive and non-constructive communication with focus on feedback dialogues
- Strategies on how to handle conflicts during leadership situations

Development Interview:

- Scheduled approximately one year prior to the command course
- Together with 5 – 8 FOs, Training Manager and experienced Training Captain (TRE)

2. Airline B – recruiting direct entry First Officers with experience

The program is called “Road to Command” (RTC)

Overview

All First Officers are recruited as future Captains. The RTC aims at providing a pathway to achieve this goal. The RTC can be visualized as a “command course fitness program” that links the conversion course with the Nomination as Commander (NaC) course.

Stakeholders include Fleet Management, Group Psychology, Flight Training and Human Factors (HF). The program starts on completion of the initial Line Check. It concludes with NaC course entry.

RTC Design Philosophy

The RTC is a competency-based program, with Knowledge, Skill and Attitude elements.

- Knowledge – Theoretical and practical understanding
- Skills – Talent and expertise required for command
- Attitude – Orientation and predisposition that influences appropriate command behaviour

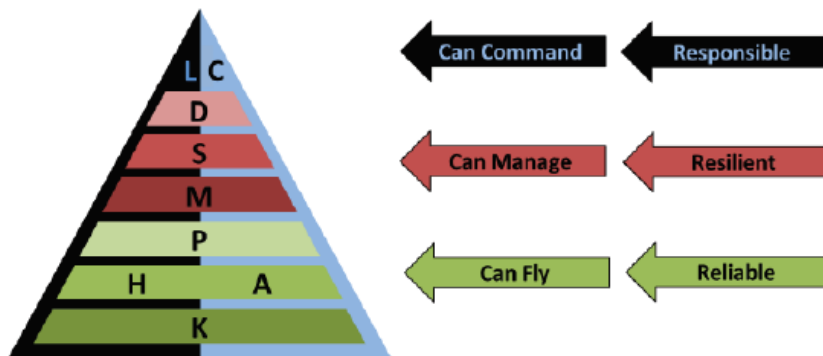
Modules have been sequenced to target these areas in a coordinated, graduated manner between stakeholders:

- Fleet Management – Attitude and Knowledge
- Group Psychology – Attitude, Skills and Maturity
- Training – Knowledge, Skills and Leadership
- Human Factors – Attitude and Skill

The RTC is based also on understanding and application of the pilot competencies, as documented in the CRM Manual:

Leadership and Teamwork	L
Communication	C
Problem Solving and Decision Making	D
Situation Awareness and Management of Information	S
Workload Management	M
Application of Procedures and Compliance with Regulations	P
Aeroplane Flight Path Management automation and manual control	H A
Knowledge	K

The RTC groups the competencies into those related to Responsibility, Resilience and Reliability.



RTC Objectives

On completion of the RTC 'fitness program' an FO will have reached the entry level 'ready for upgrade' standard for the NaC course. The objectives of the RTC are to ensure First Officers have:

- The right attitude and maturity for command
- A thorough technical and operational knowledge base
- Significant operational exposure to the network
- The ability to apply key command skills
- An awareness of the command role and responsibilities
- Demonstrated leadership potential to be a successful commander

RTC Stages

The RTC profile comprises 3 main stages; Consolidation, Development and Evaluation.

Each stage contains modules designed to develop and reinforce Knowledge, Skills and Attitude elements in a coordinated manner and prepare a FO for their command course.

Consolidation Stage

The Consolidation stage is from completion of initial Line Check up to entry into the command coaching program sessions. During this stage, trainees should aim at reinforcing their line knowledge and skills, and also identifying the right attitude for command based on operations with established line Captains and FOs.

Development Stage

The Development stage is from enrolment in RTC eLearning up to initial suitability assessment. During this stage, trainees will complete numerous modules designed to develop knowledge-base, leadership, management and also ensure handling skills are robust.

Recurrent RTC Training

Each six-month Recurrent Training phase includes a mandatory RTC module and handling training. The RTC module is scenario-based, with content dependent on the recurrent training matrix and evidence-based items. Scenarios are specifically designed to train and develop command skills, with FOs acting in command from the right seat. Although the RTC modules are not graded, trainees are expected to achieve a minimum safe standard. Feedback to assist further command development will be provided.

