

# Flight Crew Competency Based Training Framework

## Offshore Helicopter Operations



# 1. Introduction

The oil and gas industry introduced prescriptive stipulation of minimum hour requirements for pilots into the offshore helicopter environment in the late 1960's. The industry at that time was characterized by a large number of former military pilots trained to a prescribed standard, a predominance of single-pilot operations enabling command time to be easily accrued, minimal automation in helicopters resulting in a high-level of manipulative flying skills and an absence of sophisticated flight training devices requiring most training to be conducted in the aircraft. More than 40 years on, these aspects of the industry have changed in every respect, including fewer number of pilots suitably qualified to meet offshore entry minima, yet the minimum hour requirements for oil and gas contracts have not been updated to reflect the changed circumstances.

The industry has long-recognized stipulating a minimum number of hours as a filter to determine the competence of flight crew is not an optimum model, and provides no guarantee of ensuring competency. Furthermore it is recognized this approach is counter-productive when trying to develop and maintain a sustainable industry with suitably qualified and competent flight crew. With the availability of sophisticated flight training devices, a greater understanding of disciplined two-crew operations and the maturing of training approaches within industry, the development of Competency Based Training (CBT) as a tool for operators to manage their flight operations is required.

A CBT framework enables progression of certificated flight crew who generally originate from single-engine, single-pilot operations into dual-pilot, dual-engine VFR/IFR offshore operation. Progression through the phases and categories requires successful completion of a number of evaluations that confirm the required knowledge and proficiency reflective of the scope of training has been attained. This process will always require Chief Pilot approval for the candidate to advance to the next phase or category of training, ensuring the required level of accountability is maintained.

The flight crew competency based training framework is also known as a 'pilot progression plan' or 'flight crew progression plan'. Regardless, and whilst the nomenclature may differ universally, what is important is that the principles contained within this document are adequately addressed by any prospective program.

## 2. Purpose

The purpose of this document is to provide a standardized CBT framework that is objective and auditable, and which provides the necessary assurance and safeguards for all stakeholders. When fully incorporated, it provides an alternate means of conformance to the BARS Offshore Helicopter Operations (BARSOHO) personnel qualifications and experience table contained in Appendix 1 of the standard.

## 3. Competency Based Training (CBT) Roles and Responsibilities

An effective CBT program will provide a structured approach to the development of flight crew with limited experience to become highly competent crew members and, if assessed as suitable, aircraft captains. It will require investment by industry for the additional training time required to bring inexperienced crew through to command standards. Additional induction steps such as initial endorsement training using type-specific full motion simulators, access to cockpit procedural trainers, Crew Resource Management (CRM) courses, non-revenue flight training in the aircraft and other simulator-based activities such as Line-Oriented Flight Training (LOFT) exercises will need to be factored into the planning cycle. This will incur additional costs above historic flight crew employment models.

The following roles and authorizations must be documented, understood and complied with at all times:

- **Chief Pilot:** The Chief Pilot or designated personnel will select, appoint and document Line Captains to act as ‘Supervisory Line Captains’ when flying with Co-Pilots undergoing CBT. This recognizes not all Line Captains possess the requisite skills and experience to act in this role. The Chief Pilot will also be responsible for formally approving Co-Pilot category upgrades in accordance with the documented process.
- **Training and Check Captains:** Training Captains and Check Captains will be authorized to allow CBT Co-Pilots to act as the Pilot Flying (PF) at any time. They will conduct all training for CBT Co-Pilots up to the standards required for appointment to Command. Training Captains and Check Captains will conduct and document line check flights to ensure CBT Co-Pilots meet all competencies required by their current category, before making recommendations to the Chief Pilot for upgrade to the next category. Training for this group of pilots shall be documented in the Operator’s Training Program.
- **Supervisory Line Captains:** Supervisory Line Captains will not have a ‘training’ role per se, but will allow CBT Co-Pilots to gain experience through observation and exposure in both the Pilot Flying (PF) and Pilot Monitoring (PM) roles. At their discretion they may allow CBT Co-Pilots to be the PF, but only in accordance with the limitations outlined in the Co-Pilot’s category. Training for this group of pilots shall be documented in the Operator’s Training Program.
- **Line Captains:** Line Captains may fly with Category B Co-Pilots or higher. Line Captains for the purpose of the CBT Co-Pilot program will have attained a minimum of:

	FAR-29/CS-29 Aircraft	FAR-27/CS-27 Aircraft
Total Hours	2500	2000
Hours Command	1000	1000
Hours in Type	500	500
Offshore Experience	1 year as PIC	1 year as PIC

- **CBT Co-Pilots:** CBT Co-Pilots may only act in the PF role when flying with a Supervisory Line Captain, Line Captain or Check and Training Captain, and in accordance with all limitations presented in the Company’s primary Operations Document. The PF role includes primary management of the flight director/automation if the aircraft is coupled.
- **Flight Schedulers:** Schedulers will not program CBT Co-Pilots for flights, or with Captains, for which they are not endorsed or authorized.

