

# NOTICE

## U.S. DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION

N 8900.407

### National Policy

Effective Date:  
2/23/17

Cancellation Date:  
2/23/18

**SUBJ:** Guidance on Helicopter Flight Training Device (FTD) and Full Flight Simulator (FFS) Maneuvers and Procedures Table

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**1. Purpose of This Notice.** This notice provides guidance to Federal Aviation Administration (FAA) Flight Standards Service (AFS) personnel on helicopter pilot-in-command (PIC)/second-in-command (SIC) flight training, testing, and checking (all training categories) in helicopter FTDs (Levels 4, 5, 6, and 7) and FFSs (Levels B, C, and D).

**2. Audience.** The primary audience for this notice is Flight Standards District Offices (FSDO), certificate management offices (CMO), Training Center Program Managers (TCPM), and principal operations inspectors (POI). The secondary audience includes AFS divisions and regional offices.

**3. Where You Can Find This Notice.** You can find this notice on the MyFAA employee website at [https://employees.faa.gov/tools\\_resources/orders\\_notices](https://employees.faa.gov/tools_resources/orders_notices). Inspectors can access this notice through the Flight Standards Information Management System (FSIMS) at <http://fsims.avs.faa.gov>. Operators can find this notice on the FAA's website at <http://fsims.faa.gov>. This notice is available to the public at [http://www.faa.gov/regulations\\_policies/orders\\_notices](http://www.faa.gov/regulations_policies/orders_notices).

**4. Applicability.** The guidance in this notice defines policy and must be used in the assessment of an approved training program utilizing helicopter FTDs (Levels 4, 5, 6, and 7) and FFSs (Levels B, C, and D) under Title 14 of the Code of Federal Regulations (14 CFR) parts 135 and 142.

### 5. Additional References:

- Additional information on the conduct of checking and qualification requirements can be found in FAA Order 8900.1, Volume 3, Chapter 19, Section 6, Safety Assurance System: Flight Training Curriculum Segments; and Section 7, Safety Assurance System: Flightcrew Qualification Curriculum Segments.
- Title 14 CFR Part 60 appendix C establishes the standards for helicopter FFS evaluation and qualification at Levels B, C, and D.
- Part 60 appendix D establishes the standards for helicopter FTD evaluation and qualification at Level 4, 5, 6, or 7.

**6. Background.** On May 30, 2008, part 60 was published to replace existing advisory material defining flight simulation initial and continuing qualification, making flight simulation training device (FSTD) standards regulatory as opposed to advisory.

**a. Levels 4, 5, and 6 FTDs.** Part 60 defined several new levels of devices that earlier advisory material had not previously addressed. Before part 60 became effective in 2008, the only published FSTD standards for helicopters had been limited to upper level FFSs as defined in Advisory Circular (AC) 120-63, Helicopter Simulator Qualification. In order to provide for more lower fidelity and fixed-base devices, part 60 defined three additional FTD levels (Levels 4, 5, and 6 FTDs) which were roughly aligned with the existing fixed-wing FTD levels.

**b. Level 7 FTD.** A fourth device was further defined for a Level 7 FTD beyond the fixed-wing standards. The purpose for adding the new Level 7 FTD was to define a high fidelity, fixed-base device (motion restricted to vibrations only) to enable the introduction of several training tasks, including hover training, in the device. The standards for such a device were defined by the FAA and published in part 60 as a new device level. Subsequent guidance was developed and is published as part of this notice.

(1) A Level 7 FTD is intended to be used to introduce training tasks. The Level 7 FTD provides a platform that fosters learning and skill development through the practice of flight deck procedures, Instrument Flight Procedures (IFP), and operating the integrated systems of a specific aircraft in typical flight operations.

**Note:** Events labelled with a “T” in Table 1, Helicopter Maneuvers and Procedures Table, require additional training either in an aircraft or in a higher level FSTD, and may not be used to check or test.

(2) A Level 7 FTD includes the following features:

- Enclosed, helicopter-specific flight deck and aerodynamic programming with all applicable helicopter systems operating.
- Representative control loading of the simulated helicopter throughout its ground and flight envelope.
- Significant sound representation.
- Displays may be flat/liquid crystal display (LCD) panel representations or actual representations of displays in the aircraft.
- Controls, switches, and knobs must physically replicate the aircraft in control operation.
- Visual system provides an out-of-the-flight deck view, permitting cross-flight deck viewing (for both pilots simultaneously) of a field of view (FOV) of at least 146 degrees horizontally and 36 degrees vertically.
- Vibration cueing system for characteristic helicopter vibrations noted at the pilot station(s).

