

**Helicopter Safety Enhancement (H-SE) Number 117:
Competency-based Training and Assessments in Initial Pilot Training**

<p>Safety Enhancement Action:</p>	<p>Training: FAA and industry to provide guidance on improved initial helicopter pilot training to competency in the following areas: (1) aircraft performance and limitations; (2) in-flight power and energy management training, to include prevention and recovery, if required, from settling with insufficient power; (3) basic maneuvers not defined in current guidance but essential to positive aircraft control; (4) threat and error management (see H-SE 115-128); (5) mission planning; (6) aircraft systems; and (7) familiarity with Pilot Operating Handbook.</p>
<p>Expected Implementers:</p>	<ul style="list-style-type: none"> • USHST Special Emphasis Area (SEA) Training Team • Helicopter Association International (HAI) Training Committee (TC) • FAA AFS-800 • FAA Safety Team (FAAST)
<p>Statement of Work:</p>	<p>Within the USHST datasets for LOC-I, UIMC, and LALT occurring 2009-2013, nine (9) out of fifty-two (52) fatal accidents involved pilot decision errors that were directly attributable to poor knowledge pertaining to: (1) aircraft performance and limitations; (2) in-flight power and energy management training, to include prevention and recovery, if required, from settling with insufficient power; (3) basic maneuvers not defined in current guidance but essential to positive aircraft control; (4) threat and error management (see H-SE 115-128); (5) mission planning; (6) aircraft systems; and (7) familiarity with Pilot Operating Handbook. Accordingly, the USHST recommended this H-SE to include the concept of “competence” in training, as traditional assessment methods may not train to that level. The focus of this H-SE shall remain competence and its associated implementation, defined as the “knowledge, skill and attitudes.” The definition of airmanship is the “operational, technical and non-technical knowledge, skill and attitudes (competence) aircrew employ to operate an aircraft safely, effectively and efficiently.”</p> <p>Further elaboration on a few of the terms used in this H-SE may be helpful to eliminate possible confusion.</p> <p>a. The second item listed in this H-SE includes the phrase “recovery from settling with insufficient power”. The word choice is quite deliberate and does <u>not</u> refer to vortex ring state. Instead, the phrase refers to a situation where insufficient power available resulted in the aircraft settling. This H-SE seeks first and foremost to better</p>

prevent pilots from putting the helicopter in such a situation, but secondarily to improve education on recovery should a pilot find himself or herself in the situation.

- b. The third item listed in this H-SE addresses “basic maneuvers.” This is not in reference to the basic maneuvers described by the existing Practical Test Standards (PTS) or as listed in the Helicopter Flying Handbook. Such items are already defined and addressed sufficiently and there is no intent in this H-SE to expand upon those existing lists. Instead, the H-SE seeks to address those basic concepts where the fatal accident analysis suggested that both a depth of pilot knowledge and understanding was lacking, yet the current availability of literature to remedy this problem through education is scarce. Two prominent examples would be: 1) Effects of Controls and 2) Attitude and Power.

Project:

- 1. USHST SEA Training Team, in conjunction with the FAA, to convene a group of subject matter experts (H-SE 117 SME team) to define pilot competence for the following subjects:
 - a. aircraft performance and limitations;
 - b. in-flight power and energy management training, to include prevention and recovery, if required, from settling with insufficient power;
 - c. basic maneuvers not defined in current guidance but essential to positive aircraft control;
 - d. threat and error management (see H-SE# 115-128);
 - e. mission planning;
 - f. aircraft systems; and
 - g. familiarity with Pilot Operating Handbook
- 2. H-SE 117 SME team to provide guidance (*e.g.*, guidelines, recommended practices) regarding how to train initial helicopter pilot applicants on demonstrating competence as defined above.
- 3. H-SE 117 SME team to brief Airman Certification Systems (ACS) Working Group on guidance and recommendations that were developed.