An acceptable CBT program must be systematic in its approach with documented requirements and have evidence of the following:

- All training provided by the Operator to a CBT Co-Pilot for a license, rating or endorsement conducted to approved standards;
- A documented CBT Co-Pilot category system which provides a pathway for increased PF duties as competency requirements are assessed as satisfactory;
- A training program that is clearly documented in a clear and logical manner;
- Results of training that are comprehensively and accurately recorded;
- Standardized assessments measured against approved and documented standards;
- Training that is validated by summative tests;

- A formal documented upgrade process;
- A formal documented approval process for each upgrade awarded, and
- A current and up-to date publication of each CBT Co-pilot's category which will be published and accessible to all pilots, the Flight Schedulers and Management.

## 4. Six (6) Elements of CBT Framework

An approved CBT framework must, at a minimum, consist of six key elements that each are clearly identified, documented and able to be verified by a client company. The overarching aim of the CBT framework is to ensure that inexperienced crew members are only permitted to act as the PF in circumstances where their demonstrated capabilities are adequate to deal with aircraft operational issues that may arise from technical problems, weather, or unforeseen/unusual circumstances during the flight.

The six key elements are:

### 4.1 Selection Process

The aircraft operator's CBT framework shall have a documented selection process for all flight crew that involves representatives from both the Training Department and Flight Operations Management and their documented sign-off and approval. This will include the Head of Check and Training (HOCT) and the Chief Pilot, or their nominated delegates. Minimum standards for entry-level candidates are as follows:

- Class 1 Medical
- 500 hours total helicopter time
- 100 hours Command helicopter turbine time
- Commercial Helicopter Licence
- Instrument Rating (fixed or rotary)

*Note: Circumstances will arise when the experience level of an applicant exceeds the stated entry-level requirements but do not meet the full hours/experience levels required to bypass the CBT program. In these circumstances the Chief Pilot, following assessment flights and recommendations of a Check and Training Captain, may commence the applicant into the CBT program at a category appropriate to their competency.*

If not endorsed on the aircraft type, a full technical ground school course and aircraft type endorsement must be completed. In all cases the incoming pilot must complete a period at the highest co-pilot category, and undergo an In-Command-Under-Supervision (ICUS) program before being rostered on as a Captain.

The process by which an aircraft operator assesses the prior experience must be documented and provide consistent guidance that supports shortening the category framework.

### 4.2 Introductory Course

The Introductory Course is intended to provide the CBT Co-Pilot with the knowledge, skills and qualification necessary to move to revenue operations and is part of the Operator's Training Program which is approved by the National Aviation Authority (NAA). Additionally, the course will focus on consolidating the two-crew procedures, aircraft management and offshore procedures in actual conditions.

The course may be divided into a series of phases as deemed appropriate by the Operator, but shall include the following items:

- Phase 1: Ground Training:
  - CRM
  - Instrument flying
  - Multi-engine theory and emergencies
  - Aircraft Automation
  - Pilot incapacitation
  - Aircraft Performance Class Operations, i.e. PC 1/2/3
- Phase 2: Aircraft Specific Training
  - Ground and flight training
  - Type Rating if required
- Phase 3: Completion Training
  - Offshore Operator Specific Training comprising Day and Night Offshore Approaches to include Performance Class up to and including maximum aircraft weight for Performance Class and anticipated environmental condition.
  - Offshore Procedures Training – Offshore Instrument Approaches and other training required by Operator
- Phase 4: Qualification
  - Upon completion of Qualification Phase, the Progression Co-Pilot shall be able to operate the aircraft as Pilot Flying or Pilot Monitoring under the guidance of a Supervisory Line Captain or Line Captain as applicable to CBT Co-Pilot Category.

Two key components of Introductory Course for offshore helicopter operations are: (1) the successful attainment of competencies associated with instrument and night flying, and (2) competency in all supporting modes of automation. The instrument flying capabilities of entrants to the CBT program should be determined before significant resources have been expended, as this is an area likely to result in the inability of some new co-pilots to progress.

Flight Crew accepted under the CBT program must have demonstrated they are capable of conducting basic instrument flight and will require a current Instrument Proficiency Check (IPC) as a pre-employment condition. A continued focus on instrument training will be necessary throughout the progression program and to the standards demanded of regulatory IPCs.