## 7. Helicopter Maneuvers and Procedures Table.

**a. General.** Table 1 lists events which must be accomplished during flight training. The table can be used as a single source document in the development and evaluation of flight training curriculum segment proposals. Compliance with the provisions of these tables ensures that proper utilization of the helicopter FTD (Levels 4, 5, 6 and 7) and FFS (Levels B, C, and D) are maintained. The Helicopter Maneuvers and Procedures Table also contains acceptable flight training equipment (FSTD or aircraft) which may be used for any training event.

### **b. Table 1 Legend.**

(1) “X” indicates that the specified FSTD has been qualified for that event and may be used for training, checking, and testing in accordance with the approved training program.

(2) “A” indicates that a lower level FSTD may be used if that device has the necessary systems representations and functions for the event. These systems representations and functions exceed the basic requirements for that level FSTD; therefore, an “A” indicates that the FSTD must be evaluated, qualified, and approved for each particular event. The FSTD’s Statement of Qualification should specifically list the qualification of these additional tasks. The approving official determines if the device can be used for training/checking/testing. Any maneuver or procedure permitted in a specific level of FSTD may also be conducted in the aircraft itself (provided the event can safely be accomplished in the aircraft).

(3) “[ ]” indicates that if the operator is authorized to conduct the event, the training curriculum must include the event(s).

(4) “T” indicates events that may be used to introduce training tasks. Each task requires additional training, either in an aircraft or in a higher level FSTD. Checking and testing may not be conducted for events marked with a “T”.

(5) Items with subscripts or superscripts will be noted in the associated table or as a note at the end of the table (e.g., X<sub>1</sub>, A\*, X<sup>1</sup>).

(6) “-” indicates that the event is not authorized to be conducted in that particular level of FSTD.

**Table 1. Helicopter Maneuvers and Procedures Table**

		FSTD								
FLIGHT PHASE	TRAINING EVENT	LEVEL OF FTD					LEVEL OF FFS			ACFT
		4	5	6	7		B	C	D	
PREPARATION	Visual Inspection (Cockpit Only)	A	A	X	X		X	X	X	X
	Before Taxi Procedures	A	A	X	X		X	X	X	X
	Performance Limitations	A	A	X	X		X	X	X	X
	Stabilized Hover Check	-	-	-	T		-	X	X	X
SURFACE OPERATION	Starting	A	A	X	X		X	X	X	X
	Rotor Engagement	A	A	X	X		X	X	X	X
	Rotor Engagement on Water SEA	A	A	A	A		A	X	X	X
	Taxiing-Ground	-	-	-	T		X	X	X	X
	Taxiing-Hover	-	-	-	T		-	X	X	X
	Water Taxiing SEA	-	-	-	-		-	X	X	X
	Lift-to-Hover In Ground Effect (IGE)/Out of Ground Effect (OGE)	-	-	-	T		-	X	X	X
	Hover Turns IGE/OGE	-	-	-	T		-	X	X	X
	Sideward/Rearward Hovering	-	-	-	T		-	X	X	X
	Slope Operations	-	-	-	-		-	X	X	X
	Liftoff	-	-	-	T		X <sub>1</sub>	X	X	X
	Landing	-	-	-	T		X <sub>1</sub>	X	X	X
	TAKEOFF	Normal	-	-	-	T		X <sub>1</sub>	X	X
Instrument		-	-	T	X <sub>1</sub>		X <sub>1</sub>	X	X	X
Obstacle Clearance		-	-	-	T		X <sub>1</sub>	X	X	X
Running (High Density Altitude)		-	-	-	T		X	X	X	X
Category “A”		-	-	-	T		X <sub>1</sub>	X	X	X
Category “A” With Powerplant Failure Before Takeoff Decision Point (TDP)		-	-	-	T		X <sub>1</sub>	X	X	X
Category “A” With Powerplant Failure After TDP CLIMB		-	-	-	T		X <sub>1</sub>	X	X	X
Rejected Takeoff		-	-	-	T		X <sub>1</sub>	X	X	X
CLIMB	Normal	-	-	X	X		X	X	X	X
	Obstacle Clearance	-	-	-	X		X	X	X	X
	Vertical	-	-	X	X		X	X	X	X
	One Engine Inoperative	-	-	X	X		X	X	X	X
EN ROUTE	Medium-Banked Turns	-	T	T	T		X	X	X	X
	Powerplant Shutdown and Restart	-	-	X	X		X	X	X	X
	Low Speed Characteristics	-	-	-	T		-	X	X	X

