

Competency Assessment and Evaluation for Pilots, Instructors and Evaluators

Guidance Material

Second Edition
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Publications

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ICAO Annex 1, Personnel Licensing	Fourteenth Edition, July 2022
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ICAO DOC 9995, Manual of Evidence-based Training	First Edition, 2013
IATA EBT Implementation Guide	First Edition, 2013
EASA Aircrew and Air Operations regulations including EBT requirements	Revision state of March 2023



Abbreviations and Acronyms

AOC	Air Operator Certificate/ Air Operator Certificate holder (operator)
ATO	Approved Training Organization
CBTA	Competency-Based Training and Assessment
CRM	Crew Resource Management
EBT	Evidence-Based Training
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
IE	Instructor and Evaluator
ISD	Instructional System Design
KSA	Knowledge, skills and attitudes
OB	Observable behavior
PANS-TRG	Procedures for Air Navigation Services – Training
TEM	Threat and Error Management

Definitions

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

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

Competency. 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.

Note: ICAO describes knowledge, skills and attitude as:

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

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.

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 an operational person that leads to deviations from organizational or the operational person's intentions or expectations.

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

Evaluation. For the purpose of this document, evaluation means the summative assessment of a trainee performance or the evaluation of the training system.

Note: " *Validation*", as used under the FAA, is equivalent to a summative assessment.

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

Event. A combination of a task or a sub-task and the conditions under which the task or sub-task is to be performed.

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.

Human performance. Human capabilities and limitations which have an impact on the safety and efficiency of aeronautical operations.

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.

Instructional systems design (ISD). A formal process for designing training which includes analysis, design and production, and evaluation.

Instructor. A person authorized to provide training and to conduct evaluations.

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.

Resilience. The ability of a flight crew member to recognize, absorb and adapt to disruptions.

Note: Resilience is the ability to prepare and plan for, absorb, recover from, and more successfully adapt to adverse events as defined by the US National Academies of science, engineering and medicine.

Scenario (event-set). Relatively independent segment of training made up of several events.

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

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

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.

1. Introduction

This manual is intended to provide guidance to Civil Aviation Authorities, Operators (AOC) and Approved Training Organizations (ATO) for the competency assessment and evaluation of pilots, instructors and evaluators in the context of the global expansion of Competency-based Training and assessment (CBTA) programs.

Since ICAO has released the Doc 9868 Pans TRG amendment 7, the principles of CBTA are applicable to all licensing and operator training with the goal to provide a competent workforce for a safe and efficient air transport.

CBTA programs are performance-based training programs that integrates per design a continuous monitoring and evaluation of the course. The training system performance is measured and evaluated through a feedback process that use training metrics to collect the post-delivery training program data.

As the training metrics are significantly sustained by pilot and instructor/evaluator performance data, this Manual places a special emphasis on “what” is competency assessment and on “how” to conduct the pilot and instructor/evaluator performance assessment by addressing, in particular, the assessment process and method based on the latest industry best practices.

In this manual, the following terminology is applied:

- “Trainee” means a pilot or an instructor/evaluator receiving training or evaluation
- “Trainer” means an instructor/evaluator conducting training or evaluation

2. General Provisions

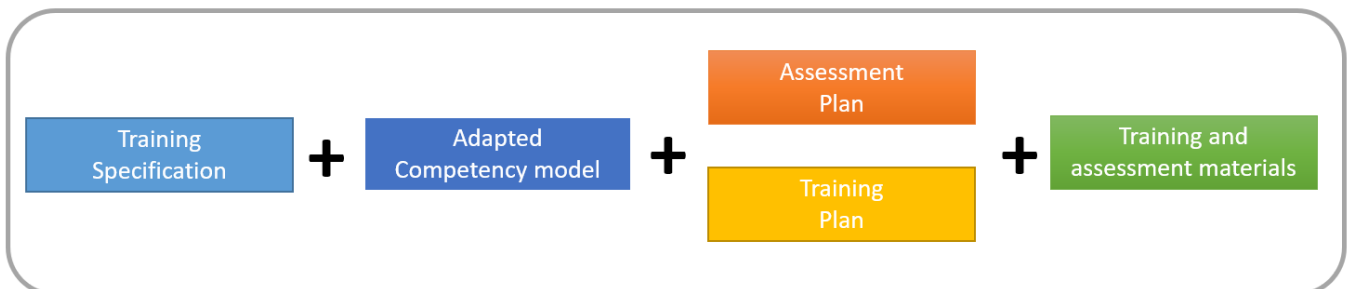
2.1 Components of a CBTA program

CBTA programs are outlined respecting a robust instructional systems design (ISD) methodology. The ISD can serve as a basis to derive the essential components of competency-based training and assessment as described below and illustrated in Figure 1.

In **bold** the components that are directly related to competency assessment

- A training specification that describes the purpose of training, the task list and the requirements that must be fulfilled when designing the training
- **An adapted competency model**, which is a group of competencies with their associated description and performance criteria adapted from an ICAO competency framework that the ATO/AOC uses to develop competency-based training and assessment for pilots and instructors/evaluators
- **An assessment plan** providing the process and tools for gathering valid and reliable evidence at different stages during training
- A training plan describing the training required to achieve the competencies. It includes but is not limited to a syllabus (including knowledge, skills and attitudes (KSA), milestones, lesson plans and schedules), and
- Training and **assessment materials** and the human, material and organizational resources needed to implement training and assessment plans

Figure 1:



2.2 The competency framework

The IATA pilot and instructor evaluator competency frameworks are available in section 10 and section 11 of this guide.

The competency frameworks are structured in such way that each competency and associated description and observable behaviors are clearly identifiable and properly determined.

Since 2018, the Observable behaviors (OB) receive a number to facilitate the CBTA training data collection and analysis.

Example of the IATA pilot competency framework for the competency communication

COMMUNICATION	
Description	Observable behaviors (OB)
Communicates through appropriate means in the operational environment, in both normal and non-normal situations.	OB 2.1 Determines that the recipient is ready and able to receive information. OB 2.2 Selects appropriately what, when how and with whom to communicate. OB 2.3 Conveys messages clearly, accurately and concisely. OB 2.4 Confirms that the recipient demonstrates understanding of important information. OB 2.5 Listens actively and demonstrates understanding when receiving information. OB 2.6 Asks relevant and effective questions. OB 2.7 Uses appropriate escalation in communication to resolve identified deviations. OB 2.9 Uses and interprets non-verbal communication in a manner appropriate to the organizational and social culture. OB 2.9 Adheres to standard radiotelephone phraseology and procedures. OB 2.10 Accurately reads, interprets, constructs and responds to datalink messages in English.

2.3 The Adapted Competency Model

The Adapted Competency model introduces performance criteria to complement the competency framework. Those performance criteria include the competency standards and the conditions that are necessary to train and assess the capacity of the pilots and instructors/evaluators to perform at the standard expected by the organization.