Failure to insist on the highest instrument flying competencies will become a significant issue during the introduction of the progression Co-Pilot to night offshore operations. The CBT program must place an emphasis on instrument and night flying as being treated as one and the same. Night approaches to isolated platforms on nights with no discernible horizon require a high skill level and this segment of flight is recognized as the most difficult role for the offshore helicopter pilot.

The CBT program will, by definition, result in a large cross-cockpit experience gradient. This issue must be addressed by a documented requirement for industry-standard initial and ongoing CRM training for the incoming pilots, as well as a requirement for the Chief Pilot to identify and train selected Supervisory Line Captains with the right experience and skill set to fly with CBT Co-Pilots while they gain the requisite skills and experience to enable progression.

### 4.3 Assessment for Progression

The Aircraft Operator will have a Training and Checking Manual that will include the following documented requirements:

- A co-pilot category system that details the aims, objectives and required outcomes for each category;
- The operational limitations imposed on the co-pilot and the Captains for each category;
- Minimum competencies required for each level of progression;
- Ground school training programs and examination requirements;
- Airborne training programs and examination requirements;
- Simulator training programs and examination requirements;
- Cockpit Procedural Training requirements;
- Category Upgrade checking forms;
- Proficiency Check and Line Check forms;
- Competencies, training and standardization requirements for the Training and Checking staff;
- Training Captains to make recommendations for upgrades reliant on successful check flights conducted by them;
- Chief Pilot or other designated personnel to formally approve each and every upgrade;
- A requirement to promulgate updated details of the approved roles for each co-pilot; and
- Appointment criteria, Roles and Responsibilities of Supervisory Line Captains.

A typical CBT program, after Introductory Course and qualification, will consist of three stages as follows:

#### Category C Co-Pilot:

- This Category is intended to provide the CBT program Co-Pilot with exposure to Line Operations under the supervision of a Supervisory Line Captain through specified tasks. While an Operator should assign a period of flight hours to complete this Category for planning purposes, the determining factor of completion is mastery of all planned tasks, and not flight hours.
- Emphasis in this category should be placed in the areas of: Flight Planning, Takeoff and Landing, Instrument Flying Procedures and CRM.
- Flies with Supervisory Line Captains who may allow them to be the PF under specified conditions as laid out in the primary Operations Document. Limitations will relate to aircraft performance either by weight or engine power margins, and also to minimum weather criteria – for example wind, cloud base, visibility, outside air temperature.
- May act as PF to helidecks subject to company published limits of heave, pitch and roll (vessels etc).
- Training Captains, at their discretion, may allow Co-Pilot to be PF at any time.
- Introduction to night flying onshore, only with a Training Captain. (Operator may choose to incorporate this section into Introductory Course.)
- Once the pilot can demonstrate to a Training Captain that they have met the required competencies for this category, the Training Captain may recommend upgrade to the next category.

### **Category B Co-Pilot:**

- This Category is intended to provide the candidate with exposure to Night Flying, Vessel Landings, External Loads, Winching, and other areas specified by the Operator where applicable. If the Operator does not conduct operations in these types of operations, the CBT program Co-Pilot may move directly to Category A. However, if the Operator does commence operations in these areas, the Co-Pilot must return to this Category to gain experience.
- Once formally endorsed and signed off by a Training Captain for supplementary roles such as external loads and winching, may act as PF on these operations with Line Captains.
- Training Captains will provide training in approaches and landings to smaller vessel helidecks, but the co-pilot will not be approved as PF to small vessels with Line Captains.
- Once the pilot can demonstrate to a Training Captain that meet the required competencies for this category, the Training Captain may recommend upgrade to the next category.

### **Category A Co-pilot:**

- This Category is intended to provide the candidate with a final period to gain experience and exposure to Line Captains prior to undergoing a final CBT evaluation.
- May act as the PF with Line Captains at their discretion under all circumstances by day/night in operations for which they have been authorized, to include small vessels.
- Ongoing operations will focus heavily on ensuring the candidate is proficient at offshore night operations (where applicable) and instrument approaches.
- Following a recommendation and documentation of proficiency by a Training Captain and with approval from the Chief Pilot, the CBT program is considered complete. The candidate may be assigned to unrestricted line operations and considered to meet the experience listed in the BARS Pilot Experience Table of the applicable aircraft and pilot position.

Each CBT candidate undergoing progression will have a comprehensive training file, identifying each stage of progression with all the necessary endorsements and approvals from a Training Captain and the Chief Pilot.