Trainees should approach the modules with the right attitude for command. The RTC modules will focus primarily on developing Knowledge and Skills in the areas of responsibility and resilience:

Responsibility: Leadership and Teamwork

Communication

Resilience: Problem Solving and Decision Making

Situation Awareness and Management of Information

Workload Management

Command Coaching Program (CCP) 2 Days

Day 1

This module is conducted by Fleet Management and focusses on establishing clear expectations of the knowledge and attitude elements of command. It also engages trainees with key operational departments, encouraging involvement and on-going awareness and contribution to the business.

Day 2

This module is conducted by Flight Training Human Factors. It focusses on developing management skills for command. It incorporates DiSC personality profiling to provide an insight into leadership, maturity and attitude for Command. This encourages self-assessment and on-going professional development. Additionally, a facilitated workshop environment is used to identify strategies and key pilot competencies for command.

Initial Suitability Assessment

This is conducted by Fleet and Training in accordance with a management process to ensure that the candidate meets the professional, technical and performance standards for the new role.

The designated Chief Pilot and Training Manager will conduct a detailed training performance review of the candidate over the last two years to ensure that the candidate is ready to enter the Evaluation Stage.

Candidates who are successful in the initial suitability assessment will be allowed to enter the Evaluation Stage.

Unsuccessful candidates will be given the opportunity to meet the designated Chief Pilot who will advise the outcome of the initial suitability assessment and discuss improvement strategies.

Additional Fleet Requirements

Initial suitability assessment may identify additional fleet and/or training requirements prior to being re-considered for Initial Suitability Assessment. This may include additional eLearning, line consolidation, recurrent training, human factors, learning and development and/or additional CMD sessions.

Evaluation Stage

Subject to a satisfactory recommendation from the initial suitability assessment, candidates will enter the Evaluation Stage. The aim of this stage is to confirm that candidates possess the knowledge, skills and attitude to be able to complete a NaC course to a good standard.

Management Evaluation Flight

This is an optional fleet requirement to observe trainee potential for command in an operational environment. It is a layover flight conducted by a fleet-designated senior Captain. Trainees will be assessed on key command competencies of Leadership, Communication, Workload Management, Situation Awareness and Problem Solving and Decision Making.

Psychometric Assessment

This is conducted by a psychologist to identify any key probes in command aptitude and competency. It provides an insight into leadership, maturity and attitude for command. Probes will be used to establish any additional objectives for the command interview.

Pre-Command Operational Knowledge Assessment

This comprises an assessment of theoretical and practical knowledge areas essential for command. It is conducted by fleet, with closed-book and open-book elements.

Command Interview

This is conducted by fleet and HR specialists to ensure that trainees possess the knowledge, skills and attitude for command. It is a scenario-based, realistic, interactive assessment of key competencies. It explores any probes identified during the RTC process to ensure that trainees meet the entry standard for NaC course.

Fleet NaC Selection Review Panel

The Fleet NaC Selection Panel consists of the designated Chief Pilot and training representative (TM/ATM).

Each candidate's command potential and capability to successfully complete the command upgrade will be evaluated prior to selection. The Fleet Command Selection Panel reviews all information available on a First Officer in order to assess:

- Evidence of command potential including maturity for the role
- Development of core command skills
- Consistency in check and training events
- Attitude to the job, colleagues and sense of responsibility
- Total flying experience
- Targets met on the RTC program

Successful candidates will be forwarded to the Command Board for final approval.

Command Board

This is the final analysis and decision module conducted by senior fleet and training management. Trainees may be deemed suitable, not yet suitable (based on additional fleet and/or training requirements), or not suitable.

Additional Sector and Network Requirements

Additional sectors and flights to specific destinations may be required to meet minimum entry requirements for NaC course.

Command Management Development (CMD)

CMD Objectives

The objective of the CMD sessions is to develop and enhance the ability of the trainees to manage various normal and non-normal situations under realistic operational conditions.