Example of an adapted competency model

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

Competency	Description	Performance criteria		
		Observable behavior (OB)	Competency Assessment	
Competency 1	Description 1	OB 1	Competency standard (Final or interim)	Conditions: <ul style="list-style-type: none"> ▪ Context complexity (operational and environmental) ▪ Level of support of the instructor ▪ Aircraft, FSTD, tool, system, or equipment
		OB 2		
		OB n		
Competency 2	Description 2	OB 1		
		OB 2		
		OB n		
Competency n	Description n	OB 1		
		OB 2		
		OB n		

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.

Note 1: Final and interim competency standard are defined by the organization.

Note 2: There are different types of conditions to be considered.

- conditions related to context (nature and complexity of the operational and environmental context)

- conditions related to the amount of support or assistance a trainee can expect from the instructor/assessor
- conditions related to tools and systems/equipment airplane, FSTD

The criteria for adaption are related to the following elements:

1. The competency itself, including its name
2. The description of the competency
3. The observable behaviors
4. The final competency standard
5. The conditions of the demonstration of competency

IATA considers that elements 1 to 3 are optional for adaption and the ATO/AOC should modify only a few elements for high-level training strategies or for tactical reasons due to a specific type of operations.

The example for strategic adaptation is related to the inclusion of the competency “Application of Knowledge” in the IATA pilot competencies framework. It is worth noting that “Application of Knowledge” has been adopted by most operators and by regulators such as EASA.

The example for tactical adaptation is related to the removal of Observable Behaviors OB 2.10 “Accurately reads, interprets, constructs and responds to datalink messages in English” from the competency Communication for the ab initio training centers that do not have data link equipment for their operations.

IATA considers that elements 4 and 5 necessitate adaptation, depending on the purpose of the training.

The example for the different final competency standard can be illustrated during the ab initio training when the expectations in terms of performance at the PPL level (private pilot) and at the CPL level (professional pilot) are not the same. The professional pilot must demonstrate higher final competency standard under more demanding conditions (e.g., weather close to minima), compared to a private pilot.

The example for different conditions can be illustrated during a type rating course when the final competency standards are identical all along the course but during the early stages, trainees can expect active coaching and teaching from the instructor. As the trainee progresses towards the final competency standard and gains more confidence in performing independently, the instructor takes on a more passive role.

3. The Assessment Plan

3.1 Content

The assessment plan should provide the following details:

- The final competency standard associated with the final milestone;
- The interim competency standard associated with each milestone (if required);
- The list of assessments (formative and summative assessments, examinations, oral assessments, etc.) required for each of the milestone(s) that have been defined;
- The tools to be used to collect evidence during practical assessment;
- The pass marks for projects, examinations or oral assessments;
- If required, the minimum number of formative assessments to be undertaken prior to starting summative assessments; and
- The number of observations required to assess performance for the interim and final competency standards.

The AOC or the ATO should produce a training manual that describes the administrative procedures relating to:

- Which personnel may conduct assessments and their qualifications;
- Roles and responsibilities of personnel during the conduct of assessments;
- Assessment procedures (preparation, conduct and post-assessment);
- Conditions under which assessments are to be undertaken;
- Record-keeping; and
- Actions to be taken when a trainee fails to meet the competency standard(s) of the assessment.

3.2 Principles of competency assessment

The following principles should be implemented and monitored by the AOC or the ATO to ensure effectiveness of the CBTA program. The statements in bold are key elements for the instructor/evaluator initial and recurrent standardization and continuous monitoring of the instructor/evaluator performance.

- Clear performance criteria are used to assess competence. The adapted competency model establishes these performance criteria.
- An integrated performance of the competencies is observed. The trainee undergoing assessment must demonstrate all competencies and their seamless interaction with each other.

- **Multiple observations are undertaken.** To determine whether or not a trainee has achieved the interim and/or final competency standard, multiple observations must be carried out.
- **Assessments are valid.** All of the competencies that comprise the adapted competency model must be assessed. **There must be sufficient evidence** to ensure that the trainee achieves the competency and meets the interim and/or final competency.
- **Assessments are reliable.** All instructors/evaluators should reach the same conclusion when performing an assessment. All instructors/evaluators should be trained and monitored to achieve and maintain an acceptable level of inter-rater reliability.

4. The assessment methods

The assessment is the determination by an instructor or evaluator as to whether a candidate meets a required competency standard under given conditions, by collecting evidence from observable behaviors.

The assessment takes place during instruction and evaluation and can be either formative or summative.

Formative Assessment

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

The formative assessment should serve to motivate trainees, identify strengths and weakness and promote learning.

Summative Assessment

The summative assessments provide a method that enables the instructor and evaluator to work with a trainee to collect evidence of the competencies and performance criteria to be demonstrated with respect to the interim or final competency standard(s).

The Summative assessments are carried out at defined points during the training and/or at the end of the training. **During summative assessments, the decision is either "competent" or "not competent" with respect to the interim or final competency standard(s).** However, this can be further developed into a more refined grading system with a scale of judgments to improve feedback for the trainee and training personnel.

The oral assessment is a method that may be used to supplement a summative assessment. The oral assessment provides the instructor/evaluator with the opportunity to target those areas of performance that could not realistically be observed in the practical environment, and to refocus on actions observed during the practical assessment that may have been cause for concern.

Oral assessments may be conducted away from the practical environment. They are usually scenario-based and are designed around situations that the instructor/evaluator wants to explore further. The instructor/evaluator explains the scenario and then asks the trainees to describe what actions they would take. After the trainees have described their actions, the instructor/evaluator may ask further clarifying questions. The instructor/evaluator then assesses the trainees' responses in relation to the adapted competency model.

Examinations are generally used to evaluate theoretical knowledge. Examinations may be written or completed with the aid of digital equipment and/or online applications.

5. The assessment materials

The assessment materials are developed based on the adapted competency model and the training and assessment plans. Assessment materials include but are not limited to training notes, exercise briefings, practical exercises, case studies, presentations, video clips, self-test quizzes, examinations, assessments, and assessment tools.

6. CBTA training system performance

CBTA is a performance-based training program that integrates per design a continuous monitoring and evaluation of the course.

Under CBTA, the training system performance is measured and evaluated through a feedback process in order to validate and refine the program and ascertain that the organization program develops pilot competencies and meets the training objectives.

The feedback process should be included in the AOC or ATO safety and compliance management system.

The typical CBTA feedback process should use defined training metrics to collect data in order to:

- identify trends and ensure corrective action where necessary;
- identify collective training needs;
- review, adjust and continuously improve the training program;
- further develop the training system; and
- standardize the instructors.

Typical metrics include but are not limited to:

- differences in success rates between training topics
- grading metrics*
- trainee's and instructor's feedback, which provides individual perspective as to the quality and effectiveness of the training
- differences in success rates between different trainee cohorts
- distribution of errors for various training topics, scenarios and aircraft class or types
- distribution of level of performance within the range of competencies and outcomes
- instructor inter-rater reliability data

Grading metrics*

Example of grading metrics based on Evidence-Based Training European Regulation

Level 0 (competent metrics): The information whether the pilot(s) is (are) competent or not.

