

# Flight Crew Competency Based Training Framework

## Offshore Helicopter Operations



# 1. Introduction

Prescriptive stipulation of minimum hour requirements for contracted pilots was first introduced into the offshore helicopter environment by major oil and gas companies in the late 1960's. This era was characterised by a high volume of ex-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 this landscape has changed in every respect, with the exception of a reliance on prescriptive number of flying hours to satisfy the broad offshore client community.

One of the ongoing difficulties facing offshore helicopter operators today is crewing – specifically the recruitment and advancement of appropriately qualified flight crew members through to command positions. In an environment that demands individual competence to be demonstrated all of the time, the industry norm has been for a contracting client to impose a standard principally based upon a minimum number of flying hours. The intention underlying this approach has been founded on the notion that knowledge, skills and behaviors are directly proportional to the number of hours flown and accrued by the individual. However it is now well recognised that the number of hours alone does not provide assurance of adequate competencies of an offshore flight crew member. Where at all possible, means other than relying on the number of flying hours as the only risk control measure for offshore helicopter flight crew competency should be explored.

## 2. Purpose

The purpose of this paper is to provide a framework for competency based training that can be used in lieu of mandating minimum number of hours for offshore helicopter operations. The framework must be presented in a format that is clear, objective and easily auditable that will in turn provide the necessary assurance for client companies.

## 3. Competency Based Training (CBT)

A CBT program acceptable to all industry stakeholders will remove the prescriptive stipulation of minimum number of hours and replace it with a structured approach designed to develop and progress individual flight crew members primarily based on their competency. As evidenced by practices in the airline industry, it is difficult to remove the need altogether for some form of measure of time-related experience. However, an added focus on competencies provides the mechanism to move beyond looking at just number of flying hours. In simple terms an acceptable CBT program must be systematic in its approach with evidence of:

- Training for a licence, rating or endorsement conducted to approved standards;
- A training program that is clearly documented in a logical, effective and relevant manner;
- Results of training that are correctly and comprehensively recorded;
- Assessments that are rigorous, standardised and measured against approved standards;
- Training that is validated by summative tests.

## 4. 8 Elements of CBT Framework

An approved CBT framework must, at a minimum, comprise of 8 key elements that each are clearly identified, documented and able to be sampled during an audit process. These elements are:

### 4.1 Selection Process

The aircraft operator's CBT System shall have a documented selection process for all flight crew that involves representatives from both the Training Department and Flight Operations 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. Selected candidates will meet or exceed the following requirements:

- Class 1 Medical
- 500 hours total helicopter time
- 100 hours Command turbine time
- Commercial Helicopter Licence
- Successful completion of any regulatory required Instrument Rating Theory examination

### 4.2 Flight Crew Category System

The Aircraft Operator will have a Category system (or similar) that provides the framework for flight crew progression. Appendix 1 outlines minimum requirements for such a system.

A key component of a CBT system for offshore helicopter operations is in the successful attainment of competencies associated with instrument and night flying, and all supporting modes of automation. The Instrument Training referenced in Appendix 1 is attached as Appendix 2, and does not differentiate between copilot and command instrument ratings. The instrument rating requires 40 hours of flight training and successful attainment required for progression by the candidate. The use of 40-hours recognises minimum requirements set out by some National Aviation Authorities.

Successful progression of an individual through the CBT system for offshore helicopter operations is reliant on the attainment of an instrument rating very early on in the program. Just as instrument flying is acknowledged as a core competency for offshore flight and it is equally recognised that not all pilots have the aptitude for instrument flight. Any CBT system therefore needs to be able to manage the inevitable consequence of individuals failing to meet the required standard along the way. Continuous improvement of the Selection Process is an obvious area of focus to minimise occurrence.

### 4.3 Assessment for Progression

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

- A syllabus that reflects each stage along with aim, objective and outcomes for each training element
- 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
- Category Upgrade checking forms
- Proficiency Check and Line Check forms
- Competencies, training and standardisation requirements for Training and Checking staff

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

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

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

- 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.
- Aircraft Operator's own Simulator Flying Instructors/Examiners (SFI/SFEs) are to be used for both LOFT exercises and during any assessments for category upgrade.
- Localised experience and evidence-based scenarios are to be considered for development of LOFT exercises.

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

The aircraft operator's Training and Checking Manual will include a description and aims of the CBT program including means by which aircraft operator Type Rating Instructor (TRI) or Type Rating Examiner (TRE) standardisation is achieved.