After the completion of CMD training, the trainee should have an increased knowledge and ability in the following competencies:

- Workload Management
- Problem Solving and Decision Making
- Communication
- Leadership

Command Management Development (CMD) simulator sessions provide an opportunity to exercise and develop command competency.

Three sessions are planned for the CMD. Two RTC trainees complete the training together, with the session divided into two unique scenarios, one scenario for each trainee. Each trainee is given the opportunity to complete a scenario from the left seat as CM1 and commander. Whilst acting as commander, their RTC colleague will fulfil the CM2 role.

Additional CMD sessions may be required to build confidence and achieve the standard expected for progression to the Evaluation Stage.

Command Mentoring Flights (CMF)

Objectives

At completion of the CMF series the trainee will be able to:

- Demonstrate consistent proficiency in the CM2 role, exhibiting good knowledge, procedures and flightpath control and at least satisfactory or better performance in the remaining pilot competencies.
- Show motivation by thorough flight preparation including route and region specific procedures, threats and operational differences, evidenced by effective threat-based briefings and high situational awareness.
- Demonstrate desirable leadership behaviours in all interactions such as: showing confidence, initiative, responsibility for own actions and those of others, maturity, integrity, credibility, approachability, calmness under pressure and decisiveness when required.
- Promote and maintain a professional environment of tolerance, mutual respect, suspicion and error recognition and mitigation.
- Demonstrate an openness to learning, change and new ideas, evidenced by knowledge of recent policy and procedural change, and reaction to operational disruption and setbacks.

Overview

Command Mentoring Flights (CMF) are specifically designated mentoring flights with a trainer, approximately 12 months prior to upgrade and comprise:

- CMF 1 Turn-around
- CMF 2 Layover
- CMF 3 Short/Long Range Variation, if possible

The aim of these flights is to probe and develop line skills for command. The trainee operates as CM2, but is expected to demonstrate ability in leadership, communication and decision-making in preparation for the role of commander.

Command mentoring may be defined as a professional relationship in which an experienced pilot assists a colleague in developing specific competencies to develop and enhance professional and personal growth.

The trainee/colleague:

- Gains from the mentor's expertise
- Receives feedback in key areas
- Develops a focus on what is needed to grow professionally
- Learns specific skills and knowledge that are relevant to personal and professional goals
- Has a friendly ear with which to share frustrations as well as successes

A mentor-colleague relationship focuses on developing the colleague professionally and personally in a safe learning environment, where the colleague feels free to discuss matters of importance to his or her development. Critical to the success of the program is the relationship between the mentor and colleague which must be built on a foundation of trust and mutual respect.

Orientation

Command mentoring is an integral part of the evaluation phase of the RTC fitness program. It is an opportunity for the trainer to role-model appropriate behaviour and to guide and assist the colleague's development. The aim is to determine if the colleague has the right attitude, maturity and leadership potential to be selected for a command course.

The colleague operates from the RHS and is expected to demonstrate a satisfactory or better performance in all of the pilot competencies in the FO role.

This is not NAC training. The colleague is not expected to carry out captain duties, however, tasks may be delegated to the colleague such as cabin crew briefing or the pre-departure PA.

The CMF footprint consists of three flights to any destination. Trainees will be paired with the same trainer for at least two flights where possible.

There is no grading however, at the end of each flight, there shall be a facilitated debrief in which the objectives are reviewed, and learning points and examples discussed.

The mentor is required to report whether the objectives were achieved, partially achieved, or not achieved, together with comprehensive observations by competency.

3. Airline C – recruiting ab-Initio pilots

The program is called “Procedure for Promotion to Commander Position”.

FOs need a minimum of 4500 flight hours for upgrade training. In preparation for the command course they will receive the following training depending on accumulated flight hours.