Level 1 (competency metrics): Level of performance reflected by numeric grade of the competencies (e.g., 1 to 5).

Level 2 (observable behavior metrics): the instructors record OBs predetermined or required by the organization (Regulatory or Policy requirements).

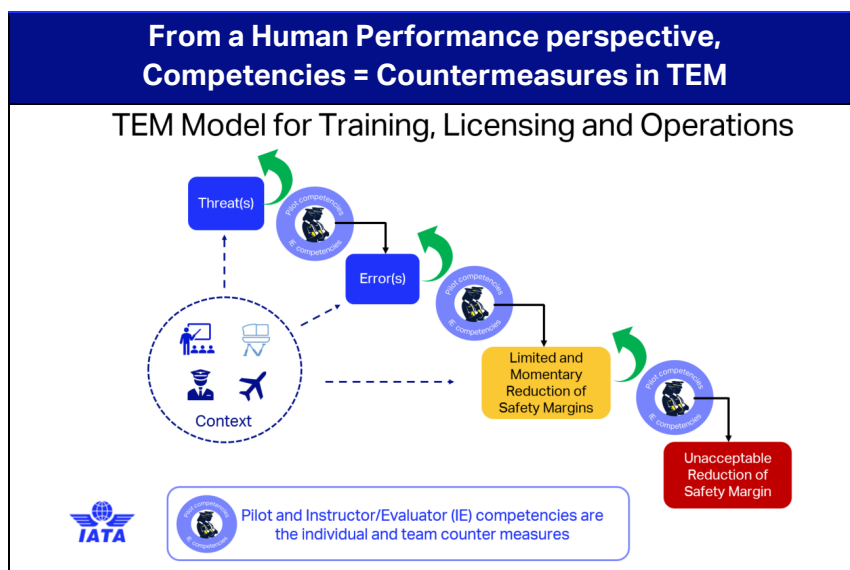
Level 3 (TEM metrics): the instructor records Threats, error or Reduction of Safety Margin predetermined or required by the organization.

7. Competencies and Threat and Error Management (TEM)

The role of the competencies within the Threat and Error Management model has been formalized at international level.

First, ICAO Doc 9868 (PANS-TRG) Amendment 7 states that: *“From a competency-based training and assessment perspective, the competencies of the approved adapted competency model provide individual and team countermeasures to threats and errors and undesired aircraft states.”*

The following schematic is used as a pedagogic tool to support the above-mentioned concept.



Note

“Limited and Momentary Reduction of Safety Margin” describes an outcome of TEM where the pilot or the instructor/evaluator demonstrated Observable Behaviors that did not allow, on few occasions, a timely management of the threats or errors. This led to a limited and momentary reduction of the safety margin.

“Unacceptable Reduction of Safety Margin” describes an outcome of TEM where the pilot or the instructor/evaluator demonstrated Observable Behaviors that did not allow a timely management of the threats or errors. This led to an unacceptable reduction of the safety margin. (For example, involuntary Undesired Aircraft State (UAS) during flight training, due to mismanagement of a stall exercise, that is recognized late or recovered late by the instructor).

From a practical perspective, the competencies being the countermeasures in the TEM model:

- The more Observable Behaviors are timely demonstrated when required, the better the threat and error management should be. This should lead to the maintenance of the safety margins.
- Per opposition, the Observable Behaviors that have not been demonstrated when they were required could result in the mismanagement of the threats and errors. This could lead to a reduction of safety margins.

8. Performance assessment

Reminder, in this Manual, the following terminology is applied:

- “Trainee” means a pilot or an instructor/evaluator receiving training or evaluation
- “Trainer” means an instructor/evaluator conducting training or evaluation

8.1 Process to assess the performance

To assess the trainee’s performance, the trainer should apply the following process:

- Observe performance (behaviors) during the training or evaluation.
- Record details of effective and ineffective performance (behaviors) observed during the training or evaluation (‘record’ in this context refers to instructors taking notes).
- Classify observations against the Observable Behaviors (OBs) and allocate the OBs to each competency (or competencies).
- Assess the performance by determining the root cause(s) according to the competency framework. Low performance would normally indicate the area of performance to be remediated in subsequent training.

Remark: Depending on the Training objective, the trainer guidance may indicate competencies which may be irrelevant to be assessed or recorded. In that case, the trainer will record “N/O” (NOT OBSERVABLE).

8.2 Competencies assessment methodology

IATA recommends applying the following methodology to ensure the maximum level of consistency and objectivity to assessments performed in a CBTA program.

To assess how well the trainee demonstrated the competency during training or evaluation, the trainer should assess the associated OBs of each competency against the following dimensions by determining:

- How many OBs the trainee demonstrated when they were required;
- How often the trainee demonstrated the OB(s) when they were required; and
- What was the outcome of the threat management and error management relating specifically to the competency being assessed?

The competency assessment (**HOW WELL**) is the combination of the number of OBs demonstrated and their frequency of demonstration and the consequential outcome of the Threat and Error Management relating specifically to the competency being assessed.

The “**HOW MANY**” dimension provides evidence related to the acquisition of the competency.

The “**HOW OFTEN**” dimension provides evidence related to the robustness of the competency.

The “**Outcome of TEM**” dimension provides evidence related to the effectiveness of the competency as individual and team countermeasures against the threats and errors.

Depending on the training objectives of the session, the “**Outcome of TEM**” dimension may not be relevant to assess the competencies. In this case refer to sections **8.3** and **9.1** below.

8.2.1 Word Pictures of “HOW MANY” dimension

The following word pictures support the competency assessment methodology by providing a scale for the “**HOW MANY**” dimension regarding a number of OBs demonstrated when required:

HOW MANY
few, hardly any
some
many
most
all, almost all

8.2.2 Word Pictures of “HOW OFTEN” dimension

The following word pictures support the competency assessment methodology by providing a scale for the “**HOW OFTEN**” dimension regarding a frequency of OBs demonstrated when required:

HOW OFTEN
rarely
occasionally
regularly
regularly*
Always, almost always

regularly* This regularly* is interpreted as very often

8.2.3 Word Pictures of “OUTCOME of TEM” dimension

The following word pictures support the competency assessment methodology by providing a scale for the “**Outcome of TEM**” dimension relating specifically to the competency being assessed:

OUTCOME of TEM <small>relating specifically to the competency being assessed</small>	The demonstrated Observable Behaviors <small>relating specifically to the competency being assessed</small>
unsafe situation	<input type="checkbox"/> Did not allow a timely management of the threats or errors <input type="checkbox"/> This led to (or could have led to**) an unacceptable reduction of the safety margin.
not an unsafe situation	<input type="checkbox"/> Did not allow, on few occasions, a timely management of the threats or errors <input type="checkbox"/> This led to (or could have led to**) a limited and momentary reduction of the safety margin.
safe	<input type="checkbox"/> Allowed the anticipation and mitigation of many expected threats, the recognition and mitigation of the unexpected threats and the timely detection and correction of the errors. <input type="checkbox"/> This led to (or could have led to**) the maintenance of the safety margin.
safe*	<input type="checkbox"/> Allowed the anticipation and mitigation of most expected threats, the recognition and mitigation of the unexpected threats and the promptly detection and correction of the errors. <input type="checkbox"/> This led to (or could have led to**) an improvement of the safety margin.
enhance safety	<input type="checkbox"/> Allowed the anticipation and mitigation of all expected threats, the recognition and mitigation of the unexpected threats and the immediate detection and correction of the errors. <input type="checkbox"/> This led to (or could have led to**) an enhancement of the safety margin.

safe*: This word picture (safe*) illustrates a more pro-active safety level.

or could have led to** must be used to:

- Integrate of the outcome of TEM dimension when the conditions of training are significantly limited. E.g., classroom, part task trainer, ...
- Ensure that the OUTCOME of TEM dimension relates specifically to the competency being assessed.