In addition to the mandatory use of type-specific full motion simulators, thorough and documented Line and Proficiency Checks must be conducted and the candidate assessed for continued progression on each training element. A panel comprising at least one TRI/TRE and Chief Pilot (or delegate) must jointly approve each stage of progression.

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. Line Training may also be conducted by Line Training Captains (LTC) nominated by the HOCT in accordance with the requirements specified in the Training and Checking Manual.

#### **4.6 Instrument and Night Flying**

A core focus on instrument flying must be established as early as practicable and maintained throughout the CBT program. The CBT must place an emphasis on instrument and night flying being treated as one and the same. The instrument flying skills are critical for inclement weather and night operations, and will include a need for high levels of proficiency with the aircraft type's automation and backup modes of aircraft operation. The aptitude and ability of a candidate's ability to fly under the Instrument Flight Rules for day/night and manage all modes of automation in normal and abnormal operations must be clearly documented with relevant endorsements and approvals throughout progression towards Command.

#### **4.7 Lateral Recruitment**

Circumstances will commonly arise when the experience level of an applicant exceeds the entry-level requirements as outlined in 4.1. A former military flight crew member may have multi-engine, multi-crew and IFR experience, but without offshore time. Such cases require development of tailored CBT program that suit the individual's circumstances, while still achieving all elements of the category system.

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

#### **4.8 Command Upgrade**

The Command Upgrade at the culmination of the program must incorporate checks associated with use of a type-specific simulator, a series of Line Checks associated with operational management of routine flights and a Proficiency Check incorporating in-flight emergency management of the aircraft. Recommendation for Command Upgrade will also address crew and passenger management, airmanship, situational awareness, client specific requirements and all qualities that combine to make a good Aircraft Captain.

## **5. Conclusion**

The development of an industry agreed Competency Based Training framework provides the catalyst for Operators to choose to move away from the prescriptive approach historically used to underpin the offshore helicopter industry for decades. 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 1 CBT PROGRAM OVERVIEW

Appendix 2 INSTRUMENT RATING

Appendix 3 CBT PROGRAM AUDIT PROTOCOL

Appendix 1

**CBT PROGRAM OVERVIEW**

Category	Overview	Training Requirements & Outcomes	Duration	Competencies
E	<p>Entry phase.</p> <p>The candidate is not yet type or instrument rated, and has no multi-engine, multi-crew, night, IFR, or offshore experience.</p>	<ol style="list-style-type: none"> <li>1. Technical Ground School. All aircraft systems and flying training conducted on aircraft or combination of acft and simulator.</li> <li>2. Instrument rating.</li> <li>3. CRM training.</li> <li>4. BOSIET HUET course.</li> <li>5. Emergency Proficiency Check (EPC) – including emergency and life-saving equipment and passenger control/safety briefing.</li> <li>6. Operator Proficiency Check to progress to Cat D.</li> </ol>	<ol style="list-style-type: none"> <li>1. 30 hours ground school + 10 hours flying training with TRI/TRE. Technical, operational, Flight Manual review, Operations Manual review, DG awareness.</li> <li>2. 40 hours instrument time with TRI/TRE.</li> <li>3. CRM: 2 days.</li> <li>4. BOSIET HUET: 2 days.</li> <li>5. EPC 0.5 days.</li> <li>6. Two (2) hours, with TRI/TRE. May be conducted on simulator.</li> </ol>	<p>Candidate must hold as a minimum: a CPL (H) licence with 500 helicopter hours, 100 hours command turbine time and instrument rating theory examination at commencement.</p> <p>On completion, the candidate will have a type rating and Instrument rating, together with any additional legislative or contractual requirements.</p>
D	<p>Line training phase commences.</p>	<ol style="list-style-type: none"> <li>1. Landing and taking off from a helideck.</li> <li>2. Line operations.</li> <li>3. Night flying: circuits to a runway only.</li> <li>4. Line Check: clearance to progress to Cat C.</li> </ol>	<ol style="list-style-type: none"> <li>1. Not less than 10 hours with TRI/TRE deck operations. Shall include 3 day deck (actual) landings and take-off from copilot seat. Simulated deck operations to a runway using flight simulator may be used to augment (but not replace) this phase.</li> <li>2. 20 sectors with LTC. Sector defined as onshore to offshore and vice versa. Inter-rigging not included as a sector unless greater than 30-minutes flight length.</li> <li>3. Night flying with TRI/TRE.</li> <li>4. 2 sectors, involving both administrative and flying duties: with TRI/TRE.</li> </ol>	<p>Consistent, safe handling.</p> <p>Cleared to line as a competent copilot, by day. Copilot at night onshore only.</p>
C	<p>Supervised consolidation flying.</p>	<ol style="list-style-type: none"> <li>1. Supervised line flying.</li> <li>2. Winch/sling endorsements as required.</li> <li>3. Line Check: clearance to progress to Cat B.</li> </ol>	<ol style="list-style-type: none"> <li>1. Not less than 200 hours with LTC.</li> <li>2. 2 hours each: with TRI/TRE.</li> <li>3. 2 sectors, involving both administrative and flying duties: with TRI/TRE.</li> </ol>	<p>Perform copilot duties with minimal supervision, by day. Copilot at night onshore only.</p> <p>Sound application and understanding of all normal and emergency operations.</p>