3500 – 4000 Flight Hours

- OM-A exam with different scenarios. This is for self-assessment only, but candidates will receive feedback.
- 2 days of TEM/CRM Training with focus on the following pilot competencies
 - Leadership and Teamwork, Situation Awareness and Management of Information, and Problem Solving and Decision Making
 - Different scenarios are trained depending on experience

4000 – 4500 Flight Hours

- Classroom training for command responsibilities and OM-A content
- Thereafter, OM-A exam. In case of failure additional training is required. Feedback to candidates and Flight Ops.
- 2 days of TEM/CRM Training with focus on following competencies:
 - Leadership and Teamwork, Situation Awareness and Management of Information, and Problem Solving and Decision Making
 - Different scenarios are trained depending on experience

More than 4500 Flight Hours

- OM-A exam. In case of failure additional training is required. Feedback to candidates and Flight Ops.
- 2 days of TEM/CRM Training with focus on following competencies:
 - Leadership and Teamwork, Situation Awareness and Management of Information, and Problem Solving and Decision Making
 - Different scenarios are trained depending on experience

Commander Candidate Assessment

- Flight Ops gathers data thru a “line feedback” system. These data are used for initial assessment of the procedural compliance, professionalism and flight discipline.
- Competency-based interview
- One simulator session; assessment with focus on following competencies:
Leadership and Teamwork, Situation Awareness and Management of Information, and Problem Solving and Decision Making

4. Airline D – recruiting ab-Initio and experienced pilots

The pilot development program is called “Management Training for Pilots”, it covers a wide scope of subjects.

First Officers need a minimum of 2500 flight hours on CS-25 aircraft or equivalent and at least 36 months within the company to be admitted to command training. In preparation for the command course they will receive the following training, which already begins during the airline’s integration course.

The development program aims at providing pilots with a global view on the company’s organization, the role of the pilots within the day-to-day operation as well as enhancing their decision making competency during their duty.

It includes the following steps:

During or shortly after joining the AOC (3 days):

- Operations Performance (overall integration of a single flight in the AOC’s flights program, management of disruptions, punctuality, fuel efficiency...)
- OPS Control Center / Flight Dispatch
- The HUB organization (main stations organization, duties, responsibilities, processes to optimize the connecting traffic, etc.)
- Focus on the customer’s needs

Evaluation before command training (3 days)

- OM-A examination
- 2 days of evaluation in the simulator

Preparation for command training (8 days):

This part is dedicated to Leadership, Decision Making, CRM, Communication, as well as human factors aspects, such as management of emotions and stress. Topics are:

- Security
- Flight safety
- Occupational safety and health
- Operations Performance
- Focus on the customer’s needs
- OPS Control Center / Flight Dispatch
- The HUBs organization (main stations org, who does what, when, and why, how to optimize the connecting traffic...)
- Rules and Regulations
- Leadership Improvement

- Communication
- Decision Making
- English communication
- 2 days of theoretical brainstorming, covering all Knowledge, Skills and Attitudes of the commander (Fuel, AWO, Security, Winter Ops, Commander's role...)
- Optional, according to the results of the evaluation: 3 LOFT simulator sessions to train specific competencies

Appendix 3—Competencies

1. ICAO COMPETENCY FRAMEWORK TO DEVELOP COMPETENCY-BASED TRAINING AND ASSESSMENT FOR AEROPLANE PILOT LICENCES, RATINGS, AND RECURRENT TRAINING

Note: The following text is extracted from the ICAO State Letter, ICAO Ref.: AN 12/59.1-18/77 dated 29 August 2018

Appendix 1 to Chapter 1
ICAO COMPETENCY FRAMEWORK
TO DEVELOP COMPETENCY-BASED TRAINING AND ASSESSMENT
FOR AEROPLANE PILOT LICENCES, RATINGS, AND RECURRENT TRAINING

Note 1: The competencies and observable behaviours in the table are not listed according to any pre-defined priority. Observable behaviours may include but are not limited to the observable behaviours listed in the table below.

Note 2: Observable behaviours are performed to a criterion, e.g. accurately or correctly, generally not stated.