		FSTD							
FLIGHT PHASE	TRAINING EVENT	LEVEL OF FTD				LEVEL OF FFS			ACFT
		4	5	6	7	B	C	D	
EN ROUTE cont.	High Speed Handling Characteristics	-	-	-	T	-	X	X	X
	Navigational Techniques	A	A	X	X	X	X	X	X
DESCENT	Normal	-	-	X	X	X	X	X	X
	Maximum Rate	-	-	X	X	X	X	X	X
	Autorotative Glide	-	-	X	X	X	X	X	X
APPROACHES	Visual Flight Rules (VFR) Procedures Normal (Level 5/6 requires visual system)	-	A	A	X	X	X	X	X
	Obstacle Clearance	-	-	-	X	X	X	X	X
	High Density Altitude	-	-	X	X	X	X	X	X
	Elevated Landing Site	-	-	-	X	X	X	X	X
	With Degraded Control Augmentation	-	-	X	X	X	X	X	X
	Instrument Flight Rules (IFR) Precision Approaches ILS/Normal	-	A	X	X	X	X	X	X
	Instrument Landing System (ILS)/One-Engine Inoperative	-	-	X	X	X	X	X	X
	[ ] Precision Approach Radar (PAR)/Normal	-	A	X	X	X	X	X	X
	[ ] PAR/One-Engine Inoperative	-	-	X	X	X	X	X	X
	IFR Nonprecision Approaches Navigation System Database (NDB)/Normal	-	A	X	X	X	X	X	X
	Very High Frequency Omni-Directional Range (VOR)/Normal	-	A	X	X	X	X	X	X
	[ ] Localizer (LOC) Backcourse Procedures	-	A	X	X	X	X	X	X
	[ ] Simplified Direction Finding (SDF)/Landing Directional Aid (LDA) Procedures	-	A	X	X	X	X	X	X
	[ ] Airport Surveillance Radar (ASR) Procedures	-	A	X	X	X	X	X	X
	[ ] Area Navigation (RNAV) Procedures	-	A	X	X	X	X	X	X

		FSTD							
FLIGHT PHASE	TRAINING EVENT	LEVEL OF FTD				LEVEL OF FFS			ACFT
		4	5	6	7	B	C	D	
APPROACHES cont.	[ ] Circling Approach (Simulator must be qualified for training/checking on the circling maneuver)	-	-	A	X	X	X	X	X
	Missed Approaches From Precision Approach	-	-	T	T	X	X	X	X
	From Nonprecision Approach	-	-	T	T	X	X	X	X
	NOTE: At least one Missed Approach Procedure (MAP) must be a complete approved procedure.								
	With Powerplant Failure	-	-	T	T	X	X	X	X
LANDINGS	Normal-to-the-Surface	-	-	-	T	X <sub>1</sub>	X	X	X
	Normal-to-the-Water SEA	-	-	-	-	-	X	X	X
	[ ] Category "A"	-	-	-	T	X <sub>1</sub>	X	X	X
	[ ] Category "A" With Powerplant Failure After Landing Decision Point (LDP)	-	-	-	T	X <sub>1</sub>	X	X	X
	Crosswind	-	-	-	T	X <sub>1</sub>	X	X	X
	Rejected	-	-	-	T	X	X	X	X
	From Precision Instrument Approach	-	-	-	T	X <sub>1</sub>	X	X	X
	From a Precision Approach with at Least 50% Power Deficiency	-	-	-	T	X <sub>1</sub>	X	X	X
	With Degraded Control Augmentation	-	-	-	T	X <sub>1</sub>	X	X	X
AFTER LANDING	Taxiing-Ground	-	-	-	T	X	X	X	X
	Taxiing-Hover	-	-	-	T	-	X	X	X
	Water Taxiing SEA	-	-	-	-	-	X	X	X
	Parking & Securing	A	A	X	X	X	X	X	X
	Stopping the Rotors	A	A	X	X	X	X	X	X
	Emergency Evacuation	A	A	X	X	X	X	X	X
UNPREPARED SITE OPERATIONS	Confined Areas	-	-	-	A	A	X	X	X
	Pinnacles	-	-	-	A	A	X	X	X
	Ridgelines	-	-	-	A	A	X	X	X
	Water Sites SEA	-	-	-	-	-	X	X	X
OTHER FLIGHT PROCEDURES DURING ANY AIRBORNE PHASE	Holding	-	-	X	X	X	X	X	X
	Ice Accumulation on Airframe	-	-	-	-	-	X	X	X
	Air Hazard Avoidance	-	-	-	A	-	X	X	X
	Wind Shear/Microburst	-	-	-	-	-	A	A	X

