GOVERNMENT OF INDIA
OFFICE OF THE DIRECTOR GENERAL OF CIVIL AVIATION
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CIVIL AVIATION REQUIREMENT
SECTION 7 – AIRCRAFT OPERATIONS
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Subject: COMPETENCY BASED TRAINING & ASSESSMENT (CBTA) AND EVIDENCE BASED TRAINING (EBT)

1. INTRODUCTION

The purpose of this CAR is to implement competency-based training and assessment (CBTA) for all line and FSTD training and assessments based on the standard laid out in Annex 1 (Amendment 176) and guidelines in ICAO Doc 9868. This CAR also provides a framework for implementing an EBT program according to the guidelines laid out in ICAO Doc 9995.

ICAO Annex 6 – Operation of Aircraft Part I contains standards and recommended practices (SARPs) for operation of commercial air transport. The standards require operators to ensure that all flight crew members are adequately trained and qualified to perform their assigned duties. Annex 1 further requires *competency based training* of pilots to be conducted in an approved training organization.

Current training programs were designed in the 1960s and are largely based on preparing pilots to cope with malfunctions/ unexpected events involving early generation jet aircraft. This "tick box" approach involved repeatedly exposing pilots to worst case scenarios during training and training them to master these scenarios. This approach was deemed sufficient to assess the pilot as being competent. Since then, aircraft design and reliability has improved steadily and significantly over time, yet accidents still occur and at times occur even though the aircraft and systems were operating without malfunction. CFIT and LOCI are examples where inadequate situation awareness on part of the crew is almost always a contributing factor. Increasing complexity, innovation and automation in systems and operating environment has created possibilities of rare events that may compromise safety. CBTA is aimed at development of defined competencies during training and checks. Competency development ensures better preparation of pilots to manage potentially dangerous situations including rare events in flight. CBTA creates more resilient flight crew who are better prepared to handle operational events as against the current practice of ticking off scripted and sometimes predictable scenarios. EBT, a joint initiative between ICAO, IATA and other industry partners has emerged as a more

sophisticated training program where TEM principles are applied to use CBTA data, LOSA and other trend data to design and monitor effective pilot training programs.

EBT involves training and assessment based on key validated data applicable to the generation type. It involves developing and assessing the overall capability of a trainee across a range of competencies using CBTA principles. A large-scale comprehensive analysis of aviation data on training, accidents, incidents and trends was conducted, important differences emerged between what can be considered as four different jet aircraft generations and two turboprop aircraft generations. Results from such analysis showed that whilst there remains an overlap in areas of risk and training needs across all these aircraft generations, there is a distinct difference in patterns and risks and training needs, EBT addresses this gap by defining customized recurrent training programs, tailor made for each generation of aircraft, as against the current practice of having a common profile for all generation types.

2. APPLICABILITY

2.1 This CAR is applicable to operators engaged in commercial operations with aeroplane weight exceeding 5700 Kg and optional for NSOP's and ATOs involved in such training.

2.2 All Scheduled Operators shall mandatorily comply with the provisions of this Civil Aviation Requirement (CAR), in accordance with the requirements specified by the Original Equipment Manufacturer (OEM)

2.3 This CAR lays down responsibilities of operators and flight crew towards training and qualification requirements and is consistent with the standards laid down in the ICAO Annexes 1 and 6 and is based on guidance provided in ICAO Doc 9625, Doc 9841, Doc 9995 and Doc 9868.

2.4 This CAR is issued under the provisions of Rule 29C and Rule 133A of the Aircraft Rules 1937.

3. DEFINITIONS & ABBREVIATIONS

3.1 DEFINITIONS

Assessment. The determination as to whether a candidate meets the requirements of the competency standard.

Behavior. The way a person responds, either overtly or covertly, to a specific set of conditions, and which is capable ofbeing measured.

Behavioral indicator. An overt action performed, or statement made by any flight crew member that indicates how the crew is handling the event.

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

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

Core competencies. A group of related behaviors Knowledge, Skill & Attitude, based on job requirements, which describe how to effectively perform a job and what proficient performance looks like. They include the name of the competency, a description, and a list of observable behaviors.

Critical flight maneuvers. Maneuvers that place significant demand on a proficient crew.

Critical system malfunctions. Aircraft system malfunctions that place significant demand on a proficient crew. These malfunctions should be determined in isolation from any environmental or operational context.

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

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

Error. An action or inaction by the flight crew that leads to deviations from organizational or flight crew intentions or expectations.

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

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 core competencies rather than by measuring the performance in individual events or maneuvers.

EBT instructor. A person who has undergone a screening and selection process, successfully completed an approved course in delivering competency-based training, and is subsequently authorized to conduct recurrent assessment and training within an approved EBT programme.

EBT module. A session or combination of sessions in a qualified FSTD, as part of the three-year cycle of recurrent assessment and training.

EBT session. A single defined period of training in a qualified FSTD that normally forms part of an EBT module.

EBT scenario. Part of an EBT session encompassing one or more scenario elements, constructed to facilitate real-time assessment or training.

EBT scenario element. Part of an EBT session designed to address a specific training topic.

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.

Factor. A reported condition affecting an accident or incident.

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

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 behaviors.

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

Inter-rater reliability. The consistency or stability of scores between different raters.

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

Maneuvers. A sequence of deliberate actions to achieve a desired flight path. Flight path control may be accomplished by a variety of means including manual aircraft control and the use of auto flight systems.

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

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

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 behavior, condition(s) and a competency standard .

Phase of flight. A defined period within a flight.

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. Part of a training module plan that consists of predetermined maneuvers & training events.

LOE/ SLF. Line Operating Experience / Supervised Line Flying. Line training flights on aeroplane operated by trainee pilots under supervision of an approved trainer.

SPOT. Special Purpose Operational training that consists of predetermined maneuvers designed for training / check events in a FSTD or aeroplane.

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

Threat management. The process of detecting threats and responding to them 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.

3.2 ABBREVIATIONS

A/C	Aircraft
AAL	Above aerodrome level
ACAS	Airborne collision avoidance system
ANP	Actual navigation performance
APP	Approach
AQP	Advanced qualification programme
ATC	Air traffic control
ATO	Approved training organization
ATQP	Alternative training and qualification programme
CAST	Commercial air safety team
CLB	Climb
CRM	Crew resource management
CRZ	Cruise
DA	Decision altitude
DES	Descent
EBT	Evidence-based training
FAA	Federal Aviation Administration (of the United States of America)
FBW	Fly by wire
FDA	Flight data analysis
FMS	Flight management system
FSTD	Flight simulation training device
GND	Ground
GPS	Global positioning system
IATA	International Air Transport Association
ISI	In-seat Instruction
ITQI	IATA Training and Qualification Initiative

KSA	Knowledge, skills and attitudes
LDG	Landing
LOSA	Line operations safety audit
MDA	Minimum descent altitude
MTOM	Maximum take-off mass
NAV	Navigation
Neo	New engine option
OEM	Original equipment manufacturer(s)
ops	operations
PF	Pilot flying
PM	Pilot monitoring
PRM	Precision runway monitor
RA	Risk assessment or ACAS resolution advisory *(context dependent)*
RNP	Required navigation performance
RNP-AR Approval required	Required navigation performance —
SARPs	Standards and Recommended Practices
SLF	Supervised line flying
SMS	Safety management system
SOP	Standard operating procedure
TA	Traffic advisory
TAWS	Terrain awareness and warning system
TO	Take-off
V1	Take-off decision speed
V2	Take-off safety speed

4. Aircraft Generations and type of aircrafts associated with such generations

Generation 4 – Jet	A318/A319/A320/A321 (including neo), A330, A340-200/300, A340-500/600, B777, A380, B787, A350, Bombardier C Series, Embraer E170/E175/E190/E195
Generation 3 – Jet	A310/A300-600, B737-300/400/500, B737-600/700/800 (NG), B737 MAX, B757, B767, B747-400,B747-8, B717, BAE 146, MD11, MD80, MD90, F70, F100, Bombardier CRJ Series, Embraer ERJ 135/145
Generation 3 – Turboprop	ATR 42-600, ATR 72-600, Bombardier Dash 8-400, BAE ATP, Embraer 120,Saab 2000
Generation 2 – Jet	A300 (except A300-600), BAC111, B727, B737-100/200,B747-100/200/300, DC9, DC10, F28, L1011
Generation 2 – Turboprop	ATR 42, ATR 72 (all series except -600), BAE J-41, Fokker F27/50, Bombardier Dash 7 and Dash 8-100/200/300 Series,Convair 580-600 Series, Shorts 330 and 360, Saab 340
Generation 1 – Jet	DC8, B707

5. Pilot Competencies and grading of observable behaviors

Competency is a dimension of human performance that is used to reliably predict successful performance on the job. A competency is manifested and observed through behaviors that mobilize the relevant knowledge, skills and attitudes to carry out activities or tasks under specified conditions. With the implementation of this CAR, All FSTD and line training / check programs shall henceforth be designed to observe, evaluate and record 9 pilot competencies in accordance to the following competency framework.

5.1 Competency Framework

The following competencies constitute the DGCA competency framework;

1	Application of Procedures & compliance with regulations	**PRO**
2	Communication	**COM**
3	Aircraft Flight Path Management, Manual Control	**FPM**
4	Aircraft Flight Path Management, with Automation	**FPA**
5	Leadership and Teamwork	**LTW**
6	Problem Solving & Decision Making	**PSD**
7	Situational Awareness & management of information	**SAW**
8	Workload Management	**WLM**
9	Application of Knowledge	**KNO**

The following tables provide the standard description of the above competencies, the associated observable behaviors and grading guidelines that shall be adopted for each competencies.

Legend of arrangement of information in the following tables;

Competency Number, Abbreviation. Name of the competency.	
Standard description of the competency	
Observable behaviors	Grading guidelines
Examples of an observation and grading	

Competency 1 – PRO. Application of procedures and compliance with regulations	
Identifies and applies appropriate procedures in accordance with published operating instructions.	
Observable Behaviors	**Grading Guidelines**
1.1 Identifies where to find procedures and regulations. 1.2 Applies relevant operating instructions, procedures and techniques in a timely manner. 1.3 Follows SOPs unless a higher degree of safety dictates an appropriate deviation. 1.4 Operates aeroplane systems and associated equipment correctly. 1.5 Monitors aircraft system status. 1.6 Complies with applicable regulations. 1.7 Applies relevant procedural knowledge.	**Grade 1**. The pilot did not apply procedures correctly, by rarely demonstrating any of the observable behaviors when required, which resulted in an unsafe situation. **Grade 2.** The pilot applied procedures at the minimum acceptable level, by only occasionally demonstrating some of the observable behaviors when required, but which overall did not result in an unsafe situation. **Grade 3.** The pilot applied procedures adequately, by regularly demonstrating most of the observable behaviors when required, which resulted in a safe operation. **Grade 4.** The pilot applied procedures effectively, by regularly demonstrating all of the observable behaviors when required, which enhanced safety. **Grade 5.** The pilot applied procedures in an exemplary manner, by always demonstrating all of the observable behaviors when required, which significantly enhanced safety, effectiveness and efficiency.

Example:

EDTO training in FSTD. Scenario: Diversion during EDTO flight due to engine failure. *Training requires Instructor required to assess PRO competency for this particular scenario*

While evaluating the PRO competency, the instructor observed that;

1.1 Pilot **adequately** identified that the relevant procedures and regulations were available in the EDTO checklist and OM-A Chapter 4.
1.2 Operating instructions & techniques listed in the EDTO diversion c/l was applied in a timely manner to **minimum acceptable level**
1.3 Followed SOP **effectively** as necessitated by the circumstances.
1.4 **Adequately** operated the aeroplane systems and associated equipment correctly during the diversion.
1.5 During diversion, **adequately** monitored the required aircraft systems,
1.6 Applicable regulations were **adequately** complied with.
1.7 Procedural knowledge was **effectively** applied to achieve a successful diversion to the designated en-route alternate aerodrome.

On the basis of the above observations – a **Grade of 3** was awarded by the instructor

Competency 2 – COM. Communication	
Communicates through appropriate means in the operational environment, in both normal and non-normal situations.	
Observable Behaviors	**Grading Guidelines**
2.1 Determines that the recipient is ready and able to receive information 2.2 Selects appropriately what, when, how and with whom to communicate 2.3 Conveys messages clearly, accurately and concisely 2.4 Confirms that the recipient demonstrates understanding of important information 2.5 Listens actively and demonstrates understanding when receiving information 2.6 Asks relevant and effective questions 2.7 Uses appropriate escalation in communication to resolve identified deviations 2.8 Uses and interprets non-verbal communication in a manner appropriate to the organisational and social culture 2.9 Adheres to standard radiotelephone phraseology and procedures 2.10 Accurately reads, interprets, constructs and responds to datalink messages in English	**Grade 1.** The pilot did not communicate effectively, by rarely demonstrating any of the observable behaviors when required, which resulted in an unsafe situation. **Grade 2.** The pilot communicated at the minimum acceptable level, by only occasionally demonstrating some of the observable behaviors when required, but which overall did not result in an unsafe situation. **Grade 3.** The pilot communicated adequately, by regularly demonstrating most of the observable behaviors when required, which resulted in a safe operation. **Grade 4.** The pilot communicated effectively, by regularly demonstrating all of the observable behaviors when required, which enhanced safety. **Grade 5.** The pilot communicated in an exemplary manner, by always demonstrating all of the observable behaviors when required, which significantly enhanced safety, effectiveness and efficiency.

Example:
Supervised Line training in aeroplane – *training guidelines(in form) required the instructor to assess COM competency based on observations throughout the flight.*

2.1 During radio calls, before communicating, pilot **adequately** ensured that the recipient is ready to receive the information.
2.2 Selected appropriately what, when, how and with whom to communicate – **adequately**.
2.3 Conveyed messages clearly, accurately, and concisely – to **minimum acceptable standards**.
2.4 Communicating with the ATC, **occasionally** confirmed that the recipient demonstrates understanding of important information – **did not result in unsafe ops.**
2.5 Listens actively and demonstrates understanding when receiving information – to **adequate standards**.
2.6 **Occasionally** asks relevant and effective questions.
2.7 **Had to be assisted** in appropriately escalating communication to resolve identified deviations – but overall **did not result in an unsafe situation**.
2.8 **Occasionally** interpreted non-verbal communication in a manner appropriate to the organisational and social culture.
2.9 **Occasionally** adhered to standard RT phraseology and procedures, however the non-standard phraseology / procedure **did not result in unsafe ops**.
2.10 **Effectively** reads, interprets, constructs and responded to datalink messages in English.
On the basis of the above observations – a **Grade of 2** was awarded by the instructor with remarks – 2.3, 2.7.

Competency 3 – FPA. Flight Path Management – Automation.	
Controls the flight path through automation.	
Observable Behaviors	**Grading Guidelines**
3.1 Uses appropriate flight management, guidance systems and automation, as installed and applicable to the conditions 3.2 Monitors and detects deviations from the intended flight path and takes appropriate action 3.3 Manages the flight path to achieve optimum operational performance 3.4 Maintains the intended flight path during flight using automation whilst managing other tasks and distractions 3.5 Selects appropriate level and mode of automation in a timely manner considering phase of flight and workload 3.6 Effectively monitors automation, including engagement and automatic mode transitions	**Grade 1.** The pilot did not manage the automation effectively, by rarely demonstrating any of the observable behaviors when required, which resulted in an unsafe situation. **Grade 2.** The pilot managed the automation at the minimum acceptable level, by only occasionally demonstrating some of the observable behaviors when required, but which overall did not result in an unsafe situation. **Grade 3.** The pilot managed the automation adequately, by regularly demonstrating most of the observable behaviors when required, which resulted in a safe operation. **Grade 4.** The pilot managed the automation effectively, by regularly demonstrating all of the observable behaviors when required, which enhanced safety. **Grade 5.** The pilot managed the automation in an exemplary manner, by always demonstrating all of the observable behaviors when required, which significantly enhanced safety, effectiveness and efficiency.