During the competency assessment, the TEM model assists the instructor-evaluator in understanding the interrelationship between safety and the trainee performance in dynamic and challenging operational contexts.

Outcome of TEM for Instructor Evaluator competency assessment

The OUTCOME of TEM dimension is applicable for IE performance assessment.

In the context of training and licensing, the OUTCOME of TEM dimension integrates the specific threats, errors and potential reductions of safety margins that could happen or result from the conduct of training or evaluation activities.

In the context of training and licensing, potential threats could be:

- Event requiring an evacuation of the facilities or of the device
- Facilities, training device or equipment not appropriate for the training objective (Actual Malfunctions, MEL, Device certification...)
- Training interruption or disruption (FFS down, ATC constraint, phone call, ...)
- Any disruption that generates time pressure (late arrival of the trainee, trainee does not show up, training time reduced...)
- Last minute change of training rostering (session content, trainees...)
- Inappropriate Official documentation (FCOM not up to date, training programs deficiencies ...)
- ...

In the context of training and licensing, potential errors could be:

The instructor/evaluator:

- Does not prepare sufficiently the training session (not familiar enough with the training facilities access, with the training device functionalities, with the IT procedures...)
- Has hobby horses
- Does not manage time appropriately
- Does not manage priorities appropriately (e.g., during flight instruction focuses on instruction instead of safety of the flight, ...)
- Omits safety briefings elements or training tool limitations
- Intervenes inappropriately (too early or too late)
- Refers to personal customized documentation
- Uses inappropriate teaching method (does not facilitate, ...)
- Generates unrealistic or inappropriate conditions for the training
- Demonstrates negative attitude towards trainees (is careless, is harsh, has bias, is lacking empathy, ...)
- Does not allocate enough time for trainee feedback

- Is not familiar with training policy and procedures
- Omits to provide necessary advice to improve performance
- Cuts corners with the training program
- Does not apply organizational performance standards
- ...

In the context of training and licensing, potential reduction of safety margins could be:

- Limited and momentary reduction of the safety margin
 - Temporarily involuntary reduction of safety margin during training (e.g., mismanagement of a stall exercise) recognized and timely recovered by the instructor
 - Temporarily Negative transfer of training, recognized and timely recovered by the instructor
 - Temporarily Negative training, recognized and timely recovered by the instructor,
 - ...
- Unacceptable reduction of safety margins
 - Involuntary reduction of safety margin during training (e.g., mismanagement of a stall exercise) not recognized or lately recovered by the instructor
 - Negative transfer of training not recognized or not recovered by the instructor
 - Negative training not recognized or not recovered by the instructor
 - Incident or accident during training
 - ...

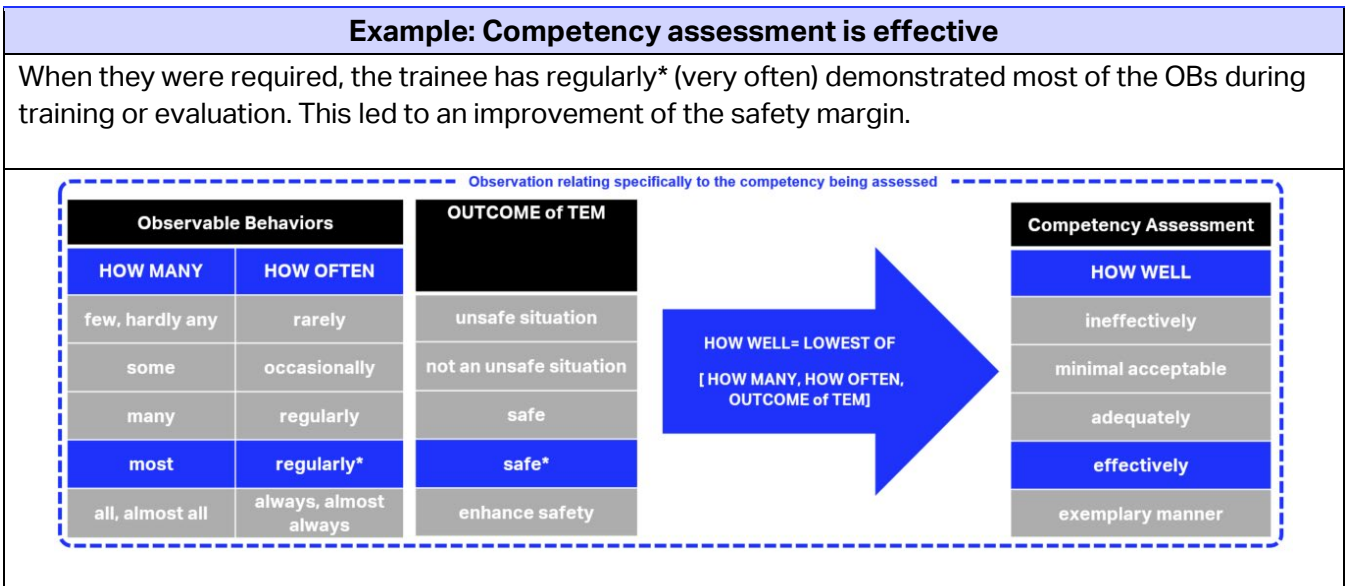
Note: When the training and assessment is conducted during flight operations (example IE as a trainee delivering instruction in an aircraft as an FI), the IE as trainer observes, as well, the IE as trainee managing the threats, the errors, and the potential reductions of safety margins in the operational context.

8.2.4 Competency Assessment: Abbreviated word pictures

The competency assessment is illustrated by the **“HOW WELL”** terminology which reflects the lowest level of each dimension (**“HOW MANY”** - **“HOW OFTEN”** - **“OUTCOME of TEM”**).

