

**Transport Canada Civil Aviation (TCCA)****OPERATIONAL EVALUATION REPORT**

Date: 2024-06-14

**Sikorsky**

Type Certificate Data Sheet (TCDS)*	TCDS Identifier/Master Series	Marketing Name	Pilot Type Rating
RDIMS# 19125726 Special Certificate of Airworthiness - Limited	N/A	UH60A	UH60A

***Original signed by Stacey Mason***

Stacey Mason

Director, Standards Branch (AART)

Transport Canada, Civil Aviation

## **Management co-ordination sheet**

### **Office of Primary Interest (OPI):**

Benoit Saulnier

Program Manager, Flight Technical and Operator Certification (FTOC)

Commercial Flight Standards (AARTF)

Standards Branch

Transport Canada, Civil Aviation

330 Sparks Street, Ottawa, Ontario

K1A 0N8

e-mail: [benoit.saulnier@tc.gc.ca](mailto:benoit.saulnier@tc.gc.ca)

### ***Original signed by Benoit Saulnier***

Deborah Martin

Chief, Commercial Flight Standards (AARTF)

Standards Branch

Transport Canada, Civil Aviation

e-mail: [deborah.martin@tc.gc.ca](mailto:deborah.martin@tc.gc.ca)

### ***Original signed by Acting Chief, Craig Leonard***

## Table of contents

1. Record of revisions .....	4
2. Introduction .....	4
3. Highlights of change .....	5
4. General .....	5
5. Acronyms .....	7
6. Definitions .....	8
7. Pilot type rating .....	9
8. Related aircraft .....	9
9. Pilot training .....	9
10. Pilot checking .....	11
11. Pilot currency .....	12
12. Operational suitability .....	12
13. Miscellaneous .....	12
14. References .....	12
Appendix 1 – Training syllabus .....	13

## 1. Record of revisions

Revision Number	Sections(s)	Page(s) Affected	Date
0 (Original)	All	All	2024/06/14

## 2. Introduction

The Transport Canada Flight Technical and Operator Certification (FTOC) section within the Civil Aviation Standards Branch is responsible for the TCCA Operational Evaluation (OE) program. FTOC's objectives during the operational evaluation of a new or modified aircraft are to determine:

1. The acceptability of a manufacturer's training program for use by Canadian operators;
2. Pilot qualification and type rating requirements including training, checking, and currency requirements, and;
3. The operational suitability of an aircraft type.

This report lists those determinations for use by:

1. TCCA Inspectors who approve training programs;
2. TCCA inspectors and Approved Check Pilots (ACPs) who conduct Pilot Proficiency Checks (PPCs) and issue Type Ratings; and
3. Aircraft operators and training providers, to assist them in developing their flight-crew member training, checking and currency programs.

Determinations made in this report are based on the evaluations of specific Sikorsky UH60A series, made in accordance with current regulations, standards, and guidance. Modifications and upgrades made to the series described herein, or introduction of new related aircraft, may require amendment of the findings in this report.

### **3. Highlights of change**

Reserved.

## **4. General**

### **4.1 Scope of report**

This OE report applies to all series of the Sikorsky UH60A Blackhawk.

### **4.2 Guidance material**

The TCCA Operational Evaluations were conducted in accordance with FAA Advisory Circular (AC) 120-53(B), *Guidance for Conducting and Use of Flight Standardization Board (FSB) Evaluations*, and the JAA/TCCA/FAA Common Procedures Document for Operational Evaluation Boards (CPD).

### **4.3 OE Report effectiveness**

Provisions of this report are effective until amended, superseded, or withdrawn by subsequent OE findings.

TCCA reserves the responsibility and authority to re-evaluate and modify sections of this report based on new or revised advisory material, amended *Canadian Aviation Regulations* (CARs), aircraft operating experience, or the evaluation of new or modified aircraft under the provisions of the CPD or FAA AC 120-53B.

### **4.4 Application of OE Report**

All relevant parts of this report are applicable on the effective date of this report.

### **4.5 Alternate means of compliance**

The OEB Chairman, the Program Manager of FTOC and/or the Chief Commercial Flight Standards should be consulted when alternate means of compliance, other than those specified in this report, are proposed. An applicant will be required to submit a proposed alternate means that provides an equivalent level of safety to the provisions of the CARs and this OE report. Analysis, demonstrations, proof of concept testing, differences documentation, and/or other substantiation may be required.