Example:
Recurrent training in FSTD. Maneuver: Expedite Climb using automation. *(Training requires Instructor required to assess FPA competency for this particular maneuver.)*

While evaluating the FPA competency, during the maneuver the instructor observed that;

3.1. Pilot elected to use the expedite feature even though the altitude condition was not completely appropriate for its use – **did not immediately result in an unsafe situation**.
3.2. Deviation from intended flight path (inadequate rate of climb) monitored and appropriate action was **effectively** taken to obtain an expedited climb.
3.3. **Did not manage** the flight path to achieve optimum operational performance – as the speed decelerated below minimum speed at times.
3.4 **Did not maintain** intended flight path during flight using automation whilst managing other tasks and distractions – **resulting in activation of low speed protection**.
3.5. **Did not select** the appropriate level and mode of automation in a timely manner considering phase of flight and workload – Expedited climb mode selected at high altitude.
3.6. **Failed to effectively monitor automation**, including engagement and automatic mode transitions – could not takeover manually to prevent a low speed that resulted in an unsafe situation

On the basis of the above observations – a **Grade of 1** was awarded by the instructor with remarks 3.3, 3.4, 3.5 & 3.6.

Competency 4 – FPM. Flight Path Management – Manual.	
Controls the flight path through manual control	
Observable Behaviors	**Grading Guidelines**
4.1 Controls the aircraft manually with accuracy and smoothness as appropriate to the situation 4.2 Monitors and detects deviations from the intended flight path and takes appropriate action 4.3 Manually controls the aeroplane using the relationship between aeroplane attitude, speed and thrust, and navigation signals or visual information 4.4 Manages the flight path to achieve optimum operational performance 4.5 Maintains the intended flight path during manual flight whilst managing other tasks and distractions 4.6 Uses appropriate flight management and guidance systems, as installed and applicable to the conditions 4.7 Effectively monitors flight guidance systems including engagement and automatic mode transitions	**Grade 1.** The pilot did not control the aircraft effectively, by rarely demonstrating any of the observable behaviors when required, which resulted in an unsafe situation. **Grade 2.** The pilot controlled the aircraft at the minimum acceptable level, by only occasionally demonstrating some of the observable behaviors when required, but which overall did not result in an unsafe situation. **Grade 3.** The pilot controlled the aircraft adequately, by regularly demonstrating most of the observable behaviors when required, which resulted in a safe operation. **Grade 4.** The pilot controlled the aircraft effectively, by regularly demonstrating all of the observable behaviors when required, which enhanced safety. **Grade 5.** The pilot controlled the aircraft in an exemplary manner, by always demonstrating all of the observable behaviors when required, which significantly enhanced safety, effectiveness and efficiency.

Example:
Recurrent check in FSTD. Maneuver: Stall recovery. *(Check requires Examiner to assess FPM competency for this particular maneuver.)*

While evaluating the FPM competency, during the maneuver the examiner observed that;

4.1. Pilot **effectively** controlled the aircraft manually with accuracy and smoothness as appropriate to the situation.
4.2. **Effectively** monitored and detected deviation from intended flight path (rapid erosion of speed resulting in stall) and took appropriate action to recover.
4.3. **Effectively** managed flight path to achieve optimum operational performance – during stall recovery and return to normal flight envelope.
4.4. **Adequately** managed flight path to achieve optimum operational performance – by ensuring that the aircraft returned and retained normal flight envelope after stall.
4.5. During and after stall recovery, **adequately** maintained intended flight path during manual flight whilst managing other tasks and distractions.
4.6. **Effectively** used flight management and guidance systems, as installed and applicable to the conditions.
4.7. **Effectively** monitored flight guidance systems including engagement and automatic mode transitions.

On the basis of the above observations – a **Grade of 3** was awarded by the examiner.

Competency 5 – LTW. Leadership and teamwork.	
Influences others to contribute to a shared purpose. Collaborates to accomplish the goals of the team.	
Observable Behaviors	**Grading Guidelines**
5.1 Encourages team participation and open communication 5.2 Demonstrates initiative and provides direction when required 5.3 Engages others in planning 5.4 Considers input from others 5.5 Gives and receives feedback constructively 5.6 Addresses and resolves conflicts and disagreements in a constructive manner 5.7 Exercises decisive leadership when required 5.8 Accepts responsibility for decisions and actions 5.9 Carries out instructions when directed 5.10 Applies effective intervention strategies to resolve identified deviations 5.11 Manages cultural and language challenges, as applicable	**Grade 1.** The pilot did not lead or work as a team member effectively, by rarely demonstrating any of the observable behaviors when required, which resulted in an unsafe situation. **Grade 2.** The pilot led and worked as a team member at the minimum acceptable level, by only occasionally demonstrating some of the observable behaviors when required, but which overall did not result in an unsafe situation. **Grade 3.** The pilot led and worked as a team member adequately, by regularly demonstrating most of the observable behaviors when required, which resulted in a safe operation. **Grade 4.** The pilot led and worked as a team member effectively, by regularly demonstrating all of the observable behaviors when required, which enhanced safety. **Grade 5.** The pilot led and worked as a team member in an exemplary manner, by always demonstrating all of the observable behaviors when required, which significantly enhanced safety, effectiveness and efficiency.

Competency 6 – PSD. Problem solving and decision making.	
Identifies precursors, mitigate problem; and makes decisions.	
Observable Behaviors	**Grading Guidelines**
6.1 Identifies, assesses and manages threats and errors in a timely manner 6.2 Seeks accurate and adequate information from appropriate sources 6.3 Identifies and verifies what and why things have gone wrong, if appropriate 6.4 Perseveres in working through problems whilst prioritising safety 6.5 Identifies and considers appropriate options 6.6 Applies appropriate and timely decision-making techniques 6.7 Monitors, reviews and adapts decisions as required 6.8 Adapts when faced with situations where no guidance or procedure exists 6.9 Demonstrates resilience when encountering an unexpected event	**Grade 1.** The pilot did not solve problems or make decisions effectively, by rarely demonstrating any of the observable behaviors when required, which resulted in an unsafe situation. **Grade 2.** The pilot solved problems and made decisions at the minimum acceptable level, by only occasionally demonstrating some of the observable behaviors when required, but which overall did not result in an unsafe situation. **Grade 3.** The pilot solved problems and made decisions adequately, by regularly demonstrating most of the observable behaviors when required, which resulted in a safe operation. **Grade 4.** The pilot solved problems and made decisions effectively, by regularly demonstrating all of the observable behaviors when required, which enhanced safety. **Grade 5.** The pilot solved problems and made decisions in an exemplary manner, by always demonstrating all of the observable behaviors when required, which significantly enhanced safety, effectiveness and efficiency.

Competency 7 – SAW. Situational awareness and management of information.	
Perceives, comprehends & manages information and anticipates its effect on the operation	
Observable Behaviors	**Grading Guidelines**
7.1 Monitors and assesses the state of the aeroplane and its systems 7.2 Monitors and assesses the aero plane's energy state, and its anticipated flight path 7.3 Monitors and assesses the general environment as it may affect the operation 7.4 Validates the accuracy of information and checks for gross errors 7.5 Maintains awareness of the people involved in or affected by the operation and their capacity to perform as expected 7.6 Develops effective contingency plans based upon potential risks associated with threats and errors 7.7 Responds to indications of reduced situation awareness	**Grade 1.** The pilot's situation awareness was not adequate, by rarely demonstrating any of the observable behaviors when required, which resulted in an unsafe situation. **Grade 2.** The pilot's situation awareness was at the minimum acceptable level, by only occasionally demonstrating some of the observable behaviors when required, but which overall did not result in an unsafe situation. **Grade 3.** The pilot's situation awareness was adequate, by regularly demonstrating most of the observable behaviors when required, which resulted in a safe operation. **Grade 4.** The pilot's situation awareness was good, by regularly demonstrating all of the observable behaviors when required, which enhanced safety. **Grade 5.** The pilot's situation awareness was exemplary; all observable behaviors were always demonstrated when required, which significantly enhanced safety, effectiveness and efficiency.

Competency 8 – WLM. Workload management.	
Maintains available workload capacity by prioritising and distributing tasks using appropriate recourses.	
Observable Behaviors	**Grading Guidelines**
8.1 Exercises self-control in all situations 8.2 Plans, priorities and schedules appropriate tasks effectively 8.3 Manages time efficiently when carrying out tasks 8.4 Offers and gives assistance 8.5 Delegates tasks 8.6 Seeks and accepts assistance, when appropriate 8.7 Monitors, reviews and cross-checks actions conscientiously 8.8 Verifies that tasks are completed to the expected outcome 8.9 Manages and recovers from interruptions, distractions, variations and failures effectively while performing tasks	**Grade 1.** The pilot did not manage the workload effectively, by rarely demonstrating any of the observable behaviors when required, which resulted in an unsafe situation. **Grade 2.** The pilot managed the workload at the minimum acceptable level, by only occasionally demonstrating some of the observable behaviors when required, but which overall did not result in an unsafe situation. **Grade 3.** The pilot managed the workload adequately, by regularly demonstrating most of the observable behaviors when required, which resulted in a safe operation. **Grade 4.** The pilot managed the workload effectively, by regularly demonstrating all of the observable behaviors when required, which enhanced safety. **Grade 5.** The pilot managed the workload in an exemplary manner, by always demonstrating all of the observable behaviors when required, which significantly enhanced safety, effectiveness and efficiency.

Competency 9 – KNO. Application of knowledge.	
Demonstrates practical and applicable knowledge of limitations and systems and their Interaction	
Observable Behaviors	**Grading Guidelines**
9.1 Demonstrates required knowledge of published operating instructions 9.2 Demonstrates knowledge of the physical environment, the air traffic environment including routings, weather, airports and the operational infrastructure 9.3 Demonstrates appropriate knowledge of applicable legislation. 9.4 Knows where to source required information 9.5 Demonstrates a positive interest in acquiring knowledge 9.6 Is able to apply knowledge effectively	**Grade 1**. The pilot did not have adequate knowledge, by rarely demonstrating any of the observable behaviors when required, which resulted in an unsafe situation. **Grade 2**. The pilot had knowledge of a minimum acceptable level, by only occasionally demonstrating some of the observable behaviors when required, but which overall did not result in an unsafe situation. **Grade 3**. The pilot had adequate knowledge, by regularly demonstrating most of the observable behaviors when required, which resulted in a safe operation. **Grade 4**. The pilot had good knowledge, by regularly demonstrating all of the observable behaviors when required, which enhanced safety. **Grade 5**. The pilot had exemplary knowledge, by always demonstrating all of the observable behaviors when required, which significantly enhanced safety, effectiveness and efficiency.

Example:
Annual ground training in SEP. *(Training requires SEP Instructor to assess KNO competency based on result of the written exam at the end of the training.)*

While evaluating the KNO competency, the instructor observed that;

9.1. Demonstrated required knowledge of published operating instructions by **adequately & correctly** answering the associated questions
9.2. Demonstrated knowledge of the physical environment and operational infrastructure by **adequately and correctly** answering the associated questions
9.3. Demonstrated knowledge of applicable legislation by **adequately and correctly** answering the associated questions.
9.4. Answered procedural questions **adequately and correctly** as the pilot knew where to source the required information (from SEP manual) during the open book exam.
9.5. Not observed due to the current assessment setting where KNO is being assessed on the basis of exam result.
9.6. Observed that the pilot is able to apply knowledge **effectively** as he was successful in passing the exam.

On the basis of the above observations – a **Grade of 3** was awarded by the instructor.

5.2 Grading Guidelines

5.2.1 Grading basis.

Grading of all FSTD / Line training / checks shall involve observation and assessment of the 9 observable behaviors. Tick box methodology of grading scenarios/ SPOT exercises / maneuvers / as S/US/NA is henceforth not permissible. Competency wise grading of trainees based on observable behavior shall be the sole basis for concluding the training or check as S/US or Pass / Fail. As it is necessary to capture all competencies to derive meaningful trends, partial data capturing or avoiding grading of a competency in a session / flight, by using NO and NA should be avoided. Course designers shall design the training / check in a way that facilitates observation and grading of all 9 competencies.

5.2.2 Grading methodology

Grading integrity is dependent on standardization of courseware and methodologies. Course designers shall design instructor guide, trainee guide and pre training presentation / lesson plan for each training / checks. Trainees shall use the trainee guide to prepare for training that they have been scheduled for. Instructor / examiner shall use the standard training presentation for briefing and also refer to the instructor guide for methodology and conditions to be adopted for conducting training / check. The guide will also list the competencies that are required to be assessed for individual maneuver / scenario or SPOT exercise. Instructor will observe trainees and grade each competency / scenario or maneuver based on the OBs listed in the tables above.

For MBTs & SPOT exercises a 1-5 Grading of pre-determined competency (s) is required for each exercise, the instructor guide and form will define as to which of the 9 competencies are to be assessed for each maneuver /SPOT exercise. Exercise wise assessment of competencies is desirable for individual components of scenario based training / check part as well. However, for scenario based training / checks designed as a LOFT, an overall assessment of all 9 competencies based on OBs noticed throughout the scenario is permissible. In such case the overall outcome of the scenario may influence the competency grades.

Note: Grading of competencies at the end of the session based on the observable behaviors noticed during the entire session may compromise data integrity, as Instructor needs to observe a huge number for OBs across several exercises to provide one set of grades at the end. Therefore it is desirable to grade maneuvers / spot exercises and scenario exercises individually, individual scores are thereafter aggregated to arrive upon a session wise grade of 9 competencies.

Course developers shall design all training / checks to facilitate observation and grading of all the 9 competencies. Instructor shall employ suitable techniques that ensure adequate opportunity to the trainee to display all the 9 competencies so that all competencies are recorded to derive meaningful trends.

For each competency, instructor shall consider the following guidelines into consideration for awarding the grade. *(Also see the examples provided in paragraph 5.1)* ;

Observable Behaviors Noticed		Outcome of TEM	Grading to be awarded	
HOW MANY	***HOW OFTEN***		***HOW WELL : Least of how many, how often and outcome***	
Few / Hardly Any	Rarely	Unsafe situation	**1**	Ineffectively
Some	Occasionally	Not unsafe	**2**	Minimally acceptable
Many	Regularly	Safe	**3**	Adequately
Most	Almost all	Enhanced safety	**4**	Effectively
All / Almost All	All	Significantly enhanced safety	**5**	Exemplary Manner

EXAMPLE: An instructor is grading COM competency for a MBT exercise,

- **HOW MANY:** He observed that ***MOST*** of the OBs – listed against COM in para 5.1 above (OBs number 2.1 to 2.10) were displayed
- **HOW OFTEN** It was also observed that the OBs were displayed by the trainee ***REGULARLY*** as required throughout the maneuver
- **The overall outcome of TEM** the maneuver / scenario was assessed as ***NOT UNSAFE*** from the COM point of view. (Overall assessment being - Communication was barely adequate but did not result in an unsafe situation)

Based on the above observation, the **Grade of 2 was awarded** by the instructor (see illustration below – grade corresponds to the lowest of How Many / How Often and Outcome of TEM);

Illustration of grading methodology adopted for the above example;

Observable Behaviors Noticed		Outcome of TEM	Grading to be awarded	
HOW MANY	***HOW OFTEN***		***HOW WELL : Least of how many, how often and outcome***	
Few / Hardly Any	Rarely	Unsafe situation	**1**	Ineffectively
Some	Occasionally	Not unsafe	**2**	Minimally acceptable
Many	Regularly	Safe	**3**	Adequately
Most	Almost all	Enhanced safety	**4**	Effectively
All / Almost All	All	Significantly enhanced safety	**5**	Exemplary Manner

5.2.3 Overall Outcome of the training / Check

Overall outcome will depend on the aggregate level of competency displayed by the pilot.