Competency	Description	Observable behaviours (OB)
Application of procedures and compliance with regulations	Identifies and applies appropriate procedures in accordance with published operating instructions and applicable regulations.	OB 1.1 Identifies where to find procedures and regulations OB 1.2 Applies relevant operating instructions, procedures and techniques in a timely manner OB 1.3 Follows SOPs unless a higher degree of safety dictates an appropriate deviation OB 1.4 Operates aeroplane systems and associated equipment correctly OB 1.5 Monitors aircraft systems status OB 1.6 Complies with applicable regulations OB 1.7 Applies relevant procedural knowledge
Communication	Communicates through appropriate means in the operational environment, in both normal and non-normal situations	OB 2.1 Determines that the recipient is ready and able to receive information OB 2.2 Selects appropriately what, when, how and with whom to communicate OB 2.3 Conveys messages clearly, accurately and concisely OB 2.4 Confirms that the recipient demonstrates understanding of important information OB 2.5 Listens actively and demonstrates understanding when receiving information OB 2.6 Asks relevant and effective questions

Competency	Description	Observable behaviours (OB)
		<p>OB 2.7 Uses appropriate escalation in communication to resolve identified deviations</p> <p>OB 2.8 Uses and interprets non-verbal communication in a manner appropriate to the organizational and social culture</p> <p>OB 2.9 Adheres to standard radiotelephone phraseology and procedures</p> <p>OB 2.10 Accurately reads, interprets, constructs and responds to datalink messages in English</p>
Aeroplane Flight Path Management, automation	Controls the flight path through automation.	<p>OB 3.1 Uses appropriate flight management, guidance systems and automation, as installed and applicable to the conditions (see Part I, Chapter 1, for the definition of conditions)</p> <p>OB 3.2 Monitors and detects deviations from the intended flight path and takes appropriate action</p> <p>OB 3.3 Manages the flight path safely to achieve optimum operational performance</p> <p>OB 3.4 Maintains the intended flight path during flight using automation while managing other tasks and distractions</p> <p>OB 3.5 Selects appropriate level and mode of automation in a timely manner considering phase of flight and workload</p> <p>OB 3.6 Effectively monitors automation, including engagement and automatic mode transitions</p>
Aeroplane Flight Path Management, manual control	Controls the flight path through manual control.	<p>OB 4.1 Controls the aircraft manually with accuracy and smoothness as appropriate to the situation</p> <p>OB 4.2 Monitors and detects deviations from the intended flight path and takes appropriate action</p> <p>OB 4.3 Manually controls the aeroplane using the relationship between aeroplane attitude, speed and thrust, and navigation signals or visual information</p> <p>OB 4.4 Manages the flight path safely to achieve optimum operational performance</p> <p>OB 4.5 Maintains the intended flight path during manual flight while managing other tasks and distractions</p> <p>OB 4.6 Uses appropriate flight management and guidance systems, as installed and applicable to the conditions (See Part I, Chapter 1, definitions)</p> <p>OB 4.7 Effectively monitors flight guidance systems including engagement and automatic mode transitions</p>
Leadership and Teamwork	Influences others to contribute to a shared purpose. Collaborates to accomplish the goals of the team.	<p>OB 5.1 Encourages team participation and open communication</p> <p>OB 5.2 Demonstrates initiative and provides direction when required</p> <p>OB 5.3 Engages others in planning</p> <p>OB 5.4 Considers inputs from others</p> <p>OB 5.5 Gives and receives feedback constructively</p>