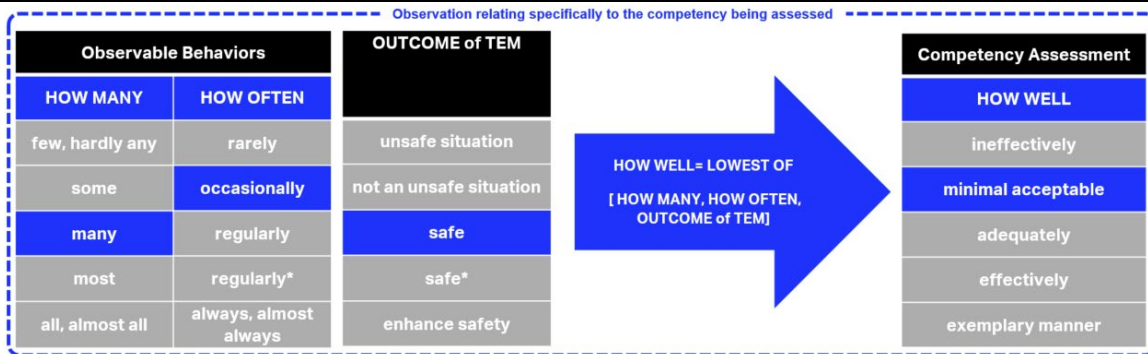


8.2.5 Examples



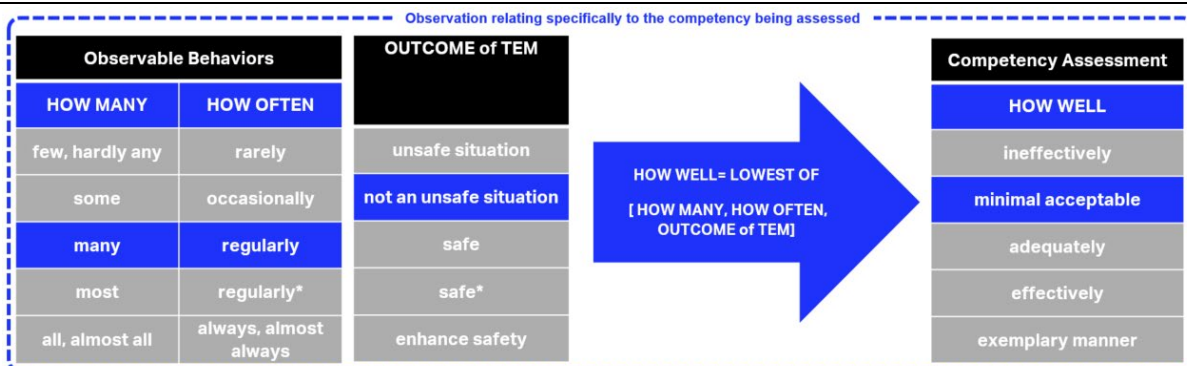
Example: Competency assessment is minimal acceptable

When they were required, the trainee has occasionally demonstrated many of the OBs during training or evaluation. Even if the safety margins have been maintained (OUTCOME of TEM is safe), the frequency of the OBs demonstration (HOW OFTEN = occasionally) indicates a lack of the competency's robustness.



Example: Competency assessment is minimal acceptable

When they were required, the trainee has regularly demonstrated many of the OBs during training or evaluation. Nevertheless, the demonstrated Observable Behaviors did not allow, on few occasions, a timely management of the threats or errors. This led to a limited and momentary reduction of the safety margin. (OUTCOME of TEM= not an unsafe situation).

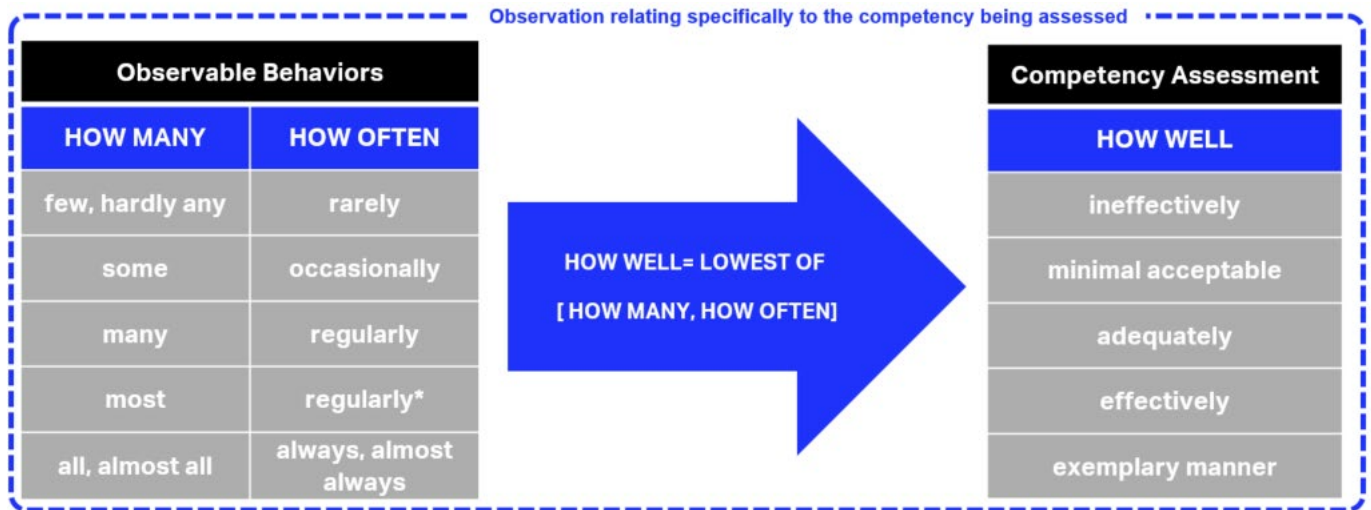


8.3 Specific case

In some cases, the outcome of the TEM dimension may not be relevant to assess the competency in regard to the training objectives of the session, e.g., session dedicated to psychomotor skill practice with the trainer taking care of the threat and error management aspects.

In that case, the trainer must assess the associated OBs of each competency against the following dimensions by determining:

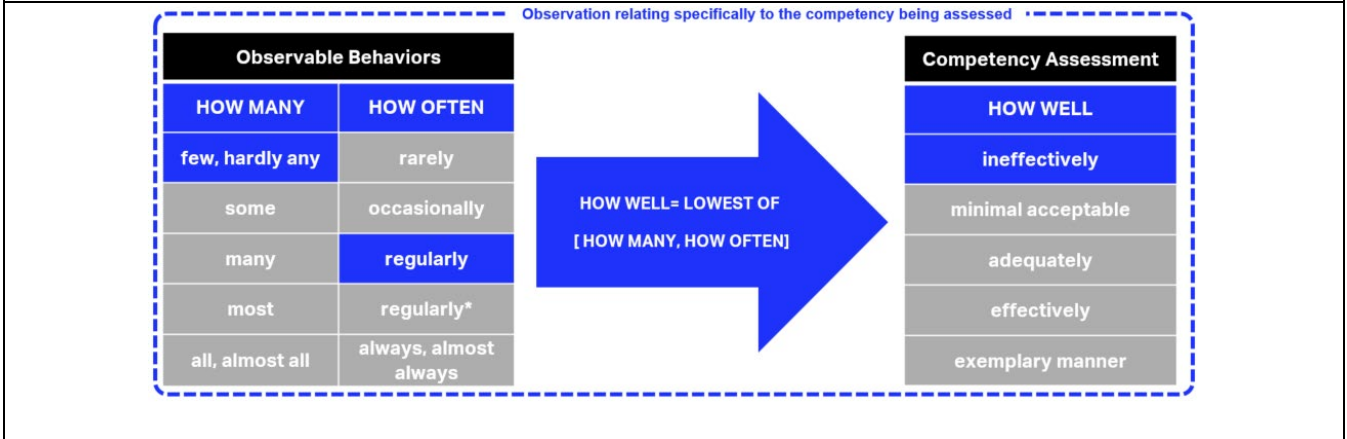
- How many OBs the trainee demonstrated when they were required.
- How often the trainee demonstrated the OB(s) when they were required.