Any grade of 1 for any exercise during a session (with respect to any competency) will amount to ***an unsatisfactory outcome*** that will require remedial / corrective or reinforcement training. If such grade was noticed during a check – appropriate corrective training and repeat of such check is required., till this is completed, line released crew will have to be taken off line duties.

In case of multiple 2s, EBT manual will specify conditions requiring additional tailored re-training such as remedial, corrective or reinforcement training. Typical guidelines will require re-training for;

- Two successive grades 2 in a same competency. (e.g grade 2 noticed for FPA in two SBT / MBT exercises during the session)
- Any competency graded 2 if the trainer evaluates that the trainee will not be able to demonstrate an adequate performance (grade 3) during the next training or evaluationsession (significant gap in understanding of such competency).
- Significant number of 2s in one session or persistent 2's across a series of consecutive sessions which indicates highly marginal performance.

Detailed instructor notes are mandatory whenever a grade of 1, 2, 4 or 5 is assigned, notes shall contain evidence justifying such a grade. Such notes may be captured exercise / maneuver / scenario wise or competence wise or as a free text in the form.

5.3 Example of CBTA forms.

A typical CBTA form contains several sections as follows;

i. Information section : Details of operator, training, simulator / aircraft, trainer and trainee, date, duration etc.
ii. SBT section : Provides full description of scenario with option to grade all competency either sub-exercise wise or entire scenario wise. Space for instructor comments.
iii. MBT / SPOT section: Provides list of maneuvers / spot exercises – exercise wise description provided (conditions, expectations and competency(s) requiring evaluation) space for grading pre-determined competency(s) for each exercise. Space for instructor comments.
iv. Result section: Aggregate grades of all 9 competency based on all observation / grades for both SBT and MBT/SPOT section. Overall remarks of the instructor. Overall outcome of the training / check.
v. Regulatory information – reference of rule / CAR. Overall description of the objectives of the training / check, environmental conditions applied etc.
vi. Optionally - Training progress / trends section – comparison of current and past performance of the trainee indicating strengths and weakness for evolving optimization strategies.

5.3.1 Forms for license renewal / validation.

Existing CA 40, 41 & 42 forms described in CAR Section 8 Series F Part II shall be used till the time CBTA is approved for the operator. Once CBTA is approved, the following shall apply;

a. The CA 42 forms defined hereunder shall be used for route checks.
b. The CA 40 /41 form defined hereunder shall be used for IR / PPC / Skill Test.
c. The broad design of a CBTA FSTD training / check forms and a Aeroplane training / check form is as provided hereunder;

	DGCA India **Route Check Form for commercial aeroplane with AUW exceeding 5700 Kgs**	**CA 42** **Rev 4, 30/09/2021**

Date:	*Routing:*	*PF/PM & Seat:*	*Aircraft Regn, Type:*

Trainee Rank:	*Name*	*CPL/ATPL*	*Crew ID:*
Trainer Rank:	*Name*	*ATPL*	*Crew ID:*

Operator:	*Crew Status:*	*Takeoff Time:* *(D/N)*
Type of check:	*Type of approach:*	*Landing Time:* *(D/N)*

1 Pre-flight *(Sub-task details are in section 2 of paragraph 5.4 of CAR 7/B/XX)* — *Grade*

PRO	COM	FPA	FPM	LTW	PSD	SAW	WLM	KNO

Remarks

2 In-Flight *(Sub-task details are in section 3 to section 8 of paragraph 5.4 of CAR 7/B/XX)* — *Grade*

PRO	COM	FPA	FPM	LTW	PSD	SAW	WLM	KNO

Remarks

3 Post-Flight *(Sub-task details are in section 9 of paragraph 5.4 of CAR 7/B/XX)* — *Grade*

PRO	COM	FPA	FPM	LTW	PSD	SAW	WLM	KNO

Remarks

Overall Instructor Remarks:

Regulatory Information:

1. Description of phase wise attributes to be assessed are provided in paragraph 5.4 of this CAR.
2. Limits: Altitude +/- 100 feet, Speed +/- 10 kts, Speed on approach + 10 kt/ - 0 kt.
3. Trainer conducting the check shall be current including requirements stated in CAR Section 7 Series I Part I/II.
4. Overall instructor remarks shall capture reasons for unsatisfactory performance (score of 1)
5. P2s shall be given takeoff / landing, conditions permitting.

Overall Grade

PRO	COM	FPA	FPM	LTW	PSD	SAW	WLM	KNO

Overall Assessment:	Satisfactory.	Un-satisfactory

Trainees name, license number & signature	*Trainers stamp & signature*

NOTE: Date in DD/MM/YYYY format. Routing – provide ICAO aerodrome codes. PF/PM - enter the nature of duties undertaken by the trainee & seat occupied. Trainee/ trainer name as per license. Crew Status – enter licensed/ trainee and P2 / P1. Takeoff & Landing time in UTC, mention Day / Night based on landing time. Type of check – Annual Line (ALC) / PIC / SLF Release / Line Release / Route Clearance / Other (provide details under other). Grade all 9 competencies flight phase wise. The average of grade shall be annotated under phase wise Grade, if any competency under the phase is graded as 1 than the phase Grade shall also be marked as 1. Overall grade for each competency shall be the average grades in all 3 flight phases, if any competency is graded 1 in any of the 3 flight phases, then the overall grade for that competency shall also be graded as 1. Overall grade (optional) = sum of square of all 9 competencies. Physical signature of trainee and trainer required. Form can be generated electronically. Remarks are *mandatory for grades of 1,2,4 & 5. Minimum information required under remarks are OB number as per paragraph 5.1 and sub-task number as per paragraph 5.4.* ***Example*** *to indicate a grade of 1 due to lack of awareness of weather on departure path leading to loss of control – under IN-FLIGHT section enter 1 under SAW and under remarks enter OB 7.3 – Sub-Phase 3.1.7*

	DGCA India License/Type Rating Skill Test/IR-PPC Form for Commercial Aeroplane with AUW exceeding 5700 kgs	CA 40 / 41 Rev 4, 30/09/2021

Date:	Test On:	Simulator Type:	Simulator location / Regn:

Trainee Rank:	Name	CPL/ATPL	Crew ID:
Trainer Rank:	Name	ATPL	Crew ID:

Operator:	Crew Status:	Start / TO Time:
Type of check:	Duration::	End / Ldg Time:
Aeroplane Type:	Day / Night:	Seat occupied:

Sl No.	Exercise	☑

1. Flight Preparation

1.1	Performance calculation	
1.2	Aeroplane external visual inspection, location of each item and purpose of inspection	
1.3	Cockpit Inspection	
1.4 M	Use of checklists prior to starting engines, starting procedures, radio and navigation	
1.5	Taxying in compliance with ATC or instructions of Examiner.	
1.6 M	Pre-Flight checks.	

PRO	COM	FPA	FPM	LTW	PSD	SAW	WLM	KNO

OBs causing score of 1,2,4 or 5:

2. Take-Offs

2.1	Normal take offs with different flap settings.	
2.2 IR	Instrument takeoff; transition to instrument flight during rotation / immediately after airborne	
2.3	Cross wind takeoff (aeroplane, if practicable)	
2.4	Takeoff at maximum takeoff AUW (actual or simulated AUW)	
2.5 IR	Simulated engine failure after V2	
2.5.1M IR #	Simulated engine failure between V1 and V2	
2.5.2 M #	Rejected takeoff at a reasonable speed before reaching V1	

PRO	COM	FPA	FPM	LTW	PSD	SAW	WLM	KNO

OBs causing score of 1,2,4 or 5:

3. Flight Maneuvers and Procedures

3.1	Turns with or without spoilers (as applicable)	
3.2 #	Tuck under and Mach buffets and other specific flight characteristics of Aeroplane (e.g. Dutch Roll)	
3.3	Normal Operation of systems and control	
3.4 : Normal/abnormal ops of the following systems (minimum 3 M items shall be selected from 3.4 to 3.5 inclusive.		
3.4.0 M	Engine (if necessary propeller)	
3.4.1 M	Pressurization and air-conditioning.	
3.4.2 M	Pitot/static system	
3.4.3 M	Fuel system	
3.4.4 M	Electrical system	
3.4.5 M	Hydraulic system	
3.4.6 M	Flight Control and Trim-system.	
3.4.7 M	Anti- and de-icing system, Glare shield heating.	
3.4.8 M	Autopilot / Flight director	

3.4.9 M	Stall warning devices or stall avoidance devices, and stability augmentation devices	
3.4.10 M	GPWS, Weather radar, Radio altimeter, Transponder.	
3.4.11 M	Radios, Navigation equipment, Instruments, Flight Management System.	
3.4.12 M	Landing gear and brake- system.	
3.4.13 M	Slat and flap system.	
3.4.14 M	Auxiliary Power Unit (APU)	
3.5 M #	ACAS / TCAS	
3.6 : Abnormal/Emergency procedures (minimum 3 M items shall be selected from 3.6.1-3.6.8 inclusive)		
3.6.1 M #	Fire drills e.g. Engine/ APU/ Cabin/ Cargo/ Flight Deck/ Electrical. Including evacuation.	
3.6.2 M #	Smoke control and removal	
3.6.3 M #	Engine failures, shut-down and restart, fuel jettison (if applicable)	
3.6.4 M	Recognition and Management of Threat and Error (For issuance of ATPL/IR)	
3.6.5 M #	Windshear at Takeoff and Landing	
3.6.6 M	Cabin pressure failure / emergency descent.	
3.6.7 M	Incapacitation of flight crew member	
3.6.8	Other emergency procedures as outlined in the appropriate Aeroplane Flight Manual	
3.7	Steep turns with 45 degree bank – 180/360 degrees left and right.	
3.8 #	Early recognition and counter measures on approaching stall (upto activation of stall warning)	
3.8.1 #	Recovery from full stall or after activation of stall warning in climb / cruise / approach configuration	
3.9	Instrument flight procedures	
3.9.1 M IR	Adherence to departure and arrival routes and ATC instructions	
3.9.2 IR	Holding procedures	
3.9.3 M IR : ILS approaches down to a decision height (DH) not less than 60m (200 feet)		
3.9.3.1M IR	Manually, without Flight Director	
3.9.3.2M IR	Manually, with flight director (either 3.9.3.2 or 3.9.3.3 to be covered)	
3.9.3.3M IR	Automatically, with Autopilot (either 3.9.3.2 or 3.9. 3.3 to be covered)	
3.9.3.4M IR	Manually, with one engine simulated inoperative	
3.9.4 M IR	NDB / VOR / LOC / RNAV approach down to the applicable MDA/H	
3.9.5 M IR	Circling approach (if applicable) to a runway at least 90 degrees off centerline from final approach	

PRO	COM	FPA	FPM	LTW	PSD	SAW	WLM	KNO

OBs causing score of 1,2,4 or 5:

4. Missed Approach Procedures

4.1 IR	Go-around with all engines operating after an ILS approach on reaching Decision Height.	
4.2 IR	Go-around with OEI after an ILS approach on reaching DH (see also 3.9.3.4)	
4.3 M IR	Rejected landing at 50f above runway threshold and go-around	

PRO	COM	FPA	FPM	LTW	PSD	SAW	WLM	KNO

OBs causing score of 1,2,4 or 5:

5. Landings

5.1 IR	Normal landings also after an ILS approach with transition to visual flight on reaching DH	
5.2 #	Landing with simulated jammed horizontal stabilizer in any out-of-trim position	
5.3	Crosswind landings (aeroplane, if practicable)	
5.4	Traffic pattern and landing without extended or with partially extended flaps and slats.	
5.5 M	Landing with critical engine simulated inoperative.	
5.6 M #	Landing with two engines simulated inoperative (for 3 and 4 engine aeroplanes)	

PRO	COM	FPA	FPM	LTW	PSD	SAW	WLM	KNO

OBs causing score of 1,2,4 or 5:

6. Low Visibility Operations Including CAT II/III (if applicable)

6.1 M IR #	RTO at minimum authorized RVR at a reasonable speed (before reaching V1)	
6.2 M IR	ILS approach using flight guidance system (checking for SOP, task sharing, standard calls etc)	
6.3 M IR	Go-around – manual / automatic from DH/AH (due reduced RVR, ground/aircraft eqpt failure etc)	
6.4 M IR	Landing(s) – manual/ automatic from DH/AH with visual reference established.	
6.5 M #	LVTO in minimum T/O RVR < 150m	

PRO	COM	FPA	FPM	LTW	PSD	SAW	WLM	KNO

OBs causing score of 1,2,4 or 5:

7. Overall assessment and examiners remarks

PRO	COM	FPA	FPM	LTW	PSD	SAW	WLM	KNO

Examiners remarks (mandatory for any grade of 1 resulting in Failure):

Overall Assessment ☑	**PASS**	**FAIL**

Trainees name, license number & signature	*Examiners stamp & signature*

NOTE: Limitations – Height 100' > 15 sec, Direction 10 degrees, Speed +/- 10 kts and +10kts/-0kt in approach phase.
Tick the last column to indicate the items that were actually covered during the check.
Items marked # are to be completed in only on simulator and may be simulated as touch drills. M is mandatory for skill test / PPC. IR is mandatory for Instrument Rating. Additionally, operator to ensure that all ATA chapters, major supplementary / special ops/ abnormal/ emergencies as listed by the OEM shall be covered in a 3 year cycle in six distinct IR-PPC profiles covering a 3 year cycle. These profiles shall be defined and included in OM D on approval by FSD..
Date required in DD/MM/YYYY format. Operator name to be entered as per AoC. Test on options are AEROPLANE / SIMULATOR. Simulator type – enter type and level. Location and registration – enter ATO initials and location for checks on simulator and enter the aircraft registration in case the check is being conducted on aeroplane. Crew status to be entered as TRAINEE/LICENCED & P1/P2. Type of check options are SKILL TEST-DAY / IR / PPC or permissible combinations. Seat occupied options are LHS/RHS. DAY/NIGHT is applicable for skill tests only.
Overall competency grades are the average grades of individual competency graded in section 1 to 6 or 1 however, incase the competency has been graded as 1 in any of the sections. Minimum grade of 2 is required in all competencies and all section to award a PASS assessment. Examiner shall award a FAIL assessment in case of any grade of 1.

Example of a completed CBTA FSTD & CBTA Aeroplane training / check form.

	**ABC Airline** **Tech Crew Training Department**	**OM D Ed 1 Rev 1** **Apx 1, Form 050**

Date:	*Duration:*	*Simulator Type:*	*Simulator location / Regn:*
xx Oct 2021	04:00	A320 Level D	ABC, New Delhi. S/N 12345678

Trainee Rank:	*Name*	*CPL/ATPL*	*Crew ID:*
Trainer Rank:	*Name*	*ATPL*	*Crew ID:*

Supervised Takeoff and Landing

			Attempts	Grade
1	SPOT	Eligibility to provide / receive STOL (based on environmental conditions, performance and aircraft technical status)	2	2.5

PRO	COM	FPA	FPM	LTW	PSD	SAW	WLM	KNO
2								3

Remarks (mandatory for grades of 1,2,4 & 5)
1.2

			Attempts	Grade
2	MBT	Handover – Takeover of controls including takeover by either crew to correct significant deviations that may impact safety	1	3.2

PRO	COM	FPA	FPM	LTW	PSD	SAW	WLM	KNO
3	4					3	3	

Remarks (mandatory for grades of 1,2,4 & 5)
2.5

			Attempts	Grade
3	MBT	Last minute takeover for incorrect/no flare, on bounced / balked landing or long float	1	2.5

PRO	COM	FPA	FPM	LTW	PSD	SAW	WLM	KNO
2	3	2	3					

Remarks (mandatory for grades of 1,2,4 & 5)
1.4, 3.2

			Attempts	Grade
4	SPOT	Overall PM duties (session wide observation)	1	3

PRO	COM	FPA	FPM	LTW	PSD	SAW	WLM	KNO
3	4	2	3	3	3	3	3	3

Remarks (mandatory for grades of 1,2,4 & 5)

Instructor Remarks:
Work on improving understanding of the regulatory requirements for supervised takeoff and landing

Regulatory Information:

1. This training is conducted in accordance to the requirements stated in CAR Section ---
2. Duration of this training is -- minutes.
3. The SPOT / MBT exercise shall be repeated as required till proficiency is achieved.