Competency	Description	Observable behaviours (OB)
		OB 5.6 Addresses and resolves conflicts and disagreements in a constructive manner OB 5.7 Exercises decisive leadership when required OB 5.8 Accepts responsibility for decisions and actions OB 5.9 Carries out instructions when directed OB 5.10 Applies effective intervention strategies to resolve identified deviations OB 5.11 Manages cultural and language challenges, as applicable
Problem Solving and Decision Making	Identifies precursors, mitigates problems; and makes decisions.	OB 6.1 Identifies, assesses and manages threats and errors in a timely manner OB 6.2 Seeks accurate and adequate information from appropriate sources OB 6.3 Identifies and verifies what and why things have gone wrong, if appropriate OB 6.4 Perseveres in working through problems while prioritizing safety OB 6.5 Identifies and considers appropriate options OB 6.6 Applies appropriate and timely decision-making techniques OB 6.7 Monitors, reviews and adapts decisions as required OB 6.8 Adapts when faced with situations where no guidance or procedure exists OB 6.9 Demonstrates resilience when encountering an unexpected event
Situation awareness and management of information	Perceives, comprehends and manages information and anticipates its effect on the operation.	OB 7.1 Monitors and assesses the state of the aeroplane and its systems OB 7.2 Monitors and assesses the aeroplane's energy state, and its anticipated flight path. OB 7.3 Monitors and assesses the general environment as it may affect the operation OB 7.4 Validates the accuracy of information and checks for gross errors OB 7.5 Maintains awareness of the people involved in or affected by the operation and their capacity to perform as expected OB 7.6 Develops effective contingency plans based upon potential risks associated with threats and errors OB 7.7 Responds to indications of reduced situation awareness
Workload Management	Maintain available workload capacity by prioritizing and distributing tasks using appropriate resources.	OB 8.1 Exercises self-control in all situations OB 8.2 Plans, prioritizes and schedules appropriate tasks effectively OB 8.3 Manages time efficiently when carrying out tasks OB 8.4 Offers and gives assistance OB 8.5 Delegates tasks OB 8.6 Seeks and accepts assistance, when appropriate

Competency	Description	Observable behaviours (OB)
		OB 8.7 Monitors, reviews and cross-checks actions conscientiously OB 8.8 Verifies that tasks are completed to the expected outcome OB 8.9 Manages and recovers from interruptions, distractions, variations and failures effectively while performing tasks

2. "Application of Knowledge", as proposed by EASA for EBT

Application of Knowledge (KNO)	Demonstrates knowledge and understanding of relevant information, operating instructions, aircraft systems and the operating environment.	OB 0.1 Demonstrates practical and applicable knowledge of limitations and systems and their interaction OB 0.2 Demonstrates required knowledge of published operating instructions OB 0.3 Demonstrates knowledge of the physical environment, the air traffic environment including routings, weather, airports and the operational infrastructure OB 0.4 Demonstrates appropriate knowledge of applicable legislation OB 0.5 Knows where to source required information OB 0.6 Demonstrates a positive interest in acquiring knowledge OB 0.7 Is able to apply knowledge effectively
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3. Chapter 7: THE ICAO PILOT INSTRUCTOR AND EVALUATOR COMPETENCY FRAMEWORK

7.1 Introduction

7.1.1 Pilot instructors shall meet the requirements specified in Annex 1, 2.1.8 and 2.8, as appropriate. In addition, for the multi-crew pilot licence (MPL) training programme, the instructor shall have experience, acceptable to the Licensing Authority, in multi-crew operations, as follows:

- a) for at least the intermediate and advanced phases of the multi-crew pilot licence (MPL) programme, have suitable experience in multi-pilot operations; or
- b) with the exception of instructors providing instruction in the intermediate and advanced phases of the MPL licence, receive training as an alternative means of compliance with the experience prerequisite for instruction in multi-pilot operations. This training should include but may not be limited to the following elements:
 - 1. multi-crew cooperation training in a suitable multi-pilot flight simulation training device;
 - 2. observations of multi-pilot line operations with a suitable operator;
 - 3. observations of subsequent multi-pilot training where applicable; and
 - 4. completion of multi-pilot cockpit resource management training.

7.1.2 The benefit of using competencies for the pilot instructor and evaluator, and some explanation on the terms used, are described below.

7.1.3 Mastering a defined set of pilot competencies should enable a pilot to perform his routine duties and manage unforeseen situations which cannot be trained in advance.

7.1.4 Similarly, mastering a set of instructor and evaluator competencies (IECs) should enable an instructor/evaluator (IE) to perform instruction and evaluation duties and manage the full spectrum ranging from ground instruction to evaluations in dynamic flight situations. It is beneficial to define a set of universal competencies, which can be consistently applied throughout the whole career of an IE.