8.3.1 Examples

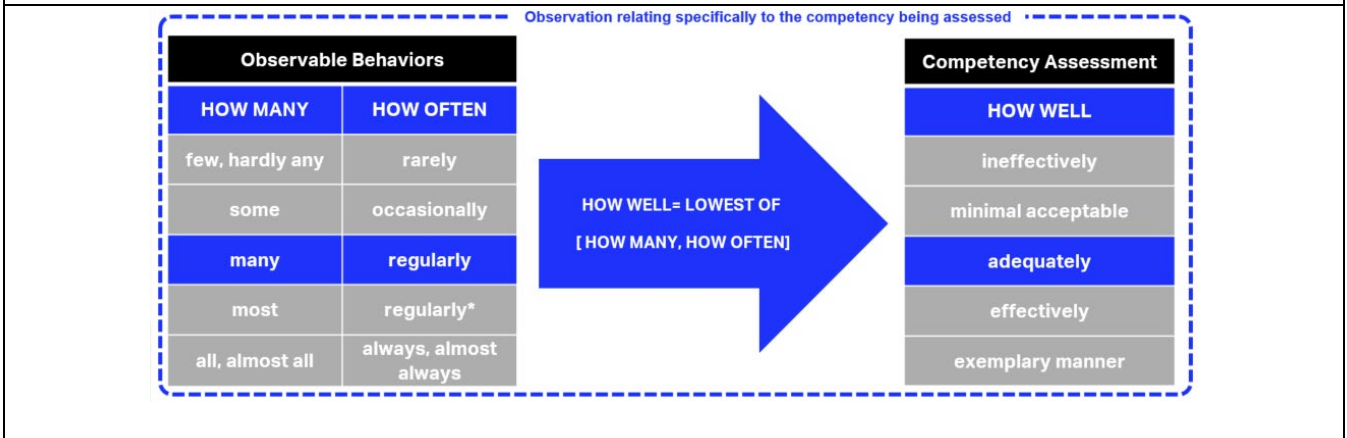
Example: Competency assessment is ineffective

When they were required, the trainee has regularly demonstrated only few of the OBs during training or evaluation. Even if the OBs have been demonstrated regularly, the limited number of OB indicates a lack of competency acquisition by the trainee.



Example: Competency assessment is adequate

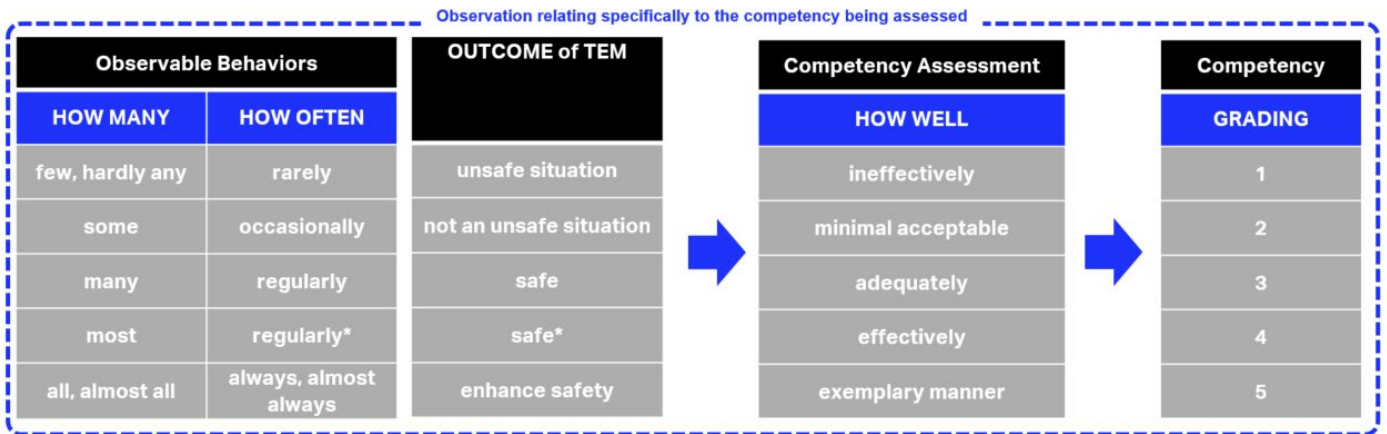
When they were required, the trainee has regularly demonstrated many of the OBs during training or evaluation.



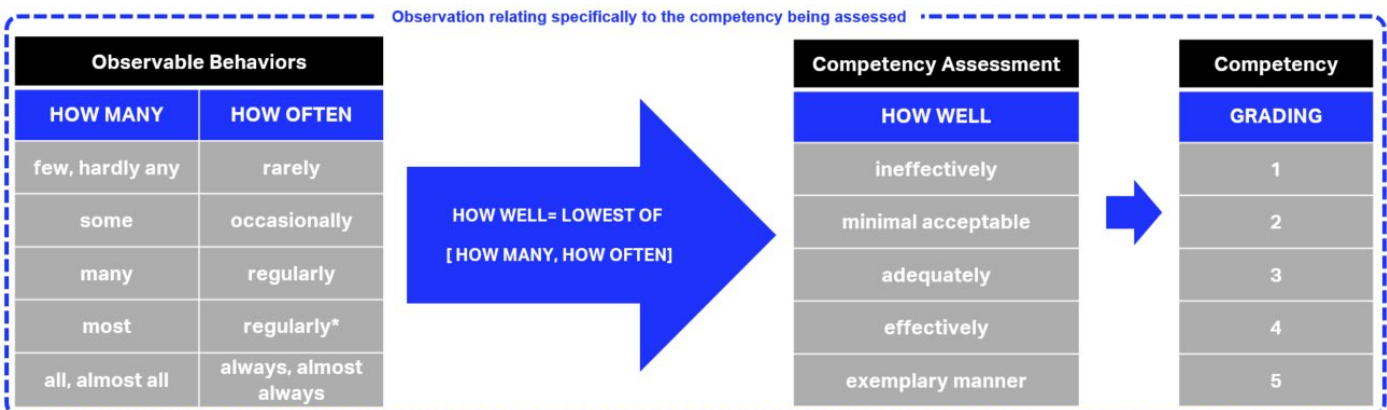
9. Outcome of the Assessment

9.1 Grading

The grading means that the trainer relates the results of the assessment to a defined scale (the aim of this defined numerical scale is to facilitate a harmonized and consistent training data collection).