If alternate compliance means are sought, training program credits, simulator approvals, and device approvals may be significantly limited, and reporting requirements may be increased to ensure equivalent levels of training, checking, and currency are maintained. TCCA will generally not consider relief through alternate compliance means unless sufficient lead-time has been planned by an operator to allow for any necessary testing and evaluation.

#### 4.6 UH60A initial type training evaluation

TCCA conducted an operational evaluation of Sikorsky UH60A in West Palm Beach, Florida USA from 22 May to 09 June, 2023, at the Flight Safety International (FSI) training facility. TCCA evaluated specific elements of FSI's UH60A training program, identified in the UH60A Pilot Qualification Plan (PQP).

The 15-day Full Transition initial type rating training course for the UH60A was assessed through a T5 evaluation process. This course included the following:

- a) Ground School syllabus; and
- b) 3 non-flying systems sessions in the FFS, followed by 9 flying sessions in the FFS were completed: 6 as Pilot Flying (PF) and 6 as Pilot Monitoring (PM).

Following the operational evaluation, changes to the ground school syllabus to increase emphasis on crew coordination in handling of emergencies, as well as handling of the manual throttle function, were proposed. It is recommended that this amended syllabus be used.

It is recommended that 3 consolidation flights be conducted after completion of training on the FFS.

**Note:**

The OE Team has not yet been able to secure access to an aircraft for the consolidation flights.

At the time of this OE, Flight Safety International Training facility in West Palm Beach FL was the only training provider for the UH60A platform. As of this report, it has been announced that Coulson Aviation, in Thermal, California, will also have a UH60A/L full motion Class D FTD available for any operator. Canadian operators are strongly encouraged to make use of either of these two facilities for both initial and recurrent training.

With the above recommendations noted, the initial type rating course was found to be acceptable by TCCA for use as the basis of an air operator's training program.

## 5. Acronyms

AC	Advisory Circular
ACP	Approved Check Pilot
AFDS	Automatic Flight Director System
APU	Auxiliary Power Unit
AQP	Advanced Qualification Program
BIM	Blade Indicator Module
CARs	<i>Canadian Aviation Regulations</i>
CASS	<i>Commercial Air Service Standard</i>
CAT I/II/III	Category I/II/III ILS Instrument Approach
CFS	Commercial Flight Standards
EASA	European Aviation Safety Agency
FAA	Federal Aviation Administration
FAR	<i>Federal Aviation Regulation</i>
FFS	Full Flight Simulator
FMC	Flight Management Computer
FMS	Flight Management System
FSB	Flight Standardization Board (FAA)
FSTD	Flight Simulation Training Device
FTOC	Flight Technical and Operator Certification (TCCA)
ILS	Instrument Landing System
OE	Operational Evaluation
OEB	Operational Evaluation Board
OEM	Original Equipment Manufacturer
PCL	Power Control Lever
PIC	Pilot in Command
PPC	Pilot Proficiency Check
QRH	Quick Reference Handbook
RNP	Required Navigation Performance
TASE	Training Area of Special Emphasis
TCCA	Transport Canada Civil Aviation
TCDS	Type Certificate Data Sheet

## 6. Definitions

These definitions are for the purposes of this report only:

**Current** – A crewmember meets all requirements to operate the aircraft under the applicable CAR or CASS.

**Operational Evaluation (OE)** – A TCCA evaluation of the pilot qualifications requirements of an aircraft type (pilot type rating, minimum flight crewmember training, checking and currency requirements, and unique or special pilot qualification requirements (e.g., specific flight characteristics, no-flap landing)), the operational suitability of an aircraft type, and the Original Equipment Manufacturer (OEM) training program.

**Operational Suitability** – A determination during an operational evaluation that an aircraft or system may be used in the Canadian airspace and meets the applicable operational regulations (e.g., CAR subparts 604, 605, 701, 702, 703 and 704, as applicable).

**Qualified** – A flight crewmember holds the appropriate licenses and ratings as required by the applicable operating regulations.

**Seat Dependent Tasks** – Manoeuvres or procedures using controls that are accessible or operable from only one flight crewmember seat.

**Special Emphasis Area** – A training requirement unique to the aircraft, based on a system, procedure, or manoeuvre, which requires additional highlighting during training. It may also require additional training time, specialized training devices or training equipment.

**Specific Flight Characteristics** – A manoeuvre or procedure with unique handling or performance characteristics that TCCA has determined must be checked.