<b>B</b>	Copilot line flying phase.	<ol style="list-style-type: none"> <li>1. Line flying with indirect supervision.</li> <li>2. Night Offshore operations endorsement.</li> <li>3. Night deck landing training. Key focus on transition from instrument to visual flight and vice versa.</li> <li>4. Category A Upgrade Check: clearance to progress to ICUS phase.</li> </ol>	<ol style="list-style-type: none"> <li>1. Not less than 500 hours on type for this Category: may be crewed with non-training captains who have more than 100 hours offshore command on type.</li> <li>2. 10 hours: with TRI/TRE.</li> <li>3. To be conducted in the aircraft with TRI/TRE. Additional training in a simulator as required.</li> <li>4. With TRI/TRE: may be conducted in a simulator.</li> </ol>	<p>Consistent, safe handling offshore by day and night.</p> <p>High level of theoretical and technical knowledge. Manages complex emergencies. Safe, competent and confident flying skills up to MAUW with limited power margins. Can perform unsupervised engine starts.</p>
<b>A</b>	ICUS phase.	<ol style="list-style-type: none"> <li>1. RHS flying.</li> <li>2. All flights with designated ICUS supervising captains.</li> <li>3. Command upgrade assessment: clearance to progress to command phase.</li> </ol>	<ol style="list-style-type: none"> <li>1. 5 hours RHS training: with TRI/TRE, to include operations to a helideck.</li> <li>2. Not less than 500 hours on type for this Category.</li> <li>3. With TRI/TRE: may be conducted in a simulator.</li> </ol>	<p>Candidate must possess ATPL (H).</p> <p>Command standard in normal and emergency theory, skill and two-crew procedures.</p>
<b>Command Upgrade</b>	Command upgrade phase.	<p>Command Upgrade Check consisting of:</p> <ol style="list-style-type: none"> <li>1. Recurrent simulator training.</li> <li>2. Proficiency check (aircraft and simulator).</li> <li>3. Line check (aircraft).</li> </ol>	<ol style="list-style-type: none"> <li>1. Recurrent simulator with SFI/SFE.</li> <li>2. Proficiency check with TRE.</li> <li>3. Line check with TRE.</li> <li>4. 2-Day classroom CRM course.</li> </ol>	<p>Command standard in normal and emergency theory, skill and two-crew procedures.</p> <p>Successfully completed all Training and Checking Manual competencies.</p> <p>Completed IRT and NVFR requirements, including recency.</p>

### **Notes on Appendix 1**

- Note 1: A sector shall be regarded as a leg between a runway and a helideck. Offshore shuttles are not included, unless the leg length satisfies the intent that the candidate will experience the normal range of activities associated with a runway to rig trip.
- Note 2: The copilot may crew an aircraft at night for those flights that involve runway operations only: crewing to an offshore facility at night may only take place with a TRI/TRE. A current instrument rating/proficiency check must be held by the copilot.
- Note 3: During this phase, the captain is to possess at least 100 in command on offshore operations with the same Aircraft Operator.
- Note 4: It is recommended that night flying training be completed during the commencement of this category stage. Key focus is on transition from instrument to visual flight and vice versa.
- Note 5: Simulators used in the conduct of the CBT can involve fixed base or procedural trainers for designated training events.  
All line checks, proficiency checks and Instrument ratings conducted in a simulator must utilize a full motion simulator specific to the type the candidate is to be rated on.



## Appendix 2 INSTRUMENT RATING

**Table One: Ground School.**

1. The Ground Training phase is intended to refresh the candidate's knowledge gained previously during regulatory required theory preparation.