Overall Grade								76.5
PRO	COM	FPA	FPM	LTW	PSD	SAW	WLM	KNO
2.5	3.5	2.0	3.0	3.0	3.0	3.0	3.0	3.0

Overall Assessment: **Satisfactory.** ✓ ~~Un-satisfactory~~

Trainees name, license number & signature | *Trainers name, license number stamp & signature*

ABC Airline
Tech Crew Training Department

OM D Ed 1 Rev 1
Apx 1, Form 050

Date:	*PF Sectors*	*PM Sectors*	*Seat:*
10/10/2021	VIDP-VOBL, VABB-VIDP	*VOBL–VABB.*	LHS

Trainee Rank:	*Name*	*CPL/ATPL*	*Crew ID:*
Trainer Rank:	*Name*	*ATPL*	*Crew ID:*

Aircraft Type: B737 NG	*Aircraft Reg:* VT ABC	*Crew Status:* Trainee PIC

PIC UPGRADE - SUPERVISED LINE FLYING

		Grade
1	**Pre-flight** 2.1. Performs dispatch duties	

	2.2. Provide flight crew and cabin crew briefings 2.3. Perform pre flight checks and cockpit preparation 2.4. Perform engine start 2.5. Perform taxi 2.6. Manage abnormal and emergency situations (if applicable / discussion / touch drill) 2.7. Communicate with cabin crew, passengers and company *(Sub tasks are described in paragraph 5.4 of CAR 7/B/XX)*

PRO	COM	FPA	FPM	LTW	PSD	SAW	WLM	KNO

Remarks

2	**In-Flight** 3. Perform take-off 4. Perform Climb 5. Perform Cruise 6. Perform Descent 7. Perform Approach 8. Perform Landing *(Sub-task details are in section 3 to section 8 of paragraph 5.4 of CAR 7/B/XX)*	*Grade*

PRO	COM	FPA	FPM	LTW	PSD	SAW	WLM	KNO

Remarks

3	**Post-Flight** 9.1. Perform taxi in and parking 9.2 Perform aeroplane post flight operations 9.3. Perform systems operation and procedures 9.4. Manage abnormal and emergency situations (if applicable / discussion / touch drill) 9.5. Communicate with cabin crew, passengers and company *(Sub-task details are in section 9 of paragraph 5.4 of CAR 7/B/XX)*	*Grade*

PRO	COM	FPA	FPM	LTW	PSD	SAW	WLM	KNO

Remarks

Overall Instructor Remarks:

Regulatory Information:

A. Trainer conducting the check shall be current including requirements stated in CAR Section 7 Series I Part I/II.
B. Overall instructor remarks shall capture reasons for unsatisfactory performance (score of 1)
C. P2s shall be given takeoff / landing, conditions permitting.

Overall Grade								
PRO	**COM**	**FPA**	**FPM**	**LTW**	**PSD**	**SAW**	**WLM**	**KNO**
Overall Assessment:			Satisfactory.			Un-satisfactory		

Trainees name, license number & signature	*Trainers stamp & signature*

NOTE: Date in DD/MM/YYYY format. Routing – provide ICAO aerodrome codes. PF/PM - enter the nature of duties undertaken by the trainee & seat occupied. Trainee/ trainer name as per license. Crew Status – enter licensed/ trainee and P2 / P1. Takeoff & Landing time in UTC, mention Day / Night based on landing time. Type of check – Annual Line (ALC) / PIC / SLF Release / Line Release / Route Clearance / Other (provide details under other). Grade all 9 competencies flight phase wise. The average of grade shall be annotated under phase wise Grade, if any competency under the phase is graded as 1 than the phase Grade shall also be marked as 1. Overall grade for each competency shall be the average grades in all 3 flight phases, if any competency is graded 1 in any of the 3 flight phases, then the overall grade for that competency shall also be graded as 1. Overall grade (optional) = sum of square of all 9 competencies. Physical signature of trainee and trainer required. Form can be generated electronically. Remarks are *mandatory for grades of 1,2,4 & 5. Minimum information required*

under remarks are OB number as per paragraph 5.1 and sub-task number as per paragraph 5.4. ***Example*** *to indicate a grade of 1 due to lack of awareness of weather on departure path leading to loss of control – under IN-FLIGHT section enter 1 under SAW and under remarks enter OB 7.3 – Sub-Phase 3.1.7*

Note: *Exercises provided are indicative to serve as an example. Modifications to format / arrangement permissible as long as all required details are captured. Other FSTD forms shall follow this format.*

5.4 Data collation

The course designers shall ensure that, as a minimum the following data shall be captured for all completed training / checks;

a. Exercises causing unsatisfactory outcome

b. Competencies causing unsatisfactory outcome

c. Combination of exercise-competency causing unsatisfactory outcome

d. Other data required to compile threats and errors for use in designing subsequent recurrent training programme.

5.4 Aeroplane pilot tasks by phases of flight.

This section is derived on the basis of guidelines provided in ICAO Doc 9858. The following list provides phase wise tasks that are required to be mastered by pilots. This list will be used to ensure to design LOE / SLF of pilots as part of their line training after completion of their FSTD training. The approved "course designer" shall ensure that all the tasks listed in this table are distributed throughout the LOE / SLF phase, ensuring that the trainee has sufficient opportunities to learn, observe and demonstrate proficiency to the trainer. Critical tasks shall be trained to proficiency. The codes associated with tasks shall be retained in the LOE / SLF form for the purpose of data collation and analysis.

Note 1. Pilot tasks used in training may include but are not limited to the pilot tasks listed in the table.
Note 2. The assignment of PF and PM duty shall be as per OEM SOP or approved modification thereof

X. Phase of flight *X.X Tasks* *X.X.X Sub-tasks*	*Duty - PF/PM*
1. [RESERVED]	
2. PERFORM AEROPLANE GROUND AND PRE-FLIGHT OPERATIONS **2.1. Perform dispatch duties** 2.1.1. Verifies technical condition of the aeroplane, including adequate use of MEL. 2.1.2. Checks technical bulletins and notices 2.1.3. Determines operational environment and pertinent weather 2.1.4. Determines impact of weather on aeroplane performance 2.1.5. Applies flight planning and load procedures 2.1.6. Determines fuel requirement 2.1.7. Files an ATS flight plan (if required)	

2.2. Provide flight crew and cabin crew briefings.

2.2.1. Briefs flight crew in all relevant matters
2.2.2. Briefs cabin crew in all relevant matters

2.3. Perform pre-flight checks and cockpit preparation

2.3.1. Ensures the airworthiness of the aeroplane
2.3.2. Performs the cockpit preparation and briefings
2.3.3. Performs FMS initialization, data insertion and confirmation
2.3.4. Optimizes and checks take-off performance and take-off data calculation
2.3.5. Conducts relevant briefings

2.4. Perform engine start

2.4.1. Asks for, receives, acknowledges, and checks ATC clearance
2.4.2. Performs engine start procedure
2.4.3. Uses standard communication procedures with ground crew and ATC

2.5. Perform taxi

2.5.1. Receives, checks and adheres to taxi clearance
2.5.2. Taxis the aeroplane including use of exterior lighting
2.5.3. Complies to taxi clearance
2.5.4. Maintains lookout for conflicting traffic and obstacles
2.5.5. Operates thrust, brakes and steering
2.5.6. Conducts relevant briefings
2.5.7. Uses standard communication procedures with crew and ATC
2.5.8. Completes standard operating procedures and checklists
2.5.9. Updates and confirms FMS data
2.5.10. Manages changes in performance and departure routes
2.5.11. Completes de-icing/ anti-icing procedures

2.6. Manage abnormal and emergency situations

2.6.1. Identifies the abnormal and emergency condition
2.6.2. Interprets the abnormal and emergency condition
2.6.3. Performs the procedure for abnormal and emergency condition.

2.7. Communicate with cabin crew, passengers and company

2.7.1. Communicates relevant information to cabin crew
2.7.2. Communicates relevant information to company
2.7.3. Makes passenger announcements when appropriate.

3. PERFORM TAKE-OFF

3.1. Perform pre-take-off and pre-departure preparation

3.1.1. Checks and acknowledges line-up clearance
3.1.2. Checks correct runway selection
3.1.3. Confirms validity of performance data
3.1.4. Checks approach sector and runway are clear
3.1.5. Confirms all checklists and take-off preparations completed
3.1.6. Lines up the aeroplane on centerline without losing distance
3.1.7. Checks weather on departure sector

3.1.8. Checks runway status and wind

3.2. Perform take-off roll

3.2.1. Applies take-off thrust
3.2.2. Checks engine parameters
3.2.3. Checks airspeed indicators
3.2.4. Stays on runway centerline

3.3. Perform transition to instrument flight rules

3.3.1. Applies V1 procedures
3.3.2. Rotates at Vr to initial pitch attitude
3.3.3. Establishes initial wings level attitude
3.3.4. Retracts landing gear
3.3.5. Maintains climb-out speed

3.4. Perform initial climb to flap retraction altitude

3.4.1. Sets climb power
3.4.2. Adjusts attitude for acceleration
3.4.3. Selects flaps according to flap speed schedule
3.4.4. Observes speed restrictions
3.4.5. Completes relevant checklists

3.5. Perform rejected take-off

3.5.1. Recognizes the requirement to abort the take-off
3.5.2. Applies the rejected take-off procedure
3.5.3. Assesses the need to evacuate the aeroplane

3.6. Perform Navigation

3.6.1. Complies with departure clearance
3.6.2. Complies with published departure procedures e.g. speeds
3.6.3. Monitors navigation accuracy
3.6.4. Communicates and coordinates with ATC

3.7. Manage abnormal and emergency situations

3.7.1. Identifies the abnormal and emergency condition.
3.7.2. Interprets the abnormal and emergency condition
3.7.3. Performs the procedure for the abnormal and emergency condition

4. PERFORM CLIMB

4.1. Perform standard instrument departure / en-route navigation

4.1.1. Compiles with departure clearance and procedures, including RNAV and RNP procedures.
4.1.2. Demonstrates terrain awareness
4.1.3. Monitors navigation accuracy
4.1.4. Adjust flight to weather and traffic conditions
4.1.5. Communicates and coordinates with ATC
4.1.6. Observes minimum altitudes
4.1.7. Selects approp0riate level of automation
4.1.8. Complies with altimeter setting procedures

4.2. Complete climb procedures and checklists

4.2.1. Performs the after takeoff items
4.2.2. Confirms and checks according to checklists

4.3. Modify climb speeds, rate of climb and cruise altitude

4.3.1. Recognizes the need to change speed/ rate of climb/ cruise altitude.
4.3.2. Selects and maintains the appropriate climb speed/ rate of climb.
4.3.3. Selects optimum cruise flight level.

4.4. Perform systems operations and procedures

4.4.1. Monitors operation of all systems
4.4.2. Operates systems as required

4.5. Manage abnormal and emergency situations

4.5.1. Identifies the abnormal and emergency condition
4.5.2. Interprets the abnormal and emergency condition
4.5.3. Performs the procedure for the abnormal and emergency condition.

4.6. Communicate with cabin crew, passengers and company

4.6.1. Communicates relevant information to cabin crew
4.6.2. Communicates relevant information to company
4.6.3. Makes passenger announcements when appropriate

5. PERFORM CRUISE

5.1. Monitor navigation accuracy

5.1.1. Demonstrates adequate area knowledge
5.1.2. Demonstrates adequate route knowledge, including RNAV and RNP routes and procedures
5.1.3. Navigates according to flight plan and clearance
5.1.4. Adjusts flight to weather and traffic conditions
5.1.5. Communicates and coordinates with ATC
5.1.6. Observes minimum altitudes
5.1.7. Uses all means of automation

5.2. Monitor flight progress

5.2.1. Selects optimum speed.
5.2.2. Select optimum cruise flight level
5.2.3. Monitors and controls fuel status
5.2.4. Recognizes the need for a possible diversion
5.2.5. Creates a diversion contingency plan if required

5.3. Perform descent and approach planning

5.3.1. Checks weather of destination and alternate airport
5.3.2. Checks runway in use and approach procedure
5.3.3. Sets the FMS accordingly
5.3.4. Checks landing weight and landing distance required
5.3.5. Checks MEA, MOCA and MSA
5.3.6. Identifies top of descent point

5.3.7. Conducts relevant briefings

5.4. Perform system operations and procedures

5.4.1. Monitors operation of all systems
5.4.2. Operates systems as required

5.5. Manage abnormal and emergency situations

5.5.1. Identifies the abnormal and emergency condition
5.5.2. Interprets the abnormal and emergency condition
5.5.3. Performs the procedure for abnormal and emergency condition

5.6. Communicate with cabin crew, passengers and company

5.6.1. Communicates relevant information to cabin crew
5.6.2. Communicates relevant information to company
5.6.3. Makes passenger announcement when appropriate.

6. PERFORM DESCENT

6.1. Initiate and manage descent

6.1.1. Starts descent according to ATC clearance or optimum descent profile
6.1.2. Selects optimum speed and descent rate
6.1.3. Adjusts speed to existing environmental conditions
6.1.4. Recognizes the need to adjust the descent path
6.1.5. Adjusts the flight path as required
6.1.6. Utilizes all means of FMS descent information

6.2. Monitor and perform en-route and descent navigation

6.2.1. Complies with arrival clearance and procedures, including RNAV and RNP procedures
6.2.2. Demonstrates terrain awareness
6.2.3. Monitors navigation accuracy
6.2.4. Adjusts flight to weather and traffic conditions
6.2.5. Communicates and coordinated with ATC
6.2.6. Observes minimum altitudes
6.2.7. Selects appropriate level/mode of automation
6.2.8. Complies with altimeter setting procedures

6.3. Replanning and update of approach briefing

6.3.1. Rechecks destination weather and runway in use
6.3.2. Briefs / rebriefs about instrument approach and landing as required
6.3.3. Reprograms the FMS as required
6.3.4. Rechecks fuel status

6.4. Perform holding

6.4.1. Identifies holding requirement
6.4.2. Programs FMS for holding pattern
6.4.3. Enters and monitors holding pattern
6.4.4. Assesses fuel requirements and determines max. holding time
6.4.5. Reviews the need for a diversion
6.4.6. Initiates diversion

6.5. Perform system operation and procedures

6.5.1. Monitors operation of all systems
6.5.2. Operates systems as required

6.6. Manage abnormal and emergency situations

6.6.1. Identifies the abnormal and emergency condition
6.6.2. Interprets the abnormal and emergency condition
6.6.3. Performs the procedure for abnormal and emergency condition

6.7. Communicate with cabin crew, passengers and company

6.7.1. Communicates relevant information to cabin crew
6.7.2. Communicates relevant information to company
6.7.3. Makes passenger announcements when appropriate

7. PERFORM APPROACH

7.1. Perform approach in general

7.1.1. Executes approach according to procedures and situation
7.1.2. Selects appropriate level/ mode of automation
7.1.3. Selects optimum approach path
7.1.4. Operates controls smoothly and with coordination
7.1.5. Performs speed reduction and flap extension
7.1.6. Performs relevant checklists
7.1.7. Initiates final descent
7.1.8. Achieves stabilized approach criteria
7.1.9. Ensures adherence to minima
7.1.10. Initiates go-around if required
7.1.11. Masters transition to visual segment