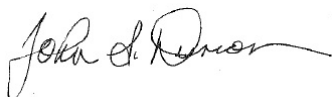
		FSTD									
FLIGHT PHASE	TRAINING EVENT	LEVEL OF FTD					LEVEL OF FFS			ACFT	
		4	5	6	7		B	C	D		
SYSTEMS PROCEDURES TRAINING DURING ANY PHASE	Pneumatic/Pressurization	A	A	X	X		X	X	X	X	
	Air Conditioning	A	A	X	X		X	X	X	X	
	Fuel and Oil	A	A	X	X		X	X	X	X	
	Electric	A	A	X	X		X	X	X	X	
	Hydraulic	A	A	X	X		X	X	X	X	
	Flight Controls	A	A	X	X		X	X	X	X	
	-Normal	Anti-icing and Deicing Systems	A	A	X	X		X	X	X	X
	-Abnormal	Autopilot	A	A	X	X		X	X	X	X
	-Alternate	Flight Management Guidance Systems	A	A	X	X		X	X	X	X
		Automatic or Other Approach & Landing Aids	A	A	X	X		X	X	X	X
		Loss of Anti-Torque Effectiveness	-	-	T	T		X	X	X	X
		Airborne Weather Radar	A	A	X	X		X	X	X	X
		Flight Instrument System Malfunction	A	A	X	X		X	X	X	X
		Communications Equipment	A	A	X	X		X	X	X	X
	Navigation Systems	A	A	X	X		X	X	X	X	
SYSTEMS PROCEDURES TRAINING DURING ANY AIRBORNE PHASE	Aircraft Fires	A	A	X	X		X	X	X	X	
	Smoke Control	A	A	X	X		X	X	X	X	
	Powerplant Malfunctions	A	X	X	X		X	X	X	X	
	Electrical, Hydraulic, Pneumatic Systems	A	A	X	X		X	X	X	X	
	Flight Control Systems Malfunction	A	A	X	X		X	X	X	X	
	-Emergency	Landing Gear Malfunction	A	A	X	X		X	X	X	X
	Anti-Torque Failure	-	-	T	T		X	X	X	X	
	Settling-with-Power	-	-	-	T		-	X	X	X	
FSTDs That Are Night Vision Goggle (NVG) Qualified	Night Vision System Operational Checks	-	-	A	A		A	A	A	X	
	NVG Failure	-	-	A	A		A	A	A	X	
	NVG Inadvertent Instrument Meteorological Conditions (IMC)	-	-	A	A		A	A	A	X	
	NVG ADDITIONAL CONSIDERATIONS	Unusual Attitude Recovery	-	-	-	A		A	A	A	X
		Transitions: Aided/Unaided	-	-	A	A		A	A	A	X
		Ground Hazard Recognition	-	-	A	A		-	A	A	X
		Brownout/Whiteout/Flat Light Operations	-	-	A	A		A	A	A	X
		External Light Techniques	-	-	A	A		A	A	A	X

		FSTD								
FLIGHT PHASE	TRAINING EVENT	LEVEL OF FTD					LEVEL OF FFS			ACFT
		4	5	6	7		B	C	D	
For NVG qualification, the National Simulator Program (NSP) must evaluate and qualify the FSTDs in accordance with NSP Guidance Bulletin #10-01.	Scanning Techniques	-	-	A	A		A	A	A	X

**Note:** X<sub>1</sub> = Qualified only if accomplished in conjunction with a running takeoff or running landing in an FSTD that represents an aircraft equipped with wheeled landing gear. Level B does not require hover programming or validation.

**8. Action.** Inspectors must utilize the guidance in this notice in the assessment of an approved training program which incorporates helicopter FTDs (Levels 4, 5, 6, and 7) or helicopter FFSs (Levels B, C, and D).

**9. Disposition.** We will incorporate the information in this notice into Order 8900.1 before this notice expires. Direct questions concerning this notice to the Air Carrier Training Systems and Voluntary Safety Programs Branch (AFS-280) at 202-267-8166.



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