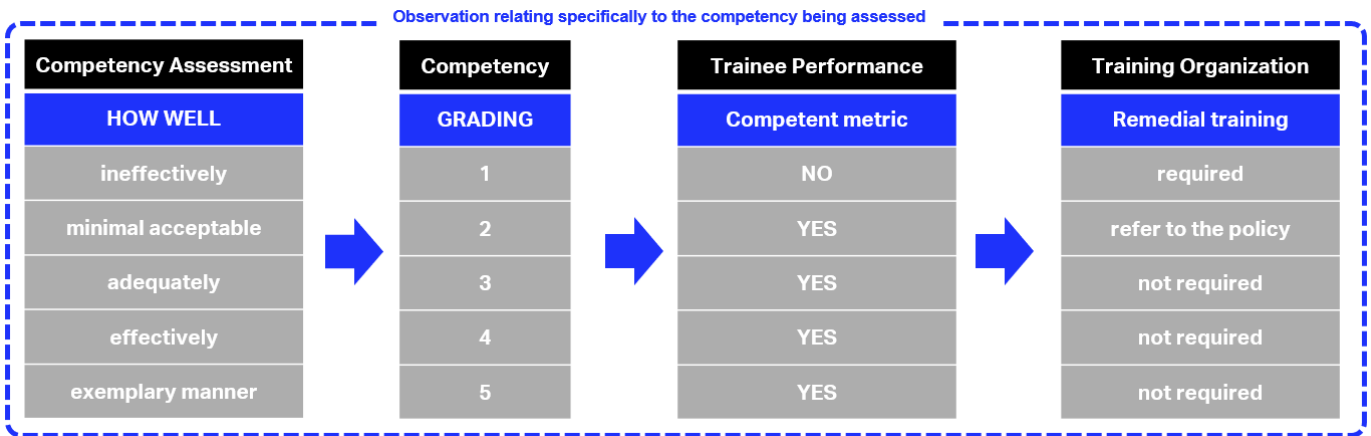
Particular case: When the training curriculum mandates the competency assessment to be based on Observable Behaviors only.



9.2 Trainee Performance

According to the industry best practices, the AOC or ATO policy should reflect the following:

- The trainee should demonstrate an **adequate level of performance corresponding to a grade 3** for each pilot, and instructor/evaluator competency.
- The trainee may demonstrate a **minimum acceptable level of performance corresponding to a grade 2** within a limited number of pilots, or instructor/evaluator competencies.



Each AOC and ATO should address the management of any performance below the adequate level of performance (grade 3) via formal procedures described within the training manual (see section 3.1 Assessment plan content).

Example of policy for the management of performance below adequate (grade 3)

A tailored Training (that may include remedial training) is required for:

- Any competency graded 1, or
- two successive grades 2 in a same competency.
- 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 evaluation session.

10. Pilot competencies

Competency Description	Observable behaviors
<p>Application of knowledge</p> <p>Demonstrates knowledge and understanding of relevant information, operating instructions, aircraft systems and the operating environment</p>	<p>OB 0.1 Demonstrates practical and applicable knowledge of limitations and systems and their interaction</p> <p>OB 0.2 Demonstrates required knowledge of published operating instructions</p> <p>OB 0.3 Demonstrates knowledge of the physical environment, the air traffic environment including routings, weather, airports and the operational infrastructure</p> <p>OB 0.4 Demonstrates appropriate knowledge of applicable legislation</p> <p>OB 0.5 Knows where to source required information</p> <p>OB 0.6 Demonstrates a positive interest in acquiring knowledge</p> <p>OB 0.7 Is able to apply knowledge effectively</p>
<p>Application of procedures and compliance with regulations</p> <p>Identifies and applies appropriate procedures in accordance with published operating instructions and applicable regulations</p>	<p>OB 1.1 Identifies where to find procedures and regulations</p> <p>OB 1.2 Applies relevant operating instructions, procedures and techniques in a timely manner</p> <p>OB 1.3 Follows SOPs unless a higher degree of safety dictates an appropriate deviation</p> <p>OB 1.4 Operates aeroplane systems and associated equipment correctly</p> <p>OB 1.5 Monitors aircraft systems status</p> <p>OB 1.6 Complies with applicable regulations.</p> <p>OB 1.7 Applies relevant procedural knowledge</p>
<p>Communication</p> <p>Communicates through appropriate means in the operational environment, in both normal and non normal situations</p>	<p>OB 2.1 Determines that the recipient is ready and able to receive information</p> <p>OB 2.2 Selects appropriately what, when, how and with whom to communicate</p> <p>OB 2.3 Conveys messages clearly, accurately and concisely</p> <p>OB 2.4 Confirms that the recipient demonstrates understanding of important information</p> <p>OB 2.5 Listens actively and demonstrates understanding when receiving information</p> <p>OB 2.6 Asks relevant and effective questions</p>

	<p>OB 2.7 Uses appropriate escalation in communication to resolve identified deviations</p> <p>OB 2.8 Uses and interprets non-verbal communication in a manner appropriate to the organizational and social culture</p> <p>OB 2.9 Adheres to standard radiotelephone phraseology and procedures</p> <p>OB 2.10 Accurately reads, interprets, constructs and responds to datalink messages in English</p>
<p>Aeroplane Flight Path Management, automation</p> <p>Controls the flight path through automation</p>	<p>OB 3.1 Uses appropriate flight management, guidance systems and automation, as installed and applicable to the conditions</p> <p>OB 3.2 Monitors and detects deviations from the intended flight path and takes appropriate action</p> <p>OB 3.3 Manages the flight path safely to achieve optimum operational performance</p> <p>OB 3.4 Maintains the intended flight path during flight using automation while managing other tasks and distractions</p> <p>OB 3.5 Selects appropriate level and mode of automation in a timely manner considering phase of flight and workload</p> <p>OB 3.6 Effectively monitors automation, including engagement and automatic mode transitions</p>
<p>Aeroplane Flight Path Management, manual control</p> <p>Controls the flight path through manual control</p>	<p>OB 4.1 Controls the aircraft manually with accuracy and smoothness as appropriate to the situation</p> <p>OB 4.2 Monitors and detects deviations from the intended flight path and takes appropriate action</p> <p>OB 4.3 Manually controls the aeroplane using the relationship between aeroplane attitude, speed and thrust, and navigation signals or visual information</p> <p>OB 4.4 Manages the flight path safely to achieve optimum operational performance</p> <p>OB 4.5 Maintains the intended flight path during manual flight while managing other tasks and distractions</p> <p>OB 4.6 Uses appropriate flight management and guidance systems, as installed and applicable to the conditions</p> <p>OB 4.7 Effectively monitors flight guidance systems including engagement and automatic mode transitions</p>