7.2. **Perform precision approac**h

7.2.1. Perform ILS approach
7.2.2. Performs low visibility ILS CAT II/III approach
7.2.3. Performs PAR approach
7.2.4. Performs GPS/GNSS approach
7.2.5. Performs MLS approach

7.3. Perform non-precision approach

7.3.1. Performs VOR approach
7.3.2. Performs NDB approach
7.3.3. Performs SRE approach
7.3.4. Performs GPS/GNSS approach
7.3.5. Performs LOC approach
7.3.6. Performs ILS back beam approach
7.3.7. Performs APV and BARO-VNAV approach
7.3.8. Performs RNP APCH and RNP AR approach

7.4. Perform approach with visual reference to ground

7.4.1. Performs standard visual approach
7.4.2. Performs circling approach

7.5. Monitor the flight progress

7.5.1. Ensures navigation accuracy
7.5.2. Communicates with ATC and crew members
7.5.3. Monitors fuel status

7.6. Perform system operations and procedures

7.6.1. Monitors operation of all systems
7.6.2. Operates system as required

7.7. Manage abnormal and emergency situations

7.7.1. Identifies the abnormal and emergency condition
7.7.2. Interprets the abnormal and emergency condition
7.7.3. Performs the procedure for abnormal and emergency condition

7.8. Perform go-around/ missed approach

7.8.1. Initiates go-around procedure
7.8.2. Navigates according to missed approach procedure
7.8.3. Completes relevant checklists
7.8.4. Initiates approach or diversion after the go-around
7.8.5. Communicates with ATC and crew members

7.9. Communicate with cabin crew, passengers and company

7.9.1. Communicates relevant information to cabin crew
7.9.2. Communicates relevant information to company
7.9.3. Makes passenger announcements when appropriate

8. PERFORM LANDING

8.1. Land the Aeroplane

8.1.1. Maintains stabilized approach path during visual segment
8.1.2. Recognizes and acts on changing conditions for wind shift/ wind shear segment
8.1.3. Initiates flare
8.1.4. Controls thrust
8.1.5. Achieves touchdown in touchdown zone on centre line
8.1.6. Lowers nose wheel
8.1.7. Maintains centre line
8.1.8. Performs after-touchdown procedures
8.1.9. Makes use of appropriate braking and reverse thrust
8.1.10. Vacates runway with taxi speed

8.2. Perform systems operation and procedures

8.2.1. Monitors operation of all systems
8.2.2. Operates systems as required

8.3. Manage abnormal and emergency situations

8.3.1. Identifies the abnormal and emergency condition
8.3.2. Interprets the abnormal and emergency condition
8.3.3. Performs the procedure for the abnormal and emergency condition

9. PERFORM AFTER LANDING AND POST-FLIGHT OPERATIONS **9.1. Perform taxi-in and parking** 9.1.1. Receives, checks and adheres to taxi clearance 9.1.2. Taxis the aeroplane including use of exterior lighting 9.1.3. Controls taxi speed 9.1.4. Maintains centre line 9.1.5. Maintains lookout for conflicting traffic and obstacles 9.1.6. Identifies parking position 9.1.7. Complies with marshaller/ stand guidance 9.1.8. Applies parking and engine shut down procedures 9.1.9. Completes with relevant checklists **9.2. Perform aeroplane post-flight operations** 9.2.1. Communicates with ground personnel and crew 9.2.2. Completes all required flight documentation 9.2.3. Ensures securing of the aeroplane 9.2.4. Conducts the debriefings **9.3. Perform systems operation and procedures** 9.3.1. Monitors operation of all systems 9.3.2. Operates systems as required **9.4. Manage abnormal and emergency situations** 9.4.1. Identifies the abnormal and emergency condition 9.4.2. Interprets the abnormal and emergency condition 9.4.3. Performs the procedure for the abnormal and emergency condition **9.5. Communicate with cabin crew, passengers and company** 9.5.1. Communicates relevant information to cabin crew 9.5.2. Communicates relevant information to company 9.5.3. Makes passenger announcements when appropriate	

5.5 CBTA for Type Rating.

This section is derived from guidelines listed in ICAO Doc 9868, 3rd Edition to the extent consistent with the provisions of this CAR.

5.5.1. CBTA shall be applied to type ratings in the aeroplane category only.

5.5.2 CBTA for type rating shall be adopted by ATOs authorized to provide Type Rating or by scheduled operators authorized to impart type rating under the ATRP programme.

5.5.3 Requirements stated in CAR Section 7 Series B Part XIX and associated requirements and guidelines issued by FSD / DTL DGCA shall apply.

5.5.4 The competency model and grading methodology defined earlier in this paragraph above shall be adopted for all FSTD and Line training and checks for Type Rating.

5.5.5 FSTD training is conducted by DGCA approved TRI / SFI. FSTD/ aeroplane checks shall be conducted by DGCA approved DE / SFE. Line training is conducted by TRI / LTC approved in accordance to CAR Section 7 Series I Part II. Additionally, these Type Rating FSTD / Line training

and checks shall only be conducted by trainers trained in CBTA / EBT who are current as described in paragraph 9 of this CAR.

5.5.6 Type Rating course shall be re-designed to incorporate CBTA principles, by CBTA / EBT course designer approved by the DGCA in accordance to requirements stated in paragraph 9 of this CAR.

5.5.7 Operator / ATO shall revise its OM-D / TPM to facilitate type rating training on CBTA principles. Such amended OM-D / TPM shall be submitted to FSD, DGCA for evaluation and approval. Type Rating on CBTA principles shall be undertaken only after such approval.

5.6 Guidelines for the design, development and implementation of CBTA type rating.

5.6.1 Course design and development

5.6.1.1 Course design must include the mandatory training elements or specific training requirements published by the original equipment manufacturer (OEM) or the state approving the course.

5.6.1.2 Course design should consider training design guidelines (if any) provided by the OEM and State approving the course.

5.6.1.3 Course content must focus on the development of pilot competencies rather than focus on pure tasks oriented training.

5.6.1.4 Course design should require the use of representative training and simulation tools as early as possible in the training process in order to contextualize all pilot competencies.

5.6.1.5 CBTA type rating programme should follow a progressive approach to achieve the final competency standard by initially acquiring the basic knowledge and skills for operation of the aircraft; then developing the competencies; and finally consolidating all competencies in conditions as close as possible to the real environment, in real-time (scenario based training / line oriented simulations.)

5.6.1.6 The course design should group aircraft system malfunctions by reference to malfunction characteristics and the underlying elements of crew performance required to manage them (Class equivalence principle or equivalency of malfunction)

5.6.1.7 CBTA programme should integrate threat and error management and surprise elements throughout the complete course syllabus with an increase of these factors towards the end of the syllabus.

5.6.1.8 Course design should enable the instructor to apply a wide range of competency based instructional techniques.

5.6.1.9 The quality assurance and safety management system shall be reviewed to assess the impact and suitable mitigatory measures shall be incorporated as deemed necessary to ensure quality and safety.

5.6.1.10 ATO / operator shall continuously monitor the effectiveness of training and introduce modifications as deemed necessary based on type rating CBTA trends, OEM documentations and modifications and associated trend analysis / operational data for the fleet.

5.6.1.11 ATO / operator shall provide regular feedback to DGCA on the progress and problems faced during and after the delivery of the first programme(s).

6 Evidence based training.

EBT is a logical extension of the CBTA program. EBT shall be considered for implementation only after successful implementation of CBTA described in paragraph 5 above.

While implementation of CBTA in accordance to paragraph 5 above is mandatory for all operators, EBT is an optional program that enables operators to harness the full benefit of the CBTA program. EBT shall be implemented in phases to ensure seamless transition from the current training and assessment regime to a CBTA-EBT based training and assessment regime. This paragraph describes the significant features of EBT and provides guidelines for its phased implementation.

The purpose of the EBT program is to use events defined to be most critical, as a means of developing and assessing competencies. In the phased implementation regime, this is achieved by designing EBT recurrent training matrix based on relevant data that indicates real time trends, risks and changes in operational environment.

EBT utilizes valuable data derived from CBTA training and checks to derive training programs that are relevant to the needs of the operator. Operator collates CBTA data fleet wise to derive critical training data such as emerging risks, trends, effectiveness of mitigatory measures, overall trainee strengths and weaknesses etc. The operator co-relates this data with other relevant data such as FDAP trends, LOSA data, OEM inputs and learnings from world wide accidents / incidents data relevant to the fleet. All these data are consolidated to used to define the most suitable and relevant recurrent training program.

On the onset, sufficient data is not available with operators to design relevant recurrent training programs based on CBTA and other data. This is because operators do not have a comprehensive approved processes to acquire, verify, collate and meaningfully data capable of assisting in development of recurrent training program. Hence in the phased implementation regime, initially, interim data available in Appendices 2 to 7 to Part II of ICAO Doc 9995 (*Manual of evidence based training)* shall be used by operators to design recurrent training programs. This data is grouped in generation specific aeroplane groups and are assessed as relevant to such generation group. The data in the Doc is extracted from a comprehensive assessment and training matrix and is well suited for initiation of the EBT program.

Eventually, operators shall establish approved processes to acquire, verify and collate meaningful real time data that is capable of assisting in development of meaningful recurrent training programs. Operators shall establish processes and test their integrity over a period of time. Such processes shall be listed in the EBT manual. Process shall ensure collation of real time data from all line/FSTD CBTA training/ checks, FDAP, LOSA, OEM inputs and worldwide accidents/ incidents in a manner that assists development of a relevant recurrent training program.

6.1 EBT recurrent assessment and training matrix

6.1.1 The EBT recurrent assessment and training of competencies are considered over a three-year recurrent assessment and training cycle. For the purposes of the construction of model training programs in line with the scheme listed in ICAO Doc 9995 Appendices 2 to 7 (Part II), the program shall include a notional exemplar 48 hours for each crew member over a three year period in a suitably qualified flight simulation training device (FSTD). The module consists of three phases – evaluation, maneuvers training and scenario-based training which have been suitably modified to

suit the phased implementation regime. Recurrent shall also include development and assessment of pilot-monitoring (PM) role.

Note: While FSTD training is most suited to achieve the objectives of CBTA & EBT, operators may continue to use the option of conducting aeroplane recurrent training and checks on aeroplane, provided such option is in line with the applicable regulations and such training is approved by the FSD (by way of inclusion in the operators training program [OM -D]).

6.1.2 In the phased implementation regime, The evaluation phase of each module will periodically be the focus of license renewal or revalidation and the same will be carried out using CA 40/41 form described in paragraph 5 of this CAR. Each crew shall undergo PPC / IR-PPC check once every six months (IR to be completed at-least once every year). If the check is conducted in an approved FSTD, duration shall be for a minimum of 2 hours as PF and 2 hours as PM. Hence the crew shall be undergoing evaluation for a period of 4 hours each over 6 recurrent evaluation cycles totaling 24 hours FSTD time over a period of 3 years.

6.1.3 The maneuvers training and scenario-based training phase shall be carried out as part of the recurrent training for each crew once every six months. If conducted on an approved FSTD, this training shall be conducted every six months for a minimum duration of 2 hours as PF and 2 hours as PM – amounting to 24 hours FSTD time over a period of 3 years.

6.2 Evaluation Phase

6.2.1 The purpose of the evaluation phase is to:

a. Observe and assess flight crew competency;

b. Collect data to further develop and validate the effectiveness of the training system;

c. Identify individual training needs.

6.2.2 Evaluation shall be conducted only by DGCA authorized Designated Examiners / SFEs / DGCA approved TRE/ Examiners who have been trained in CBTA / EBT concepts as per the requirements stipulated in this CAR.

6.2.3 As part of the phased implementation, evaluation phase may consist of maneuver and scenario elements, and may include evaluation of special operations as necessitated by operational environment relevant to the operator. During the evaluation phase of the session, the examiner will not normally give any instruction to the pilots or interrupt. Instead, he or she will focus on observation, run the scenario and play the role of external parties (ATC, cabin crew etc) where necessary. All deficiencies in flight crew competence should be noted in order that may be addressed during the next recurrent session that is planned for the crew. In the event the instructor is obliged to intervene, the effect of this intervention on the flight crew's performance should be taken into account.

6.2.4 Evaluation phase profile shall be scripted around the CA 40/41 form by "course designer" DEs approved by the FSD. The design should consist of a LOFT like scenario during which there are one or more occurrences for the purpose of evaluating one or more key element of required competencies. The root cause rather than the symptoms in any deficiency should be identified. Other exercises shall be covered as maneuver based assessments.

6.2.5 Evaluation profile shall cover the mandatory exercises listed in CA 40/41 form. The primary objective shall be to continually develop competencies and adopt TEM principles to mitigate relevant operational risks. Evaluation profiles provide feedback to course designers to assess the

effectiveness of training completed in the recent past. Evaluation phase also assists in deriving latest trends on any new/ emerging threats.

6.2.6 While the profile will be designed around the CA 40/41 form, ample opportunities are available to the course designers to assess risks, trends and competency levels of pilots from a specific fleet. Course designers shall use this data in conjunction with FDAP trends, LOSA data, OEM data, learnings from accidents / incidents in order to design the subsequent 6 monthly recurrent training profile.

6.2.7 The unmodified Evaluation Phase described in Doc 9995 shall be considered for adoption only after the phased implementation of EBT is complete and sufficient experience is obtained by the operator. Till such time, the modified evaluation phase described in this paragraph shall be adopted.

6.3 Maneuvers Training Phase

6.3.1 Maneuvers training phase is an integral part of the bi-annual recurrent training.

6.3.2 The purpose of the maneuvers training phase is to practice and develop the handling skills necessary to fly critical flight maneuvers. This is not real-time training, but allows crews the time to practice and improve performance in largely psychomotor skill based exercises. It is important to maintain focus on skill, and not to turn this into a LOFT style training. Once the pilot has completed the cortical part of the maneuvers successfully, the aim has been achieved. Repositioning of the flight simulation, to focus training on the intended maneuvers will be a commonly used FSTD feature for this phase. Every effort shall be made to provide a relaxed environment free from the normal LOFT style considerations, where the crew can practice skills with coaching where necessary. Instructor can adopt In-Seat-Instruction techniques where necessary.

6.4 Scenario Based Training Phase

6.4.1 Scenario based training phase is an integral part of the bi-annual recurrent training.

6.4.2 The purpose of the scenario based training phase is to develop, retain and practice the competencies for effective management of threats and errors to enhance the crews ability to cope with both predictable and unforeseen situations. In contrast with the evaluation phase, the instructor should intervene or interrupt where necessary to enable the development of the crews competence or enhance the learning experience. Training should consist of line oriented flight scenarios during which one or mnore threats may be introduced. Typically, contents of this training should be adopted to develop the weaker competencies identified during evaluation phase – as derived from collation of recent evaluation phase CBTA data relevant for the operator / fleet. Scenario based training phase shall incorporate elements of surprise and compliance.

6.4.3 *Surprise.* As per studies detailed in Doc 9995, data indicated substantial difficulties encountered by crews when faced with a threat or error that was a surprise or an unexpected event. The element of surprise should be distinguished from what is sometimes referred to as the “startle factor”, the latter being a physiological reaction. Wherever possible, consideration should be given towards variations in the types of scenario, times of occurrences and types of occurrence, so that pilots do not become overly familiar with repetitions of the same scenarios. Variations should be the focus of EBT programme design, but not left to the discretion of individual instructors in order to preserve programme integrity and fairness. Course designers shall clearly describe the recurrent profile in suitable guidance material that is accessible only to instructors.

6.4.4 *Compliance.* Data analyzed also indicated a strong link between intentional non-compliance and the occurrence of more serious errors resulting in incidents and accidents. Compliance is

considered as a training topic, spanning all aspects of the EBT programme. This means that instructors should ensure that observed non-compliances are taken as learning opportunities throughout the programme. In all modules of the programme, the FSTD should as far as possible be treated like an aircraft, and non-compliances should not be accepted unless clearly necessary in the particular circumstances to maintain or achieve a higher level of safety.