7.1.5 The competencies for instructors and evaluators developed hereby are based on the latest ICAO provisions, EASA and FAA regulations, guidance material and best practices from the industry.

7.1.6 In the competency framework, the evaluator is a person authorized to conduct the formal and final summative assessment of a trainee's performance.

7.1.7 The table below proposes an overview of the ICAO Pilot Instructor and Evaluator Competency Framework. Therefore, operators and ATOs electing to implement competency-based training and assessment for their instructors and evaluators may develop an adapted competency model to suit the particular context of their organization.

7.1.8 In the tables below, the cells in green are not part of the ICAO competency framework but are to be developed by the operator or the ATO for the adapted competency model, respecting the guidance contained in the green cells.

7.2 ICAO pilot instructor and evaluator competency framework

The tables in paragraph 3 provide the details for each competency.

Competencies for pilot instructors and evaluators				
Name of the competency	Description	Performance Criteria		
		Observable behaviour (OB)	Competency Assessment	
			Final competency standard	Conditions
Pilot competencies¹	See ICAO Aeroplane Pilot Competency Framework ²	See the observable behaviours in the tables below	Operators and ATOs define in their relevant approved manuals the level of performance to be achieved by the instructor and evaluator.	Ground training and/or Flight training
Management of the learning environment	See descriptions in the tables below for the individual competencies			
Instruction				
Interaction				
Assessment and Evaluation				

¹ For ground instructors some pilot competencies may not apply – see 3.1.

² Only an ICAO Aeroplane Pilot Competency Framework is published. For other categories of aircraft, suitable amendments to the framework may be necessary to account for differences in piloting.

7.3 Tables detailing the individual competencies for instructors and evaluators (IEC1 – IEC5)

Note: The competencies and observable behaviours in the tables are not listed according to any predefined priority. Observable behaviours may include, but are not limited to, the observable behaviours listed in the tables below.

7.3.1 IEC1 – pilot competencies

Instructor and evaluator competency – pilot competencies				
Name of the competency	Description	Performance Criteria		
		Observable behaviour (OB)	Competency Assessment	
			Final competency standard	Conditions
IEC1: Pilot competencies¹	See ICAO Aeroplane Pilot Competency Framework ²	See ICAO Aeroplane Pilot Competency Framework ²	Operators and ATOs define in their relevant approved manuals the level of performance to be achieved by the instructor and evaluator.	Ground training and/or Flight training

¹ For ground instructors some pilot competencies may not apply: the operators and ATOs have to identify which pilot competencies and associated observable behaviours are applicable depending on their ground instructors/evaluators activities. As an example, the pilot competency communication must be demonstrated by ground instructors/evaluators (except for some observable behaviours) while the pilot competency flight path management manual control may not be mandatory.

² Only an ICAO Aeroplane Pilot Competency Framework is published. For other categories of aircraft, suitable amendments to the framework may be necessary to account for differences in piloting.

7.3.2 IEC2 – management of the learning environment

Instructor and evaluator competency – management of the learning environment				
Name of the competency	Description	Performance Criteria		
		Observable behaviour (OB)	Competency Assessment	
			Final competency standard	Conditions
IEC2: Management of the learning environment	Ensures that the instruction, assessment and evaluation are conducted in a suitable and safe environment	OB 2.1 Applies TEM in the context of instruction/ evaluation OB 2.2 Briefs on safety procedures for situations that are likely to develop during instruction/evaluation OB 2.3 Intervenes appropriately at the correct time and level (e.g. progresses from verbal assistance to taking over control) OB 2.4 Resumes training/evaluation as practicable after any intervention OB 2.5 Plans and prepares training media, equipment and resources OB 2.6 Briefs training devices or aircraft limitations that may influence training, when applicable OB 2.7 Creates and manages conditions that are suitable for the training objectives (e.g. FSTD, airspace, ATC, weather, time, etc.) OB 2.8 Adapts to changes in the environment while minimizing training disruptions OB 2.9 Manages time, training media and equipment to ensure that training objectives are met	Operators and ATOs define in their relevant approved manuals the level of performance to be achieved by the instructor and evaluator.	Ground training and/or Flight training