## **7. Pilot type rating**

### **7.1 The pilot type rating**

The Sikorsky UH60A type rating designation is UH60A.

### **7.2 Minimum crew compliment**

The Sikorsky UH60A Blackhawk was designed for 2 pilot operations and has never been marketed or certified for single pilot operations in any military or government operations. TCCA agrees and retains the crew requirements accordingly.

Minimum Crew: Dual pilot, Day/Night VFR, IFR and NVG for all operations.

## **8. Related aircraft**

Reserved.

## **9. Pilot training**

### **9.1 Previous experience**

The provisions of this section apply to all UH60A training programs for pilots who have experience in CAR 604, 702, 703 or 704 operations in multi-engine transport category helicopters.

Pilots receiving UH60A training should have previous operational experience in multi-engine transport category helicopters with complex systems, and a good knowledge of multicrew flight operations. Pilots without this experience may require additional training.

### **9.2 Initial ground school**

Initial ground school provided sufficient instruction on the use of the performance data and aircraft systems. While the curriculum has some flexibility built-in to accommodate less experienced pilots, those with little to no experience in crew operations or complex multi-engine helicopters may require additional ground school time.

### **9.3 Training Areas of Special Emphasis**

Pilots must receive special emphasis training in the following areas:

**Note:**

Special emphasis flight training requires corresponding special emphasis ground training.

### 9.3.1 Initial ground training

- Special Certificate of Airworthiness Limited Category limitations and conditions
- Emergency Procedures knowledge and coordination between pilots.
  - Engine failures during take-off, rejected take-offs and rejected landings
  - Single-engine failures at altitude and in hover
  - Stabilator malfunctions
- Electronic Control Unit (ECU)/Digital Electronic Control (DEC)/Enhanced Digital Engine Control Unit (EDECU) Lockout
- Degraded Automatic Flight Control System (AFCS)
- Crew Resource Management for two pilot operations
- Performance planning – understanding of power limitations, for the type of engines in the model being operated, changing from Torque limits to N1 limits as altitude increased and ambient temperatures decrease.  
**Caution:** Some charts have confusing names, such as using the title of *Torque Factor* but requiring data is referred to as *Torque Ratio*
- Management of Air Source for Heat / Start and Ice protection / Heat with their related decrease in Torque available
- OEM cargo hook system and usage with/without essential crew
- Weight & Balance – understanding Centre of Gravity limitations during low weight operations

#### Note:

Rotor blades use Blade Indicator Modules (BIM) filled with nitrogen, and the droop stops are constructed of beryllium. These components are hazardous and toxic; pilots must be aware of their associated material handling instructions if handled during walkaround or maintenance functions.

### 9.3.2 Initial and recurrent flight training

- Hydraulic system failures
- Manipulation of Power Control Levers (PCLs) or throttles – their detents and use of “lockout” for manual control of the governor

- Use of APU Air and associated malfunctions of the starter
- Stabilator malfunctions

#### **9.4 Specific flight characteristics**

There are no specific flight characteristics.

#### **9.5 Seat dependent tasks**

There are no seat dependent tasks.

#### **9.6 Flight Simulation Training Devices (FSTD)**

##### **9.6.1 Full flight simulator (FFS)**

It is highly recommended that a FFS be used for flight training. A program of 12 FFS slots is recommended, 6 as Pilot Flying and 6 as Pilot Monitoring.

It is recommended that 3 consolidation flights be completed in the aircraft prior to the PPC, to clarify any differences between the FFS and the aircraft.

#### **9.7 Training equipment**

There are no specific systems or procedures that are unique to the UH60A that require specific training equipment.

### **10. Pilot checking**

It is highly recommended that a FFS be used for all PPCs and flight tests.

#### **10.1 Specific flight characteristics**

There are no specific flight characteristics.

#### **10.2 Seat dependent tasks**

There are no seat dependent tasks.

#### **10.3 Other checking items**

##### **10.3.1 Initial and recurrent checking**

- Hydraulic system failures
- Manipulation of Power Control Levers (PCLs) or throttles – their detents and use of “lockout” for manual control of the governor
- Use of APU Air and associated malfunctions of the starter

- Stabilator malfunctions

### **10.3.2 All types of checking**

- Use of APU
- Hydraulic systems
- Performance data charts with emergency handling in all phases of flight, including flight in the "avoid area" of the Height / Velocity chart, should be demonstrated.

### **10.4 Flight Simulation Training Devices (FSTD)**

Full emergency procedures training for engine, hydraulic and flight control malfunctions procedures for the UH60A require an FSTD for checking.