6.5 Development and assessment of the pilot-monitoring (PM) role.

6.5.1 *Background*. The pilot monitoring (PM) plays a vital role in operational safety. One of the objectives of the EBT programme is to develop special attention to the development and enhancement of that role. The PM is considered to provide the following functions;

a. plays an active role;

b. maintains situation awareness, particularly regarding the tasks of other crew members;

c. supports the PF by providing inputs to the tactical (short term) and strategic (long term) plan for the flight;

d. monitors parameters not immediately apparent to the PF;

e. monitors activities of the PF;

f. provides back-up to the PF (ensures redundancy; takes over control when the PF does not respond to cues or fails to ensure safety);

g. makes call-outs of deviations from SOPs and/or limitations; and

h. performs tasks as defined by the SOPs.

6.5.2 *Assessment and training.* Instructors should balance their attention to both PF and PM roles and maximize learning opportunities, which are often revealed when both crew members are busy with particular tasks, sometimes to the exclusion of effective flight path monitoring. In the phased implementation regime, each FSTD/ Line training form shall include ‘Assessment of pilot monitoring (PM) role’ as an independent SPOT exercise in order to record and collate this vital data. All 9 competencies shall be assessed and recorded.

6.6 EBT recurrent profile general.

6.6.1 Bi Annual recurrent training shall be conducted by DGCA authorized TRIs / SFIs. Operators shall ensure that these trainers are trained in CBTA / EBT in accordance to this CAR.

6.6.2 Typically 30 minutes time as PF is allotted in the 4 hour bi-annual recurrent training exclusively for Maneuvers Training Phase. Another 30 minutes as PF is typically allotted to scenarios / maneuvers based special operations/ other regulatory recurrent training. The remaining PF time (typically 60 minutes) is allotted to the Scenario Based Training Phase.

6.6.3 Recurrent training profile (including maneuvers training phase and scenario-based training phase) shall be designed by “course designer” DEs approved by the FSD.

6.6.4 Development and assessment of the pilot-monitoring (PM) role shall be assessed and noted for all FSTD / line training and checks.

6.6.5 In the phased implementation regime, course designers will adopt the maneuvers and scenarios described in the matrix of Appendices 2 to 7 of ICAO Doc 9995 to design recurrent training profiles. This practice shall be continued till the time the operator defines, tests and implements

data collation procedures to collect, verify and process previous CBTA data, FDAP, LOSA, OEM information and worldwide data on accidents / incidents relevant to the fleet. Once such data collation procedures are assessed and approved, recurrent training maneuvers and scenario shall be replaced with more suitable ones based on the latest collated data.

6.6.5 Frequency

In the phased implementation regime, scenarios and maneuvers described in Appendix 2 to 7 of Doc 9995 shall be initially adopted by course designers to create recurrent training profiles. The frequency of the topic to be included in an EBT recurrent training program is determined in according to evidence, initially the frequency defined in Doc 9995 shall be adopted. There are three levels of frequency as enumerated below:

A	Every six months	assessment and training topic to be included with defined scenario elements during every EBT module.
B	Every year	assessment and training topic to be included with defined scenario elements during alternate EBT modules
C	Once in every 3-year cycle	assessment and training topic to be included with defined scenario elements

6.6.6 Equivalence of malfunctions (Malfunctions Clustering)

Several scenarios listed in Appendices 2 to 7 of ICAO Doc 9995 can be clustered (bunched) by applying the philosophy of Equivalence of malfunctions. Equivalent groups of aircraft system malfunctions can be determined by reference to malfunction characteristics and the underlying elements of crew performance required to manage them. Demonstrated proficiency in the management of one malfunction is then considered equivalent to demonstrated proficiency for the other malfunctions in the same group. Malfunctions characteristics should be considered in isolation from any environmental or operational context as in the table below.

Characteristic	Description of required crew performance	Examples
Immediacy	System malfunctions requiring immediateand urgent crew intervention or decision	Fire, smoke, loss of pressurization at high altitude, failures during take-off,brake failure during landing
Complexity	System malfunctions requiring complexprocedures	Multiple hydraulic system failures,smoke and fumes procedures
Degradation of aircraft control	System malfunctions resulting in significantdegradation of flight controls in combinationwith abnormal handling characteristics	Jammed flight controls, certaindegradation of FBW control
Loss of instrumentation	System failures that require monitoring andmanagement of the flight path using degraded or alternative displays	Unreliable primary flight path information, unreliable airspeed
Management of consequences	System failures that require extensive management of their consequences (independent of operation or environment)	Fuel leak

6.6.7 Equivalency of approach types

Selection of approaches for scenario-based training should be based on the underlying elements of flight crew performance to conduct them. Equivalent groups of approaches can be determined by reference to these elements. Demonstrated proficiency in the conduct of one approach type can be considered equivalent to demonstrated proficiency for the other approach types in the same group.

In order to develop the equivalency of approach types the following parameters should be considered:

a. straight in/visual alignment/circling approaches;
b. level of automation;
c. precision/non precision approaches and approaches with vertical guidance;
d. internal/external guidance;
e. visual segment;
f. special airport approach procedures (e.g. PRM, RNP-AR);
g. non-standard glide path angle; and
h. low visibility operations.

Frequency of training may be reduced for types of approaches that are conducted regularly in line operations.

Go-around training from various stages of the approach should form an integral and frequent element of approach training.

It is impossible to list here all possible permutations for an operation and the different approach types. It is intended that an operator wishing to benefit from the philosophy described here should examine all types of approaches flown within the operation, and make an analysis according to the characteristics detailed above. The resulting list of equivalent approach types, along with the list of equivalent malfunctions should be included in the EBT recurrent training program.

6.6.8 In seat instruction

In-seat instruction should follow a predetermined scripted scenario. It can be achieved by:

a. the response of one pilot to simple instructions provided confidentially by the instructor. This should be limited to the simulation of pilot incapacitation; or

b. by the instructor occupying a pilot seat and performing pre-determined exercises acting as the PF or PM for the purposes of demonstration and of intervention by the other pilot.

In-seat instruction should be used in select FSTD training and during SLFs. Where a pilot is instructed to play a role, there should be no assessment of this function. Where a pilot is expected to respond to an error induced during ISI, the response should be according to behavior expected in line operations, and additionally there should be no negative consequences to any assessment of performance for the duration of ISI. Once ISI has ceased and/or control is transferred, subsequent performance may be assessed in the normal way.

Topics marked “ISI” are intended to be the focus of instructor ISI. In these cases, topics should be combined together to create an In - Seat Instruction scenario to be used at the determined frequency. The following training topics may be considered for instructor In Seat Instruction:

a. monitoring, cross-checking, error detection, mismanaged aircraft state; and.
b. upset management..

6.6.9 Focusing on airline-critical procedures

The EBT development process is operator specific. Operators have different missions, philosophies and SOPs, and EBT development helps an airline to best adapt to meet unique operational needs. This operational focus should be used to involve training and flight operations in the process of developing competency. By addressing procedures and fundamental issues of crew performance, enhanced EBT extends involvement to the entire spectrum of flight operations, involving personnel in flight standards, training, and operations.

Guidelines for identifying own operator's needs

The identification of competency problem areas is an on-going activity, and to ensure the long-term success of the EBT program, an airline should identify a few operationally significant competency problems at the beginning of the EBT development process.

An airline that does not have detailed crew performance data should use the *Data Report for Evidence- Based Training* to identify general problem areas, and then the airline should use specific aircraft accident and incident reports to obtain the details.

When existing airline data or reports do not point to clear competency issues, the course developer should consider surveys or structured interviews as possible tools for data collection.

The needs survey should be designed primarily for instructors and should investigate at least two areas:

i. performance problems by phase or sub-phase of flight; and

ii. performance problems by EBT topic.

The course developer should be aware of the benefits and possible liabilities of each scenario it plans to add. The team's mandate is to create an immersive training program, minimizing repositioning and maximizing realism, and the team should thus be cognizant with the need to create manageable workload and effective learning.

6.7 Documentation and records

On completion of program implementation, all available measurement and tracking tools should continue to be used to chart improvements and degradations in crew and pilot performance. The data should also be utilized to facilitate further program development and customization.

CBTA data is critical for successful implementation of EBT. CBTA, FDAP, LOSA and OEM data shall be compiled and stored in a way that ensures integrity and easy data mining. The operators Director Training, Director Flight Safety and Director Operations shall be jointly responsible for the relevance and integrity of data relating to CBTA, FDAP, LOSA/OEM respectively. DGCA shall be provided access to such data to evaluate the effectiveness of the CBTA/ EBT program. Such data also assists DGCA to develop regulations / guidelines based on data analysis and emerging trends. Operators shall collaborate with OEM, ATOs and similar domestic and international operators who have adopted CBTA/ EBT to derive maximum benefit.

6.8 EBT manual

Operator shall create a EBT manual defining all CBTA & EBT requirements in accordance to this CAR. The manual shall define the roadmap to implement a phased EBT. The manual shall be submitted to FSD for approval and shall form a part of the operators training programme.

6.8.1 Training & check forms (other than CA 40, 41 & 42) shall adopt the competency framework and grading methodology defined in this CAR. Electronic forms may be used provided data is hosted on a secure database that ensures integrity and security, maintaining data on open sheets such as excel is not permitted. Electronic forms shall capture the trainer/ trainee signature on real time basis, ideally the IP address and geo-location shall also be captured whenever the form is signed. Digital signature will be adopted when operator completes phased EBT trails and moves to implement baseline / advanced EBT.

6.8.2 The data acquisition, verification and collation system and associated procedures shall be detailed in the EBT manual. System shall be capable of generating trends and analysis based on different levels such as operator level, fleet level, trainee level, trainer level, competence level, malfunction/ equivalent malfunction level, scenario/maneuver level etc. Online forms, data and trends shall be made accessible to the FSD / DTL.

7 Implementation methodology.

7.1 Definition of an implementation and operations plan.

All operators shall implement CBTA as per the timelines defined in this CAR. Operators may optionally implement EBT in phases in accordance to the methodology defined in this CAR. Where constraints exist, operator can choose to implement the phased EBT initially for one fleet.

7.2 Implementation strategy.

a) **Training and assessment according to CBTA principles.** All FSTD and line training that are currently undertaken will be continued. The training component itself will not change, however the assessment and grading methodology will change in accordance to the requirements stated in paragraph 5. Training shall be modified so as to focus on competencies. All forms shall capture competency and grades based on observable behavior individually for each SPOT / maneuver and either individually or collectively for scenario elements. Phased implementation of EBT shall be considered once 6 months of CBTA experience is acquired in grading competencies.

b) **EBT - phased implementation.** This will be considered only after sufficient experience is gained in CBTA and procedures for collation of data are operational. The operator will follow the guidelines in this CAR to prepare six FSTD recurrent training modules based maneuvers and scenarios listed in ICAO Doc 9995 Appendix 2 to 7. Operator will thereafter start capturing training data, trends, and also consider FDAP data, line / LOSA events, global accident-incident data, OEM inputs, validated data from other relevant sources, this data is used by course developers to design the next FSTD recurrent training profile. Methodology for selection, clustering and distribution of maneuvers and scenario exercises over 6 recurrent profiles spread over 3 years shall be defined in the EBT manual. Course developers shall record reasons for selection/ modification of particular maneuvers / scenarios for each FSTD recurrent training module, the same is subject to audit by FSD, DGCA.

c) **Baseline / Enhanced EBT:** The ultimate objective is to implement a baseline / enhanced EBT program by applying the principles defined in DOC 9995. However this will be considered only after operators acquire significant experience after implementing (a) and (b) above.

7.3 Instructor training and standardization.

Operators can seek interim training approval for training instructors when they submit the EBT manual for approval. Training guidelines stipulated in paragraph 9 shall be followed.

7.4 Approval of EBT manual

Operator shall create an EBT manual incorporating the provisions of this CAR and wherever consistent, the philosophies detailed in DOC 9868 and Doc 9995. The manual may contain acceptable deviations / improvements to suit the operational environment, fleet or area of operation applicable to the operator as long as the core philosophies of this CAR are adopted. The operator shall submit the EBT manual to FSD, DGCA for approval. EBT Manual shall form a part of Operator's Training Program / ATO TPM. EBT shall be implemented only after the manual has been approved by FSD.

7.5 Summary of steps involved in implementation

Step	Activity
1	Operator defines the CBTA implementation plan and interim initial training plan in the EBT manual and submits it to FSD, DGCA.
2	Operator seeks interim approval for training its trainers and course developers.
3	Operator completes initial CBTA/ EBT training for all LTCs/ instructor & examiners
4	Operator converts all its line and FSTD training / checks (except CA 40, 41 & 42) to ensure training on CBTA principles, and seeks approval for the amended training program with FSD, DGCA.
5	Operator commences CBTA training and check methodology for all FSTD and Line training
6*	Operator establishes and tests and operationalizes processes for acquisition, validation and collation of data from CBTA, FDAP, LOSA, OEM amendments / modifications, worldwide accident / incident data relevant to the fleet – for the purpose of using such data for designing recurrent EBT profile that is more relevant to the operators fleet, nature of operation and competence.
7*	If the operator seeks to implement EBT, shall adopt the 3 year FSTD training program by adopting maneuvers and scenarios defined in Appendices 2 to 7 of ICAO Doc 9995, and submits at-least 2 distinct EBT FSTD profiles based on the generation of aircraft being used for operations, operational environment etc. Note: The profiles can be modified from time to time based on available data, trends etc.
8*	Operator incorporates the EBT recurrent profiles and obtains approval for the revised EBT EBT manual
9*	Operator commences EBT recurrent training
10	Operators Course Developer collates data described in point 6 above to evolve more meaningful and relevant recurrent training profiles.
11*	After a minimum of two FSTD cycles after phased implementation, operator may apply to FSD, DGCA to adopt baseline EBT, the same shall be considered based on the operators ability to analyze and adopt data to create meaningful and more relevant EBT recurrent training profiles.
** Applicable only in case the operator chooses to implement the phased EBT programme.*	

8. Baseline and Enhanced EBT programme.

Baseline and Enhanced EBT programme shall be considered for implementation only after the operator has gained sufficient experience in successfully implementing CBTA and phased EBT programme. The guidelines listed in ICAO DOC 9995 as far as they are consistent with this CAR shall be adopted for design, implementation and approval of such baseline / enhanced EBT programme.

9. CBTA / EBT Instructor training.

9.1 Introduction

9.1.1 Pilot instructors shall meet the standards and recommended practices requirements specified in ICAO Annex 1, 2.1.8 and 2.8, as appropriate.

9.1.2 The benefits of using competencies for the pilot instructor and evaluator, and some explanations on the terms used , are described below.

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

9.1.4 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.

9.1.5 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.

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

9.1.7 The tables below provides an overview of the adopted Pilot Instructor and Evaluator Competency (IEC) framework.

9.2 Pilot (FSTD/ Line) instructor and evaluator competency framework

Name of the competency	***Description***	***Observable behavior (OB)***
IEC 1: 9 Pilot competencies	See competencies listed in paragraph 5 of this CAR	See the observable behaviors in paragraph 5 above
IEC 2: Management of the learning environment	See descriptions below for the individual competencies	See the observable behaviors in the tables below
IEC 3: Instruction		
IEC 4: Interaction		
IEC 5: Assessment and evaluation		

IEC 1	
Name of the competency:	**9 Pilot Competencies**
Description:	See individual descriptions for each competency in paragraph 5 above
Observable Behaviors; See observable behavior associated with each pilot competency as listed in paragraph 5 above.	

IEC 2	
Name of the competency:	**Management of the learning environment**

Description:	Ensures that the instruction, assessment and evaluation are conducted in a suitable and safe environment.
Observable Behaviors.	
OB 2.1	Applies TEM in the content 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	Adopts 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.