Serial	Lesson Title	Duration
GS 1	<i>Basic IF Techniques:</i> Briefings and checklists Automation usage EFIS Display Controllers Instrument takeoff Straight and level, Acceleration/deceleration Climbing/descending, Turning Unusual attitude (U/A) recovery Instrument approach Circling and Missed Approaches	2.0
GS 2	<i>Navigation Aids and Aircraft Systems:</i> NDB, GPS, VOR/LOC/ILS DME (arrival, arcing, pairing) Weather radar, ARA, ARA/GNSS Flight Directors/Automation Point to Point navigation	2.5
GS 3	<i>Navigation Aids and Aircraft Systems:</i> NDB, GPS, VOR/LOC/ILS DME (arrival, arcing, pairing) Radar Flight Directors/Automation Point to Point navigation	1.5
GS 4	<i>Emergencies in IMC:</i> Inadvertent IMC OEI RoC/drift-down/LSALT Engine failure/fire EFIS/DAFCS failures Electrical malfunctions Autorotation Emergency descent	1.5
GS 5	<i>Plan a flight under the IFR</i> Performance requirements Take-off and landing considerations LSALT calculations	1.5

**Table Two: Instrument Flying**

1: The total time of 40 hours of training for the flying phase is aligned with some National Aviation Authorities requirement for the application of an Instrument Rating.

2: Significant emphasis is to be placed on conducting IF flight training at night, with particular focus on the circling approach.

3: Whilst the ARA is not a legislative requirement, its inclusion is an integral element of IF offshore operations.

<b>Serial</b>	<b>Lesson Title</b>	<b>Duration</b>
(Instrument Flying Phase: Notes 2 and 3)  <b>IF 1</b>	Navigational aid validity checks Taxy/hover checks Instrument takeoff Instrument handling Unusual Attitude (UA) recovery	<b>1.5</b>
<b>IF 2</b>	Navigational aid validity checks Taxy/hover checks Instrument takeoff Instrument handling Unusual Attitude (UA) recovery	<b>1.5</b>
<b>IF 3</b>	DME/GPS arrival Circling approach Sector entry/holding pattern NDB approach Missed approach	<b>2.0</b>
<b>IF 4</b>	DME arc ILS approach (raw data, fully coupled) ARA (as flying and non-flying pilot: Note 4) Missed approach	<b>2.0</b>
<b>IF 5</b>	RNAV GNSS ARA	<b>2.0</b>
<b>IF 6</b>	Consolidate instrument approaches Emergencies Degraded instrumentation/automation	<b>2.5</b>
<b>IF 7</b>	IFR Navigation 2 stage flight plan	<b>3.5</b>
<b>IF 8</b>	IFR navigation 3 stage flight plan (offshore, with ARA)	<b>5.0</b>
<b>IF 9</b>	Consolidation	<b>2.0</b>

<b>Serial</b>	<b>Lesson Title</b>	<b>Duration</b>
<b>IF 10</b>	Consolidation	<b>2.0</b>
<b>IF 11</b>	IFR Navigation 2 stage flight plan	<b>3.5</b>
<b>IF 12</b>	IFR navigation 3 stage flight plan (offshore, with ARA)	<b>5.0</b>
<b>IF 13</b>	Consolidation	<b>2.5</b>
<b>IF 14</b>	IFR Navigation 2 stage flight plan	<b>2.5</b>
<b>IF 15</b>	Consolidation	<b>2.5</b>
<b>1F 16</b>	Instrument Rating/Proficiency Check	<b>2.0</b>

**Appendix 3 CBT PROGRAM AUDIT PROTOCOL**

Sequence	Title/Question	Framework reference
1.	Competency Based Training – Program Management	
1.01	If the operator utilizes competency based training for the flight crew training program, the operator should have a training and checking manual that clearly describes policies, procedures and guidance supporting the CBT.	4.3
1.02	If the operator utilizes competency based training for the flight crew training program, the operator should have a flight crew category system that clearly defines minimum levels of training, experience and competency outcomes for each specific category level.	4.2 App 1
1.03	If the operator utilizes competency based training for the flight crew training program, the operator should ensure the progression of each candidate is formally approved and recorded by a TRE/TRI or Chief Pilot (or delegate).	4.5
1.04	If the operator utilizes competency based training for the flight crew training program, the operator shall have a selection process that evaluates and records the following criteria: a. Medical standard level 1 as a minimum; b. Minimum of 500 hours total rotary wing experience; c. Minimum of 100 hours command turbine experience; d. Commercial Helicopter Pilot License; e. Successful completion of Instrument flying theory examination (as applicable).	4.1
1.05	If the operator utilizes competency based training for the flight crew training program, the operator’s selection process should include a final approval from the head of check and training and the chief pilot (equivalent titles and delegates are acceptable) for participation in the CBT program.	4.1
1.06	The operator should have policy and procedures for the management of training candidates who are unsuccessful in check and training events.	4.2
1.07	If the operator utilizes competency based training for the flight crew training program, the operator should set standards for the minimum level of training and experience of the training and checking staff.	4.3
1.08	If the operator utilizes competency based training for the flight crew training program, the operator should ensure that each TRI/TRE is approved/accepted by the responsible regulatory authority.	4.5
1.09	If the operator utilizes competency based training for the flight crew training program, the operator should ensure that each line training captain (LTC), (if utilized), is nominated and approved by the head of training and checking.	4.5
1.10	If the operator utilizes competency based training for the flight crew training program, the operator’s training program should include a system for the standardization of the training staff and check airmen.	4.5