#### **4.4 Use of Simulators**

Use of approved type-specific full motion flight simulators is a mandatory requirement for progression through a CBT program. The following minimum requirements shall be in place:

- Successful completion of all aircraft emergency procedures to captaincy standard.
- Line Oriented Flight Training (LOFT) and Crew Resource Management (CRM) developed by and/or endorsed by the Aircraft Operator must form part of the syllabus.
- CRM is to be assessed during all simulator training sessions.
- Localized experience and evidence-based scenarios are to be considered for development of LOFT exercises.

Ideally the Company will have a helicopter Flight Procedures Trainer, but in any event, pilots will have access to a helicopter instrument procedural trainer, with a printout capability for the conduct of regular instrument

flying practice. There will be a documented requirement for CBT co-pilots to conduct self-training exercises in these training devices at a prescribed frequency. Printouts of the results of this training will be monitored and filed by the Training Department on the individual's training file.

#### **4.5 Training and Checking Manual Inclusions**

The aircraft operator's Training and Checking Manual will include a description and required competencies for each co-pilot category of the CBT program, and the forms to be used to authorize upgrades.

The Manual will include an indicative time /experience level when co-pilots should reasonably be expected to be able to progress through each co-pilot category up to and including ICUS.

The Manual will also include the means by which aircraft operator Type Rating Instructor (TRI) or Type Rating Examiner (TRE) standardization is achieved.

In addition to the mandatory use of type-specific full motion simulators, thorough and documented Line and Instrument Proficiency Checks must be conducted and the candidate assessed for continued progression on each training element.

Emergency training will also be conducted in the aircraft by Training Captains if safe to do so. Normal day flight operations, even in marginal conditions, should be quickly achievable by all new entrants passing through the CBT scheme. Pilots with no previous captain experience will need to have hands-on emergency procedures practice on a regular basis if their reaction to a critical emergency as PF is to become instinctive.

Training and recommendations for advancement will only be conducted by TRI/TREs as delegated by the National Aviation Authority in their Instrument of Approval and Delegation.

#### **4.6 Command Upgrade**

Following a documented minimum time or experience as a co-pilot at the highest co-pilot category, the co-pilot will undergo a series of checks and training as specified in the Company Training Manual prior to consideration for command training.

Following the Chief Pilot's endorsement of the upgrade recommendation, the co-pilot will undergo conversion training by a Training Captain. This process will involve, ICUS training as specified in the Company Training Manual. There will be a requirement for the ICUS pilot to successfully complete a further course to Captain Standard in a type-specific full motion flight simulator.

## **5. Conclusion**

The development of a Competency Based Training framework provides the ability for Operators to augment their pilot staff by progressively training and exposing limited-time pilots to their procedures in a formal, documented and controlled system that aligns the improving capabilities of these pilots with the higher and higher levels of required competence associated with the more demanding flying tasks. The incorporation of a robust CBT program will provide transparency into the operator's training regime and allow the necessary auditable assurance demanded by all clients of the offshore helicopter industry.

Appendix One: CBT Operational Review Questions



Appendix One  
CBT Operational Review Questions

**Offshore CBT Question Set**

1. Elements of the Offshore CBT:

- 1.1 Roles and Responsibilities
- 1.2 Documentation
- 1.3 Framework
  - a. Selection Process
  - b. Introductory Course
  - c. Assessment for Progression and Category System
  - d. Simulation
  - e. Training and Check Manual
  - f. Command Upgrade

2. Question Set for each Element:

**2.1 Roles and Responsibilities**

- a. Does the Operator's CBT program state that Supervisory Line Captains should only be appointed by the Chief Pilot following consideration of their Knowledge, Skills and Experience as applicable to the oversight of a low experience CBT co-pilot?
- b. Does the Operator's CBT Program detail the process by which the Chief Pilot appoints Supervisory Line Captains?
- c. Are Duty Statements/Job Descriptions provided for Line Captains?
- d. Are Duty Statements/Job Descriptions provided for Supervisory Line Captains?
- e. Does the Operator's CBT Program include an induction and training program for Supervisory Line Captains?
- f. Are Duty Statements/Job Descriptions provided for CBT co-pilots?
- g. Do the Duty Statements/Job Descriptions include policy or guidance as to when the CBT co-pilot should act as Pilot Flying (PF) and Pilot Monitoring (PM)?
- h. Does the CBT Program require a recommendation for a Check Flight to be conducted on the progression co-pilot following the successful completion of training for each CBT Program category?
- i. Does the syllabus of training include a requirement for a Check Captain to conduct a successful check flight on the CBT co-pilot prior to making a recommendation to the Chief Pilot for category upgrade?
- j. Are defined minimum standards and an accompanying assessment framework provided for each category upgrade check flight?
- k. Does the Operator's CBT program state that only the Chief Pilot may authorize category upgrades for CBT co-pilots?
- l. Is policy or guidance provided for Line Captains on when Category C and above CBT co-pilots should act as PF or PM?
- m. Does the Operator provide direction to the flight scheduler's so that they are aware of and can comply with the crewing restrictions required under the CBT program?