IEC 3	
Name of the competency:	**Instruction**
Description:	Conducts training to develop the trainee's competencies.
Observable Behaviors.	
OB 3.1	References approved sources (operational 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 centered feedback technique (e.g. facilitation)
OB 3.12	Provides positive reinforcement.

IEC 4	
Name of the competency:	**Interaction**
Description:	Supports the trainee's learning and development Demonstrates exemplary behavior (role model)
Observable Behaviors.	
OB 4.1	Shows respect for the trainee e.g. for culture, language and experience.
OB 4.2	

OB 4.3	Shows patience and empathy, e.g. by actively listening, reading non-verbal messages and encouraging dialogue
OB 4.4	Manages trainees barriers to learning
OB 4.5	Encourages engagement and mutual support
OB 4.6	Coaches the trainees
OB 4.7	Supports the goal and training policies of the operator / ATO and Authority
OB 4.8	Shows integrity (e.g. honesty and professional principles)
OB 4.9	Demonstrates acceptable personal conduct, acceptable social practices, content expertise, a model for professional and interpersonal behavior Actively seeks and accepts feedback to improve own performance.

IEC 5	
Name of the competency:	**Assessment and evaluation**
Description:	Assesses the competencies of the trainee Contributes to continuous training system improvement.
Observable Behaviors.	
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 trainees 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.

9.3 Approved CBTA/ EBT instructors

DGCA approved TRIs / SFIs shall conduct CBTA/ EBT training in FSTDs.

Approved LTCs/ check pilots and DGCA approved TRIs shall conduct CBTA/ EBT training in aeroplane.

DGCA approved DEs/SFEs shall conduct CBTA/ EBT checks in FSTDs. DGCA approved DEs/ examiners shall conduct CBTA/EBT checks in aeroplane.

CBTA/ EBT instructor initial training, check and release and the recurrent training shall be conducted only by FOIs or DEs/ SFEs specifically approved as '**Approved CBTA / EBT Instructor Trainer**' by FSD for such purpose.

Recurrent CBTA / EBT for DEs shall be part of the annual DE course conducted by DGCA.

All other trainers shall undergo recurrent CBTA / EBT ground training course conducted by **Approved CBTA / EBT trainers**. Recurrent training shall comprise of 12 hours of ground training and 4 hours of observation / standardization in the simulator where the trainee instructor shall conduct a CBTA training / check in a FSTD under the supervision of the **Approved CBTA / EBT Instructor Trainer**.

9.4 Approved CBTA / EBT Instructor Trainers

9.4.1 Only FOIs / DEs / SFEs specifically approved by FSD DGCA shall serve as **approved CBTA / EBT Instructor Trainers.**

9.4.2 For approval, CBTA / EBT Instructor Trainers, nominee shall complete a CBTA / EBT trainer course from an organization acceptable to FSD, such organization shall have significant prior experience in implementing CBTA / EBT. Operator shall propose the names of DEs / SFEs who have prior regulatory / CBTA / EBT experience and also propose the name of the organization and instructor with whom the CBTA / EBT trainer course shall be undertaken. FSD may review and approve the same on merits.

9.4.3 Only Approved CBTA / EBT Instructor trainer shall train/ standardize other trainers. Such training can be imparted only upon on successful completion of own CBTA / EBT trainer course defined above.

9.5 Approved CBTA / EBT course designers.

9.5.1 Only FOIs / DEs / SFEs specifically approved by FSD DGCA shall serve as approved CBTA /EBT course designers.

9.5.2 Only **Approved CBTA / EBT course designers** shall design, test and implement CBTA / EBT training programs for all FSTD and line trainings. They shall be accountable to the DGCA for the quality, relevance and effectiveness of the CBTA / EBT programme designed by them.

9.5.3 Operator shall provide data required for review and design of CBTA training / checks and EBT recurrent training profiles to such Approved CBTA / EBT course designers.

9.5.4 Operator shall propose names of DEs / SFEs who have prior regulatory / CBTA / EBT experience for approval as Approved CBTA / EBT course designer. Such nominations shall be reviewed and approved by FSD on merits.

9.5 Initial CBTA / EBT training of instructors.

9.5.1 All Trainers (such as LTCs, Check Pilots, TRIs, DEs, Examiners, SFIs and SFEs) shall be trained on EBT principles. 9.5.2 Initial training shall comprise of ground instruction of 20 hours and an observe conduct of a CBTA training / check session under the supervision of an Approved CBTA / EBT Instructor Trainer.

9.5.3 Topics that will mandatorily be covered during the initial CBTA / EBT training of instructors are as follows;

i. Elements of the trainers course.

ii. Pilot competencies and observable behaviors

iii. Differences between traditional training and CBTA / EBT. CBTA / EBT forms and guidance materials.

iv Instructor competencies and observable behaviors

v TEM

vi Practical examples for observing competencies, grading and completing CBTA forms.

Vii Observation of a CBTA training / check conducted by the Approved CBTA / EBT instructor trainer

Viii Conduct of a CBTA training / check under supervision of Approved CBTA / EBT instructor trainer

9.6 Recurrent CBTA/ EBT training for instructors / examiners.

All EBT qualified instructors / examiners shall undergo recurrent training once in two years. Completion of EBT recurrent course shall meet the recurrent training course requirements for instructors as defined in CAR Section 7 Series I Part I/II/III. The training shall be spread over 16 hours including 14 hours of ground instruction and 2 hours of standardization check on the simulator. Recurrent CBTA / EBT training shall be conducted by Approved CBTA / EBT Instructor trainer and shall cover the following syllabus;

i. Elements of the trainers course including recent changes and developments.

ii. Pilot competencies and observable behaviors

iii. Challenges of CBTA / EBT and inter rater reliability.

iv Instructor competencies and observable behaviors

v TEM

vi Practical examples for observing competencies, grading and completing CBTA forms.

Vii Standardization – conduct of CBTA training / check under supervision of Approved CBTA / EBT instructor trainer

9.7 Inter Rater Reliability

9.7.1 The development of strong inter-rater reliability (instructor concordance) and consistency in the approach to EBT is of great importance and should not be underestimated either initially or as a focus for continuous improvement of an EBT system. Establishing robust guidelines and thorough experience strengthens inter-rater reliability, provided that suitable mechanisms are put in place. Clear and concise instructions, accurate performance indicator descriptions and peer review all increase inter-rater reliability.

The operator should work with the instructors to establish a specified level of inter-rater reliability prior to conducting EBT.

Individual instructors with specific assessment problems should be encouraged to work with the group in resolving the issues. Assessment should be approached as a group effort where the team, and not just one individual, needs to resolve any outstanding problems.

The operator should treat assessment standardization as a long-term development process giving the instructors the organizational support that will allow them to drive the process.

9.7.2 Prior to conducting instruction and assessment within an EBT programme, all instructors should successfully complete a formal competency assessment / standardisation session. The competency assessment shall be made during a practical training session supervised by a qualified instructor / examiner nominated by the operator.

Instructors shall undergo recurrent EBT training once in two years which will suffice towards the requirement of Teaching and learning instruction (trainers' course) defined in CAR Section 7 Series I Part II.

10. Threat and Error Management (TEM)

10.1. General

10.1.1. Threat and error management is an overreaching safety concept regarding aviation operations and human performance. TEM is not a revolutionary concept but it evolved gradually, as a consequence of the constant drive to improve the margins of safety in aviation operations, through the practical integration of Human Factors knowledge.

10.1.2. TEM developed as a product of the collective industry experience. This experience fostered the recognition that past studies and operational consideration of human performance in aviation had largely overlooked the most important factor influencing human performance in dynamic work environments. That is the interaction between people and the operational context (i.e., organizational, regulatory and environmental factors) within which people discharge their operational duties.

10.1.3. The recognition of the influence of the operational context in human performance further led to the conclusion that study and consideration of human performance in aviation operations must not be an end in itself. In regard to the improvement of margins of safety in aviation operations, the study and consideration of human performance without context address only part of a larger issue. TEM therefore aims to provide a principled approach to the broad examination of the dynamic and challenging complexities of the operational context in human performance, for it is the influence of these complexities that generates consequences directly affecting safety. TEM training is now embedded in ICAO SARPs as an intrinsic part of Flight Crew Licensing requirements.

10.2. Meeting training and licensing requirements for TEM

10.2.1. As the management of operational threats and errors is considered to be a key aspect of safety critical aviation disciplines, TEM knowledge, threat and error recognition and its management are part of licensing and rating requirements in Annex 1. TEM pilot training requirements for commercial air transport operations are identified in Annex 6, Parts I and III. TEM is applicable to all flight crews conducting flight operations and is to be adapted according to the operational context.

10.2.2. In traditional training, TEM can be trained as a separate module or as parts of several modules to recognize and manage threats and errors to the appropriate level of performance.

10.2.3. In competency-based training, TEM is naturally and fully embedded in the

training curriculum. The competencies of the approved adapted competency model provide individual and team countermeasures to threats and errors to avoid undesired aircraft states

10.3. The threat and error management model

10.3.1. The threat and error management (TEM) model is a conceptual framework that assists in understanding, from an operational perspective, the interrelationship between safety and human performance in dynamic and challenging operational contexts.

10.3.2. The TEM model focuses simultaneously on the operational context and the people performing operational duties in such context. The model is descriptive and diagnostic of both human and system performance: descriptive because it captures human and system performance in the operational context, resulting in realistic descriptions; diagnostic because it allows qualifying and quantifying complexities of the operational context in relation to the description of the contextual human performance, and vice versa.

The TEM model can be used in several ways:

a) safety analysis tool — can focus on a single event, as is the case with accident/incident analysis, or can be used to understand systemic patterns within a large set of events, as is the case with operational audits;

b) licensing tool — helps clarify human performance needs, strengths and vulnerabilities, allowing the definition of competencies from a broader safety management perspective;

c) training tool — helps an organization improve the effectiveness of its training interventions and, consequently, of its organizational safeguards; and

d) operational tool — helps an organization to increase its safety margins by providing the operational personnel tools as well as strategies and tactics to manage potential threats and errors.

10.3.3. From a training perspective, the broadest application to date of the TEM model is in flight crew human performance training, especially in crew resource management (CRM) training, a widely implemented human factors- based training intervention. This may lead to questions about the relationship between TEM and CRM, and it is therefore essential to clarify potential confusions from the outset.

10.3.4. TEM is an overarching safety concept with multiple applications in aviation, while CRM is exclusively a training intervention.

10.3.5. From a traditional training perspective, the basic concepts underlying TEM (threats, errors and undesired aircraft states) have been systematically only integrated into existing CRM programmes because TEM countermeasures build in large measure — although not exclusively — upon CRM skills. The combination of TEM concepts with CRM skills thus introduces the opportunity to present the utilization of CRM skills by flight crews anchored in the operational environment and from a purely operational perspective. TEM training does not replace CRM training but rather complements and enhances it.

10.4. The challenges in the TEM model

There are three basic challenges in the TEM model, from the perspective of flight crews: threats, errors and undesired aircraft states. The model proposes that threats and errors are part of everyday aviation operations that must be managed by flight crews, since both threats and errors carry the potential to generate undesired aircraft states. Flight crews must also manage undesired aircraft states, since they carry the potential for unsafe outcomes. Undesired aircraft state management is an essential component of the TEM model, as important as threat and error management, because it largely represents the last opportunity to avoid an unsafe outcome and thus maintain safety margins in flight operations.

10.5. Threats

10.5.1. Threats are defined as events or errors that occur beyond the influence of the flight crew, increase operational complexity, and must be managed to maintain the margins of safety. During typical flight operations, flight crews have to manage various contextual complexities, for example, adverse meteorological conditions, airports surrounded by high mountains, congested airspace, aircraft malfunctions, and errors committed by other people outside of the cockpit, such as air traffic controllers, flight attendants or maintenance workers. The TEM model considers these complexities as threats because they all have the potential to negatively affect flight operations by reducing margins of safety.

10.5.2. Some threats can be anticipated, since they are expected or known to the flight crew. For example, flight crews can anticipate the consequences of a thunderstorm by briefing their response in advance or can prepare for a congested airport, as they execute the approach, by making sure they keep a watchful eye out for other aircraft.

10.5.3. Some threats can occur unexpectedly and without warning, such as an in-flight aircraft malfunction. In this case, flight crews must demonstrate competencies developed through training and operational experience to manage such unexpected threats.

10.5.4. Some threats may not be directly obvious to, or observable by, flight crews as they are immersed in operational context. Such threats can potentially be uncovered by safety analysis. These are considered latent threats. Examples include equipment design issues, optical illusions, or shortened turn-around schedules.

10.5.5. Regardless of whether threats are expected, unexpected, or latent, one measure of the effectiveness of a flight crew's ability to manage threats is whether threats can be anticipated so as to enable the flight crew to respond to them through deployment of appropriate countermeasures.

10.5.6. Threat management is a building block to error management and undesired aircraft state management. Although the threat-error linkage is not necessarily straightforward (i.e. it may not always be possible to establish a linear relationship or one-to-one mapping between threats, errors and undesired states), safety analysis data demonstrate that mismanaged threats are normally linked to flight crew errors, which in turn are often linked to undesired aircraft states. Threat management provides the most proactive option to maintain margins of safety in flight operation, by avoiding safety-compromising situations at their roots. As threat managers, flight crews are the last line of defence to keep threats from impacting flight operations.

10.5.7. The following table presents examples of threats, grouped under two basic categories derived from the TEM model. Some environmental threats can be planned

for and some will arise spontaneously, but they all have to be managed by flight crews in real time. Organizational threats, on the other hand, can be controlled (i.e. removed or, at least, minimized) at source by aviation organizations and are usually latent in nature. Flight crews still remain the last line of defence, but there are earlier opportunities for these threats to be mitigated by aviation organizations themselves.

Examples of threats

Environmental threats	*Operational threats*
Weather: thunderstorms, turbulence, icing, wind shear, cross/tailwind, very low/high temperatures. **ATC:** traffic congestion, TCAS RA/TA, ATC command, ATC error, ATC language difficulty, ATC non-standard phraseology, ATC runway change, ATIS communication, units of measurement (QFE/meters). **Airport:** contaminated/short runway; contaminated taxiway, lack of/confusing/faded signage/markings, birds, aids U/S, complex surface navigation procedures, airport constructions. **Terrain:** High ground, slope, lack of references, "black hole". **Other:** similar call signs.	**Operational pressure:** delays, late arrivals, equipment changes. **Aircraft:** aircraft malfunction, automation event/anomaly, MEL/CDL. **Cabin:** flight attendant error, cabin event distraction, interruption, cabin door security. **Maintenance:** maintenance event/error. **Ground:** ground-handling event, de-icing, ground crew error. **Dispatch:** dispatch paperwork event/error. **Documentation:** manual error, chart error. **Other:** crew scheduling event

10.6. Errors

10.6.1. Errors are defined actions or inactions by the flight crew that lead to unintentional deviations from organizational or operational expectations. Unmanaged and/or mismanaged errors can lead to undesired aircraft states. Errors in the operational context thus tend to reduce the margins of safety.

10.6.2. Errors can be spontaneous (i.e. without direct linkage to specific, obvious threats), linked to threats, or part of an error chain. Examples of errors would include the inability to maintain stabilized approach parameters, executing a wrong automation mode, failing to give a required call-out, or misinterpreting an ATC clearance.

10.6.3. Regardless of the type of error, an error's effect on safety depends on whether the flight crew detects and responds to the error before it leads to an undesired aircraft state and to a potential unsafe outcome. This is why one of the objectives of TEM is to understand error management (i.e. detection and response), rather than solely focusing on error causality (i.e. causation and commission). From a safety perspective, operational errors that are detected in a timely manner and promptly responded to (i.e. properly managed) do not lead to undesired aircraft states and lead to the desired margins of safety being restored by proper error management in flight operations, thus becoming operationally inconsequential. In addition to its safety value, proper error management is an example of successful human performance, having both learning and training value.