The following fatal accidents prompted this safety enhancement:

CEN11FA507	ERA10FA283
CEN12FA139	ERA13FA336
CEN13FA009	ERA10LA348

	CEN13FA205 WPR12GA106 ERA09FA497																				
Relation to Current Aviation Community Initiatives:	<ul style="list-style-type: none"> • FAA ACS • ICAO PANS-TRG Doc 9868 • USHST H-SEs, including #30, 122, 115, 128, 124 																				
Performance Goal Indicators:	<ul style="list-style-type: none"> • Competency defined for specified subjects. • ACS Working Group briefed on competency definitions. • Guidelines for training to competency created. 																				
Key Milestones:	<table border="1"> <thead> <tr> <th></th> <th><u>Total Months</u></th> <th><u>Start Date</u></th> <th><u>End Date</u></th> </tr> </thead> <tbody> <tr> <td>Output 1:</td> <td>12</td> <td>Dec 1, 2017</td> <td>Dec 1, 2018</td> </tr> <tr> <td>Output 2:</td> <td>12</td> <td>Dec 1, 2018</td> <td>Dec 1, 2019</td> </tr> <tr> <td>Output 3:</td> <td>12</td> <td>Dec 1, 2019</td> <td>Dec 1, 2020</td> </tr> <tr> <td>Completion:</td> <td>36 months</td> <td></td> <td></td> </tr> </tbody> </table>		<u>Total Months</u>	<u>Start Date</u>	<u>End Date</u>	Output 1:	12	Dec 1, 2017	Dec 1, 2018	Output 2:	12	Dec 1, 2018	Dec 1, 2019	Output 3:	12	Dec 1, 2019	Dec 1, 2020	Completion:	36 months		
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Output 1:	12	Dec 1, 2017	Dec 1, 2018																		
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Output 3:	12	Dec 1, 2019	Dec 1, 2020																		
Completion:	36 months																				
Potential Obstacles:	Consensus defining competency within existing rules. No rule change is sought through this H-SE.																				
Detailed Implementation Plan Notes:																					
CICTT Code:	LATL / LOC-I / UIMC																				

Output 1:	
Description:	Convene H-SE 117 Subject Matter Expert (SME) team to define pilot competence for the list of subject areas noted in this H-SE.
Lead Organization:	USHST SEA Training Team
Supporting Organizations:	<ul style="list-style-type: none"> • FAA AFS-800 • HAI Training Committee
Actions:	<ol style="list-style-type: none"> 1. USHST SEA Training Team and the FAA to conduct outreach to convene a team of SMEs to define competency in list of subject areas noted in this H-SE. 2. H-SE 117 SME team to establish a team lead, define roles, and establish a meeting schedule.
Output Notes:	
Time Line:	12 months
Target Completion Date:	December 1, 2018

Output 2:	
Description:	Provide guidance (<i>e.g.</i> , guidelines, recommended practices) regarding how to train initial helicopter pilot applicants on demonstrating competence for the list of subject areas noted in this H-SE.
Lead Organization:	H-SE 117 SME Team (identified through Output 1)
Supporting Organizations:	<ul style="list-style-type: none"> • USHST SEA Training Team • FAA AFS-800 • HAI Training Committee
Actions:	<ol style="list-style-type: none"> 1. H-SE 117 SME Team to review existing regulations, standards (PTS), and guidance on knowledge, skills, and risk management that pilots must know regarding: <ol style="list-style-type: none"> a. aircraft performance and limitations; b. in-flight power and energy management training, to include prevention and recovery, if required, from settling with insufficient power; c. basic maneuvers not defined in current guidance but essential to positive aircraft control; d. threat and error management (see H-SE# 115-128); e. mission planning; f. aircraft systems; and g. familiarity with Pilot Operating Handbook. 2. H-SE 117 SME Team to define what competence level required for completion of the training for the subjects above. 3. H-SE 117 SME Team to develop guidance materials for using the competency definitions in training.
Output Notes:	<p>Definitions should be complete, but practical and useful in training. Definitions should not exceed existing requirements; however, any significant issues with existing requirements should be noted.</p> <p>Materials may be targeted at training providers as well as trainees.</p>
Time Line:	12 months
Target Completion Date:	December 1, 2019
Output 3:	
Description:	Brief the ACS working group on competency definitions.
Lead Organization:	H-SE 117 SME Team

Supporting Organizations:	FAA AFS-800
Actions:	H-SE 117 SME team to meet with ACS working group as early as possible after the development of the competency definitions and brief them on the outputs of this H-SE.
Output Notes:	H-SE 117 SME team may consider meeting with the ACS working group prior to the development of the competencies to coordinate work between the team and the ACS working group.
Time Line:	12 months
Target Completion Date:	December 1, 2020