<p>Leadership and Teamwork</p> <p>Influences others to contribute to a shared purpose</p> <p>Collaborates to accomplish the goals of the team</p>	<p>OB 5.1 Encourages team participation and open communication</p> <p>OB 5.2 Demonstrates initiative and provides direction when required</p> <p>OB 5.3 Engages others in planning</p> <p>OB 5.4 Considers inputs from others</p> <p>OB 5.5 Gives and receives feedback constructively</p> <p>OB 5.6 Addresses and resolves conflicts and disagreements in a constructive manner</p> <p>OB 5.7 Exercises decisive leadership when required</p> <p>OB 5.8 Accepts responsibility for decisions and actions</p> <p>OB 5.9 Carries out instructions when directed</p> <p>OB 5.10 Applies effective intervention strategies to resolve identified deviations</p> <p>OB 5.11 Manages cultural and language challenges, as applicable</p>
<p>Problem Solving and Decision Making</p> <p>Identifies precursors, mitigates problems; and makes decisions</p>	<p>OB 6.1 Identifies, assesses and manages threats and errors in a timely manner</p> <p>OB 6.2 Seeks accurate and adequate information from appropriate sources</p> <p>OB 6.3 Identifies and verifies what and why things have gone wrong, if appropriate</p> <p>OB 6.4 Perseveres in working through problems while prioritizing safety</p> <p>OB 6.5 Identifies and considers appropriate options</p> <p>OB 6.6 Applies appropriate and timely decision-making techniques</p> <p>OB 6.7 Monitors, reviews and adapts decisions as required</p> <p>OB 6.8 Adapts when faced with situations where no guidance or procedure exists</p> <p>OB 6.9 Demonstrates resilience when encountering an unexpected event</p>

<p>Situation awareness and management of information</p> <p>Perceives, comprehends and manages information and anticipates its effect on the operation</p>	<p>OB 7.1 Monitors and assesses the state of the aeroplane and its systems</p> <p>OB 7.2 Monitors and assesses the aeroplane's energy state, and its anticipated flight path.</p> <p>OB 7.3 Monitors and assesses the general environment as it may affect the operation</p> <p>OB 7.4 Validates the accuracy of information and checks for gross errors</p> <p>OB 7.5 Maintains awareness of the people involved in or affected by the operation and their capacity to perform as expected</p> <p>OB 7.6 Develops effective contingency plans based upon potential risks associated with threats and errors</p> <p>OB 7.7 Responds to indications of reduced situation awareness</p>
<p>Workload Management</p> <p>Maintain available workload capacity by prioritizing and distributing tasks using appropriate resources</p>	<p>OB 8.1 Exercises self-control in all situations</p> <p>OB 8.2 Plans, prioritizes and schedules appropriate tasks effectively</p> <p>OB 8.3 Manages time efficiently when carrying out tasks</p> <p>OB 8.4 Offers and gives assistance</p> <p>OB 8.5 Delegates tasks</p> <p>OB 8.6 Seeks and accepts assistance, when appropriate</p> <p>OB 8.7 Monitors, reviews and cross-checks actions conscientiously</p> <p>OB 8.8 Verifies that tasks are completed to the expected outcome</p> <p>OB 8.9 Manages and recovers from interruptions, distractions, variations and failures effectively while performing tasks</p>

11. Instructor/Evaluator competencies

Competency Description	Observable behaviors
Pilot Competencies Refer to the description in the Pilot Competencies template (section 10)	Refer to observable behaviors in the Pilot Competencies template (section 10)
Management of the learning environment Ensures that the instruction, assessment and evaluation are conducted in a suitable and safe environment	IOB 2.1 Applies TEM in the context of instruction/evaluation IOB 2.2 Briefs on safety procedures for situations that are likely to develop during instruction/evaluation IOB 2.3 Intervenes appropriately, at the correct time and level (e.g., progresses from verbal assistance to taking over control) IOB 2.4 Resumes instruction/evaluation as practicable after any intervention IOB 2.5 Plans and prepares training media, equipment and resources IOB 2.6 Briefs on training devices or aircraft limitations that may influence training, when applicable IOB 2.7 Creates and manages conditions (e.g., airspace, ATC, weather, time, etc.) to be suitable for the training objectives IOB 2.8 Adapts to changes in the environment whilst minimizing training disruptions IOB 2.9 Manages time, training media and equipment to ensure that training objectives are met
Instruction Conducts training to develop the trainee's competencies	IOB 3.1 References approved sources (operations, technical, and training manuals, standards and regulations) IOB 3.2 States clearly the objectives and clarifies roles for the training IOB 3.3 Follows the approved training program IOB 3.4 Applies instructional methods as appropriate (e.g., explanation, demonstration, facilitation, discover with assistance, discover without assistance) IOB 3.5 Sustains operational relevance and realism IOB 3.6 Adapts the amount of instructor inputs to ensure that the training objectives are met IOB 3.7 Adapts to situations that might disrupt a planned sequence of events IOB 3.8 Continuously assesses trainee's competencies IOB 3.9 Encourages the trainee to self-assess IOB 3.10 Allows trainee to self-correct in a timely manner IOB 3.11 Applies trainee-centered feedback techniques (e.g., facilitation, etc.) IOB 3.12 Provides positive reinforcement

<p>Interaction with the trainees Supports the trainees' learning and development</p> <p>and</p> <p>Demonstrates exemplary behaviour (role model)</p>	<p>IOB 4.1 Shows respect for the trainees (e.g., for culture, language, experience)</p> <p>IOB 4.2 Shows patience and empathy (e.g., by actively listening, reading non-verbal messages and encouraging dialogue)</p> <p>IOB 4.3 Manages trainees' barriers to learning</p> <p>IOB 4.4 Encourages engagement and mutual support</p> <p>IOB 4.5 Coaches the trainees</p> <p>IOB 4.6 Supports the goal and training policies of the operator/ATO and Authority</p> <p>IOB 4.7 Shows integrity (e.g., honesty and professional principles)</p> <p>IOB 4.8 Demonstrates acceptable personal conduct, acceptable social practices, content expertise, a model for professional and interpersonal behaviour</p> <p>IOB 4.9 Actively seeks and accepts feedback to improve own performance</p>
<p>Assessment and Evaluation Assesses the competencies of the trainee</p> <p>and</p> <p>Contributes to continuous training system improvement</p>	<p>IOB 5.1 Complies with Operator/ATOs and Authority requirements</p> <p>IOB 5.2 Ensures that the trainee understands the assessment process</p> <p>IOB 5.3 Applies the competency standards and conditions</p> <p>IOB 5.4 Assesses trainee's competencies</p> <p>IOB 5.5 Performs grading</p> <p>IOB 5.6 Provides recommendations based on the outcome of the assessment</p> <p>IOB 5.7 Makes decisions based on the outcome of the summative assessment</p> <p>IOB 5.8 Provides clear feedback to the trainee</p> <p>IOB 5.9 Reports strengths and weaknesses of the training system (e.g., training environment, curriculum, assessment/evaluation) including feedback from trainees</p> <p>IOB 5.10 Suggests improvements for the training system</p> <p>IOB 5.11 Produces reports using appropriate forms and media</p>