10.6.4. Capturing how errors are managed is then as important as, if not more important than, capturing the prevalence of errors itself. It is of interest to capture if and when errors are detected and by whom, the response(s) upon detecting errors, and the outcome of errors. Some errors are quickly detected and resolved, thus becoming operationally inconsequential, while others go undetected or are mismanaged. A mismanaged error is defined as an error that is linked to or induces an additional error or undesired aircraft state.

10.6.5. The following table presents examples of errors, grouped under three basic categories derived from the TEM model. In the TEM concept, errors have to be "observable"; therefore, the TEM model uses the "primary interaction" as the point of reference for defining the error categories.

Examples of errors

Aircraft handling errors	Manual handling/flight controls: vertical/lateral and/or speed deviations, incorrect flaps/speed brakes, thrust reverser or power settings. Automation: incorrect altitude, speed, heading, auto throttle settings, incorrect mode executed, or incorrect entries. Systems/radio/instruments: incorrect packs, incorrect anti-icing, incorrect altimeter, incorrect fuel switches settings, incorrect speed bug, incorrect radio frequency dialled. Ground navigation: attempting to turn down wrong taxiway/runway, taxi too fast, failure to hold short, missed taxiway/runway.
Procedural errors	SOPs: failure to cross-verify automation inputs. Checklists: wrong challenge and response; items missed, checklist performed late or at the wrong time. Call-outs: omitted/incorrect call-outs. Briefings: omitted briefings; items missed. Documentation: wrong weight and balance, fuel information, ATIS, or clearance information recorded, misinterpreted items on paperwork; incorrect logbook entries, incorrect application of MEL procedures.
Communication errors	Crew to external: missed calls, misinterpretations of instructions, incorrect read back, wrong clearance, taxiway, gate or runway communicated. Pilot to pilot: within crew miscommunication or misinterpretation.

10.6.6. The TEM model classifies errors based upon the primary interaction of the pilot or flight crew at the moment the error is committed. Thus, in order to be classified as an aircraft-handling error, the pilot or flight crew must be interacting with the aircraft (e.g. through its controls, automation or systems). In order to be classified as a procedural error, the pilot or flight crew must be interacting with a procedure (e.g. checklists and SOPs). In order to be classified as a communication error, the pilot or flight crew must be interacting with people (e.g. ATC, ground crew, and other crew members).

10.6.7. Aircraft-handling errors, procedural errors and communication errors may be unintentional or may involve intentional non-compliance. Similarly, proficiency considerations (i.e. deficiencies in various competencies and training system

deficiencies) may underlie all three categories of error. In order to keep the approach simple and avoid confusion, the TEM model does not consider intentional non-compliance and proficiency as separate categories of error but rather as subsets of the three major categories of error.

10.7. Undesired aircraft states

10.7.1. Undesired aircraft states are characterized by divergences from parameters normally experienced during operations (e.g. aircraft position or speed deviations, misapplication of flight controls, or incorrect systems configuration) associated with a reduction in margins of safety. Often considered at the cusp of becoming an incident or accident, undesired aircraft states must be managed by flight crews.

10.7.2. Examples of undesired aircraft states would include lining up for the incorrect runway during approach to landing, exceeding ATC speed restrictions during an approach, or landing long on a short runway requiring maximum braking. Events such as equipment malfunctions or ATC controller errors can also reduce margins of safety in flight operations, but these would be considered threats.

10.7.3. Undesired states can be managed effectively, restoring margins of safety, or can induce an additional error, leading to an incident or accident.

10.7.4. The following table presents examples of undesired aircraft states, grouped under three basic categories derived from the TEM model.

Examples of undesired aircraft states

Aircraft handling	• Aircraft control (attitude). • Vertical, lateral or speed deviations. • Unnecessary weather penetration. • Unauthorized airspace penetration. • Operation outside aircraft limitations. • Unstable approach. • Continued landing after unstable approach. • Long, floated, firm or off-centre line landing.
Ground navigation	• Proceeding towards wrong taxiway/ runway. • Wrong taxiway, ramp, gate or hold spot. •
Incorrect aircraft configurations	• Incorrect systems configuration • Incorrect flight controls configuration • Incorrect automation configuration • Incorrect engine configuration • Incorrect weight and balance configuration

10.7.5. An important learning and training point for flight crews is the timely switching from error management to undesired aircraft state management. An example would be as follows: a flight crew selects a wrong approach in the flight management computer. The flight crew subsequently identifies the error during a cross-check prior to the final approach fix (FAF). However, instead of using a basic mode (e.g. heading) or manually

flying the desired track, both flight crew members become involved in attempting to re-programme the correct approach prior to reaching the FAF. As a result, the aircraft "stitches" through the localizer, descends late, and goes into an unstable approach. This would be an example of the flight crew getting "locked in" to error management, rather than switching to undesired aircraft state management. The use of the TEM model assists in educating flight crews that, when the aircraft is in an undesired state, their basic task is undesired aircraft state management instead of error management. It also illustrates how easy it is to get locked in to the error management phase.

10.7.6. Also from a learning and training perspective, it is important to establish a clear differentiation between *undesired aircraft states* and *outcomes*. *Undesired aircraft states* are transitional states between a normal operational state (i.e. a stabilized approach) and an outcome. *Outcomes*, on the other hand, are end states, most notably reportable occurrences (i.e. incidents and accidents). An example would be as follows: a stabilized approach (normal operational state) turns into an unsterilized approach (undesired aircraft state) that results in a runway excursion (outcome).

10.7.7. The training and remedial implications of this differentiation are significant. While at the undesired aircraft state stage, the flight crew has the possibility, through appropriate TEM, of recovering the situation and returning to a normal operational state, thus restoring margins of safety. Once the undesired aircraft state becomes an outcome, recovery of the situation, return to a normal operational state, and restoration of margins of safety are not possible.

10.8. Countermeasures

10.8.1. As part of the normal discharge of their operational duties, flight crews must employ countermeasures to keep threats, errors and undesired aircraft states from reducing margins of safety in flight operations. Examples of countermeasures would include communication, workload management, application of procedure, etc. Flight crews dedicate a significant amount of resources to the application of counter-measures to ensure margins of safety during flight operations. Empirical observations during training and checking suggest that as much as 70 per cent of flight crew activities may be countermeasure-related activities.

10.8.2. Countermeasures are generally flight crew actions. However, some counter-measures to threats, errors and undesired aircraft states that flight crews employ build upon "hard" resources provided by the aviation system. These resources are already imbedded in the system before flight crews report for duty and are therefore considered as systemic- based countermeasures. These include for example:

— airborne collision avoidance system (ACAS);

— ground proximity warning system (GPWS),

— standard operating procedures (SOPs);

— checklists;

— briefings; and

— training.

10.8.3. 6.8.3 Other countermeasures are more directly related to the human contribution to the safety of flight operations. These are personal strategies and tactics, and individual and team countermeasures, which typically include canvassed knowledge, skills and attitudes underpinning the pilot competencies. There are basically three categories of individual and team countermeasures:

— planning countermeasures: essential for managing anticipated and unexpected threats; — execution countermeasures: essential for error detection and error response; and
— review countermeasures: essential for managing the changing conditions of a flight.

10.8.4. Enhanced TEM is the product of the combined use of systemic-based and individual and team countermeasures. The following Table presents detailed examples of individual and team countermeasures. Further guidance on countermeasures can be found in the manual *Line Operations Safety Audit (LOSA)* (ICAO Doc 9803).

Examples of individual and team countermeasures

Planning countermeasures		
APP	The required briefing was interactive and operationally thorough	- Concise, not rushed, and met SOP requirements. - Bottom lines were established
COM	Operational plans and decisions were communicated and acknowledged	- Shared understanding about plans – "everybody is on the same page".
WLM	Roles and responsibilities were defined for normal and non-normal situations	- Workload assignments were communicated and acknowledged
PSD	Crew members developed effective strategies to manage threats to safety	- Threats and their consequences were anticipated - Used all available resources to manage threats

Execution countermeasures		
SAW	Crew members actively monitored and cross-checked systems and other crew members	- Aircraft position, settings, and crew actions were verified.
WLM	Operational tasks were prioritized and properly managed to handle primary flight duties	- Avoided task fixation - Did not allow work overload
FPA	Automation was properly managed to balance situational and/or workload requirements	- Automation setup was briefed to other members - Effective recovery techniques from automation anomalies

Review countermeasures		
PSD	Existing plans were reviewed and modified when necessary	- Crew decisions and actions were openly analysed to make sure that existing plan was the best plan

LTW; COM	Crew members asked questions to investigate and/ or clarify current plans of action	- Crew members not afraid to express a lack of knowledge – "Nothing taken for granted" attitude
LTW	Crew members stated critical information and/or solutions with appropriate persistence	- Crew members spoke up without hesitation

11. Forms & Records

Performance data protection, validation, collection and translation into a common format will lead to a consistent elevated standard of global training practices, linked to actual operational performance as seen IATA Training and Qualification Initiative (ITQI). This will be of immense value to the airline industry. Over the past decade, the IATA Operational Safety Audit (IOSA) has already demonstrated what is possible using a common approach to airline safety standards, by delivering remarkable safety dividends to IATA airline members and other air operators on the IOSA Registry, and in turn to the travelling public. By advocating this total systems approach, based upon career spanning preselection, training and assessment according to consistent principles, methods, and outcomes, ITQI is endeavoring to "raise the bar" once again. For this purpose, the following minimum data is required to be captured for all non-regulatory training and checks conducted under the EBT regime.

11.1 Requirements of CBTA / EBT training / check form.

As a minimum, the following data shall be captured for all line/ FSTD training and checks by using conventional or electronic forms. This data is important to operators to check effectiveness and to evolve more meaningful EBT programs. It is equally important to the DGCA, as Data enables DGCA to assess the effectiveness of an operator's EBT program and for future implementation of baseline / enhanced EBT.

1. Name and logo of the operator and the responsible department.
2. Reference of the training program / OM D, approved version and effective date.
3. Rank, name, license number of the trainer and the trainee.
4. Simulator registration number, level and location for all FSTD training / checks.
5. Aircraft registration, sectors all aircraft training / checks.
6. Date of training check and duration of the training / check.
7. Name of the training / check
8. Notes on competencies – free text. (notes can be captured for individual competencies / bunched under heads knowledge, skill, attitude)
9. Grading 1-5 for each of the competencies optionally including a calibrated score for session wise competency analysis.
10. List of scenario / maneuvers defined for the training / check.
11. Grading of performance in scenario / maneuver based on the grading criteria defined in this CAR
12. Optional deep analysis features such as Number of re-sits required (if any) for accomplishing the scenario / maneuver with details of at-least one competency that was marginal / lacking causing a grade of 1 or 2 and associated calibrated score.
13. Notes/ remarks on scenario / maneuver performance and overall session performance (free Text)

14. Overall result – satisfactory / unsatisfactory.
15. Signature of the trainer and trainee – physical signature in conventional forms and signature captured via touch device for electronic forms with option to capture the IP address and geo location of the trainer and trainee.
16. Space for comments of the training manager for validation of form / data etc as required.
17. It is preferred that the system generates Trend analysis after each training / check to provide trends to trainee on their overall performance so far across all line / FSTD training checks. Trend analysis to the trainer on grading pattern. Trend analysis for the operator on trends associated with each competency, scenario and maneuver

11.2 Requirements for regulatory forms

CA 40/41/42 check forms defined in this CAR as applicable for issue / renewal of license and ratings shall be used. The forms can be a printout of the format published in this CAR or may be generated electronically provided the official format is maintained.

11.3 Records

Records (hard copies) of all forms shall be maintained for 3 years. If electronic form is implemented, both electronic forms and paper backup forms shall be used for a minimum period of one year till system reliability is established by the DGCA.

Soft copy of training records, forms, trends, analysis and data shall be maintained for a period of 5 years to enable data collation at national and international levels and between operators.

If online forms and data acquisition system is implemented, DGCA shall be provided online access to data, forms and all training records.

12. Applicability of other training

All training requirements defined in current regulations shall continue to be applicable with the exception of training / checks specifically introduced / modified in this CAR.

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ANNEXURE 1

Summary of FSTD re-current topics that shall be adopted by operators for phased implementation of EBT. See Appendix 2-7 of Doc 9995 for specific exercises and frequency.

Generation 4 Jets

Gen4 Jet Training Topics	A	B	C
	Adverse weather	Adverse wind	ATC
	Automation management	Aircraft system malfunction	Engine failure
	Competencies non-technical (CRM)	Aircraft System management	Fire and smoke management
	Compliance	Approach, visibility close to minimum	Loss of communications
	Error management	Landing	Managing loading, fuel, performance errors
	Go-Around management	Runway or taxiway condition	Navigation
	Manual aircraft control	Surprise	Operations or type specific
	Mismanaged aircraft state	Terrain	Pilot incapcitation
	Monitoring & cross-checking	Workload, distraction, pressure	Traffic
	Unstable approach		Upset recovery
			Windshear recovery

Generation 3 Jets

Gen3 Jet Training Topics	A	B	C
	Adverse weather	Adverse wind	ATC
	Automation management	Aircraft system malfunction	Engine failure
	Competencies non-technical (CRM)	Aircraft system management	Fire and smoke management
	Compliance	Approach, visibility close to minimum	Loss of communications
	Error management	Landing	Managing loading, fuel, performance errors
	Go-Around management	Surprise	Navigation
	Manual aircraft control	Windshear recovery	Operations or type specific
	Mismanaged aircraft state	Workload, distraction, pressure	Pilot incapcitation
	Monitoring & cross-checking		Runway or taxiway condition
	Unstable approach		Terrain
			Traffic
			Upset recovery

Generation 3 Turboprops

Gen3 Turboprop Training Topics							
	A	Adverse weather		B	Aircraft system malfunctions		C	Adverse wind
		Automation management			Aircraft system management			Engine Failure
		Competencies non-technical (CRM)			Approach, visibility close to minimum			Fire and smoke management
		Compliance			Landing			Loss of communications
		Error management			Surprise			Managing loading, fuel, performance errors
		Go-Around management			Terrain			Navigation
		Manual aircraft control			Upset recovery			Operations or type specific
		Mismanaged aircraft state			Workload, distraction, pressure			Pilot incapcitation
		Monitoring & cross-checking						Runway or taxiway condition
		Unstable approach						Traffic
								Windshear recovery

Generation 2 Jets

Gen2 Jet Training Topics							
	A	Adverse weather		B	Adverse wind		C	Loss of communications
		Approach, visibility close to minimum			Aircraft system malfunction			Managing loading, fuel, performance errors
		Automation management			Compliance			Navigation
		Competencies non-technical (CRM)			Engine Failure			Operations or type specific
		Error management			Fire and smoke management			Pilot incapcitation
		Go-Around management			Landing			Runway or taxiway condition
		Manual aircraft control			Mismanaged aircraft state			Terrain
		Monitoring & cross-checking			Surprise			Traffic
		Unstable approach			Windshear recovery			Upset recovery

Generation 2 Turboprops

Gen3 Turboprop Training Topics							
	A	Adverse weather		B	Aircraft system malfunctions		C	Adverse wind
		Automation management			Aircraft system management			Engine Failure
		Competencies non-technical (CRM)			Approach, visibility close to minimum			Fire and smoke management
		Compliance			Landing			Loss of communications
		Error management			Surprise			Managing loading, fuel, performance errors
		Go-Around management			Terrain			Navigation
		Manual aircraft control			Upset recovery			Operations or type specific
		Mismanaged aircraft state			Workload, distraction, pressure			Pilot incapcitation
		Monitoring & cross-checking						Runway or taxiway condition
		Unstable approach						Traffic
								Windshear recovery