### **10.5 Equipment**

There are no specific systems or procedures that are unique to the UH60A that require specific equipment.

## **11. Pilot currency**

There are no additional currency requirements.

## **12. Operational suitability**

The UH60A aircraft is operationally suitable under CAR 702, with a Special Certificate of Airworthiness – Limited and its associated Operating Conditions.

## **13. Miscellaneous**

There are no miscellaneous issues.

## **14. References**

1. FAA Advisory Circular AC120-53B, Change 1, *Guidance for Conduction and Use of Flight Standardization Board Evaluations*, dated October 24, 2016.
2. JOEB OPS/FCL Common Procedures for Conducting Operational Evaluation Boards, dated June 10, 2004.
3. RDIMS# 19125726 Special Certificate of Airworthiness – Limited issued 08 Dec 2022.

## Appendix 1 – Training syllabus

### Sikorsky UH60A Ground School

Day	Duration	Objectives
1	7.0hrs	Approved Rotorcraft Manual/ Aircraft Operating Manual Crew Resource Management (CRM) Inadvertent Instrument Meteorological Conditions (IIMC) Lighting Master Warning
2	7.5hrs	Electrical Auxiliary Power Unit (APU) Fuel System Powertrain Powerplant
3	7.0hrs	Powerplant System Integration
4	8.0hrs	Flight Controls/ AFCS Hydraulics Systems Integration
5	7.5hrs	Fire Protection Weight and Balance Landing Gear Rotors Systems Integration Optional Equipment/Kits/Accessories
6	7.5hrs	Performance Flight Planning Navigation Avionics / Communications Ice/Rain Protection

7	2.0hrs	Environmental system Systems Review/Exam
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### Sikorsky UH60A Simulator Training Modules

Day	Duration/ Type	Objectives
1	Brief 1.0hrs Sim 2.0hrs Debrief 0.5hrs  VFR	Preflight Inspection Use of Checklist  Powerplant starts – Normal/Abnormal Before Take-off Checks Taxing/Runway Operations Normal Take-off and Climb Crosswind Take-off Normal Approach and Landing Crosswind Landing Emergencies – Powerplant/Fuel system/Electrical  After Landing procedures Parking and Securing
2	Brief 1.0hrs Sim 2.0hrs Debrief 0.5hrs  VFR	Rejected Take-off Powerplant failures (shutdown/restart) Settling with Power – Recognition and recovery Vortex Ring State Specific Flight Characteristics Approach and Landing with Powerplant failure. Fire detection and extinguishing systems Autorotation Helicopter/Personal Emergency Equipment In-flight fire and smoke removal Emergency evacuation

3	Brief 1.0hrs Sim 2.0hrs Debrief 0.5hrs  VFR	Powerplant Failure without restart Steep Turns Recovery from Unusual Attitudes Go-around/Rejected Landing. Hydraulic system Emergency Decent Environmental systems System Integration
4	Brief 1.0hrs Sim 2.0hrs Debrief 0.5hrs  VFR	Flight Control systems Loss of Tail rotor Effectiveness Ditching Anti-Ice and Deice system
5	Brief 1.0hrs Sim 2.0hrs Debrief 0.5hrs  VFR	Powerplant Failure during Take-off Inadvertent IMC Recovery AFCS/EFIS and Related subsystems Navigation and Avionic systems
6	Brief 1.0hrs Sim 2.0hrs Debrief 0.5hrs  IFR	Departure Procedure Powerplant Failure During Take-off Inadvertent IMC Recovery Precision Approach 1 Non-precision Approach 1 Instrument Arrival Landing from a Precision Approach AFCS/EFIS and related subsystems Navigation and Avionics

7	Brief 1.0hrs Sim 2.0hrs Debrief 0.5hrs  IFR	Instrument Take-off Instrument Departure Holding Precision Approach 2 Non-precision Approach 2 Manually Flown Full Procedure Turn Missed Approach 1 Precision approach, One Engine Inoperative – Manually Flown Missed Approach with One Engine Inoperative Missed Approach from Precision Approach Published Missed Approach Environmental systems
8	Brief 1.0hrs Sim 2.0hrs Debrief 0.5hrs  VFR / IFR	Review  Optional Lessons: Slingshot, water bucket, hoisting, etc..
9	Brief 1.0hrs Sim 2.0hrs Debrief 0.5hrs	Check flight