Sequence	Title/Question	Framework reference
1.11	The operator should have a policy and system supporting continuous improvement of the training program that formally reviews all key aspects of the CBT program on an annual basis.	4.2
1.12	If the operator utilizes competency based training for the flight crew training program and lateral recruitment is undertaken, the program should provide policy and guidance for the development of a tailored training program suitable to the specific candidate. (Note: the minimum standards established by the category system must still be addressed).	4.7
2.	Use of Simulators	
2.01	If the operator utilizes competency based training for the flight crew training program, the operator shall ensure simulator training is carried out in a full motion simulator specific to the type the candidate is being rated for. (Designated training sequences may be conducted in a fixed base flight training device where full motion is not required).	4.4
2.02	If the operator utilizes competency based training for the flight crew training program, the operator should ensure that simulators utilized in training and assessment are approved/accepted by the responsible regulatory authority.	4.4
2.03	If the operator utilizes competency based training for the flight crew training program, the operator should ensure that company simulator flying instructors/examiners are utilized for LOFT assessments and upgrade events, where not precluded by the responsible regulatory authority. (Note: in certain states, the regulatory authority will provide the check airman).	4.4
3.	Competency Based Training records system	
3.01	If the operator utilizes competency based training for the flight crew training program, the operator should have a records management system that records: <ul style="list-style-type: none"> <li>a. Ground school examination results;</li> <li>b. Designated training element outcomes;</li> <li>c. Category upgrade event results;</li> <li>d. Proficiency check results; and</li> <li>e. Line-check evaluations.</li> </ul>	4.3 4.5
4.	Competency Based Training Program Elements	
4.01	If the operator utilizes competency based training for the flight crew training program, the operator should have a syllabus of training detailing objectives, outcomes and stages of each training event/competency level.	4.3
4.02	If the operator utilizes competency based training for the flight crew training program, the operator's syllabus of training should describe the following: <ul style="list-style-type: none"> <li>a. Ground school training and examination requirements;</li> <li>b. Airborne training and examination requirements; and</li> <li>c. Simulator training programs and examination requirements.</li> </ul>	4.3

Sequence	Title/Question	Framework reference
4.03	<p>If the operator utilizes competency based training for the flight crew training program, the operator should ensure that the training program includes the following elements:</p> <ol style="list-style-type: none"> <li>Proficiency in the use of automation during normal and abnormal operations and back up function modes;</li> <li>Operations Manual review;</li> <li>Crew Resource Management (CRM);</li> <li>BOSIET HUET;</li> <li>Emergency Proficiency Check;</li> <li>Winch and sling endorsements as required;</li> <li>Dangerous goods.</li> </ol>	4.6 App 1 Cat E-A
4.04	<p>If the operator utilizes competency based training for the flight crew training program, the program should provide simulator training events, developed or endorsed by the operator, that include:</p> <ol style="list-style-type: none"> <li>Localized experience and evidence based scenarios;</li> <li>LOFT profiles; and</li> <li>CRM practical assessments.</li> </ol>	4.4
4.05	<p>If the operator utilizes competency based training for the flight crew training program, the operator should ensure that the instrument rating is awarded (minimum of 40 hours flight/simulator training) to the candidate during the entry level of the CBT and prior to advancement to line training/operations.</p>	4.6 App 1, Cat E
4.06	<p>If the operator utilizes competency based training for the flight crew training program, the operator should ensure that the process for recommendation to undergo a command upgrade includes assessment of the candidate for:</p> <ol style="list-style-type: none"> <li>Crew and passenger management skills;</li> <li>Airmanship;</li> <li>Situational awareness;</li> <li>Client specific requirements;</li> <li>Leadership.</li> </ol>	4.8
4.07	<p>If the operator utilizes competency based training for the flight crew training program, the operator should ensure that the command upgrade assessment includes:</p> <ol style="list-style-type: none"> <li>A proficiency check;</li> <li>Use of a type specific simulator; and</li> <li>A series of Line Checks on routine operational flights.</li> </ol>	4.8 App 1