- n. Does the Operator provide a record of the current CBT Program category for each progression co-pilot that is available to all staff?

## 2.2 Documentation

- a. Is a formal syllabus of training provided for the CBT program?
- b. Does the CBT framework include a co-pilot category structure with the aims, objectives and required outcomes for each category clearly stated?
- c. Are the required training objectives clearly defined for each CBT co-pilot Category?
- d. Are the required competencies for each progression co-pilot category clearly stated?

## 2.3 Framework

### 2.3.1 Selection Process

- Is the CBT framework described effectively in the Operator's Operations/Training Manual?
- Does the Operator's CBT selection process contain the following minimum standards?
  - Class 1 Medical
  - 500 hours total helicopter time
  - 100 hours Command helicopter turbine time
  - Commercial Helicopter License
  - Instrument Rating (fixed or rotary)?
- Does the Operator's CBT selection process include a requirement that candidate selection must be supported by written documentation, endorsement and sign-off from representatives from the Training Department and Flight Operations Management?
- Does the CBT provide for program commencement at above the entry level if the candidate possesses appropriate experience?
- If entry to the CBT program is permitted above entry level, does the Operator mandate a flight assessment and written recommendation from a Check or Training Captain prior to the Chief Pilot determining the entry category of the candidate?
- Does the CBT program require that a candidate who enters the program above the entry level, but is not endorsed on the aircraft type complete a period of ICUS flying before being rostered to fly in command?
- Does the program framework describe the method by which an above entry level candidate must be continually assessed throughout the shortened program period?

### 2.3.2 Introductory Course

- Does the CBT ground school detail an expanded syllabus for entry level CBT candidates?
- Does the ground school component of CBT program include written examinations with stated pass/fail criteria for each syllabus category?
- Does the program Introductory Course detail an expanded syllabus for entry level candidates?
- Does the syllabus of training include a requirement for training flights including offshore approaches and landings with Aircraft Performance Class at Maximum aircraft weight and anticipated environmental condition?
- Does the Operator mandate written narrative following each progression training flight?
- Does the syllabus provide a guide as to the number of flights and hours that a CBT co-pilot is likely to require at each stage of training?
- Does the program framework include a requirement for assessment of capability that allows a newly endorsed co-pilot to return to base flight in the event of Captain Incapacitation?

- Does the program provide for continual exposure to instrument flight and approach skills?
- Does the program detail a process for dealing with a candidate who does not meet the required standards to progress through the program stages?
- Does the CBT syllabus contain an appropriate volume of night flying training sufficient to support candidate progression to a competent night offshore approach standard?
- Does the program syllabus include a requirement for both initial and on-going CRM training with an emphasis on management of large cockpit gradient issues?

#### 2.3.4 Assessment for Progression

- Are the operation restrictions and limitations for each co-pilot category clearly stated?
- Does the CBT program utilize Category Upgrade checking forms that must be authorized by the Chief Pilot prior to progression to the next category?
- Does the CBT program utilize Proficiency Check and Line Check forms to record the results of mandatory tests and check flights?
- Does the program state minimum competencies for training and checking staff?
- Does the program detail the processes to train/standardize Training and Checking staff?
- Do all Training and Check flights include an assessment of CRM?
- Does the Operator use local and evidence based scenarios in its training program?
- Does the Operator have a policy for the conduct of emergency training in the aircraft?
- Are limits for emergency training well documented and easily understood by all staff?

#### 2.3.5 Use of Simulators

- Does the program syllabus include a Cockpit Procedural Trainer equipped with data print out?
- Does the syllabus provide for practice flights by trainees in the Cockpit Procedures Trainer?
- Are practice flights in the Cockpit Procedures Trainer recorded and examined by Training Department staff to verify the maintenance of appropriate instrument flight standards?
- Does the program syllabus include use of a full motion flight simulator?
- Are minimum standards and criteria established for each simulator training flight?
- Are simulator flights assessed and recorded against minimum competency standards?

#### 2.3.6 Training and Checking Manual Inclusions – previously addressed

#### 2.3.7 Command Upgrade

- Does the program contain a minimum standard of experience or time as a co-pilot prior to consideration for a Command Upgrade?
- Does the syllabus of training for Command Upgrade training and assessment of each candidate in all applicable roles?

-End-