7.3.3 IEC3 – instruction

Instructor and evaluator competency – instruction				
Name of the competency	Description	Performance Criteria		
		Observable behaviour (OB)	Competency Assessment	
			Final competency standard	Conditions
IEC3: Instruction	Conducts training to develop the trainee’s competencies	OB 3.1 References approved sources (operations and technical sources, training manuals and regulations) OB 3.2 States clearly the objectives and clarifies roles for the training OB 3.3 Follows the approved training programme OB 3.4 Applies instructional methods as appropriate, (e.g. explanation, demonstration, learning by discovery, facilitation, in-seat instruction) OB 3.5 Sustains operational relevance and realism OB 3.6 Adapts the amount of instructor inputs to ensure that the training objectives are met OB 3.7 Adapts to situations that might disrupt a planned sequence of events OB 3.8 Continuously assesses trainee’s competencies OB 3.9 Encourages the trainee to self-assess OB 3.10 Allows trainee to self-correct in a timely manner OB 3.11 Applies trainee-centred feedback techniques (e.g.: facilitation, ...) OB 3.12 Provides positive reinforcement	Operators and ATOs define in their relevant approved manuals the level of performance to be achieved by the instructor and evaluator.	Ground training and/or Flight training

7.3.4 IEC4 – interaction with the trainees

Instructor and evaluator competency – interaction with the trainees				
Name of the competency	Description	Performance Criteria		
		Observable behaviour (OB)	Competency Assessment	
			Final competency standard	Conditions
IEC4: Interaction with the trainees	Supports the trainee's learning and development	OB 4.1 Shows respect for the trainee, e.g. for culture, language and experience OB 4.2 Shows patience and empathy, e.g. by actively listening, reading non-verbal messages and encouraging dialogue OB 4.3 Manages trainee's barriers to learning OB 4.4 Encourages engagement and mutual support OB 4.5 Coaches the trainees OB 4.6 Supports the goal and training policies of the Operator/ATO and Authority OB 4.7 Shows integrity (e.g. honesty and professional principles) OB 4.8 Demonstrates acceptable personal conduct, acceptable social practices, content expertise, a model for professional and interpersonal behaviour OB 4.9 Actively seeks and accepts feedback to improve own performance	Operators and ATOs define in their relevant approved manuals the level of performance to be achieved by the instructor and evaluator.	Ground training and/or Flight training
	Demonstrates exemplary behaviour (role model)			

7.3.5 IEC5 – assessment and evaluation

Instructor and evaluator competency – assessment and evaluation				
Name of the competency	Description	Performance Criteria		
		Observable behaviour (OB)	Competency Assessment	
			Final competency standard	Conditions
IEC5: Assessment and Evaluation	Assesses the competencies of the trainee Contributes to continuous training system improvement.	OB 5.1 Complies with Operator / ATOs and authority requirements OB 5.2 Ensures that the trainee understands the assessment process OB 5.3 Applies the competency standards and conditions OB 5.4 Assesses trainee’s competencies OB 5.5 Performs grading OB 5.6 Provides recommendations based on the outcome of the assessment OB 5.7 Makes decisions based on the outcome of the summative assessment OB 5.8 Provides clear feedback to the trainees OB 5.9 Reports strengths and weaknesses of the training system (training environment, curriculum, assessment/evaluation) including feedback from trainees OB 5.10 Suggests improvements for the training system OB 5.11 Produces reports using provided appropriate forms and media	Operators and ATOs define in their relevant approved manuals the level of performance to be achieved by the instructor and evaluator.	Ground training and/or Flight training

<i>Origin</i> CBTA-TF – Pilot Team	<i>Rationale</i> The Competency-based Training and Assessment Task Force – Pilot Team introduces a new Chapter with the ICAO pilot instructor and evaluator competency framework. The new procedures assist in the implementation of competency-based training and assessment for pilot instructors and evaluators.
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