

TABLE C3D—FUNCTIONS AND SUBJECTIVE TESTS—Continued

QPS requirements				Information	
Entry No.	Motion system (and special aerodynamic model) effects	Simulator level			Notes
		B	C	D	
9. ....	<b>Tire failure dynamics:</b> Procedure: Simulate a single tire failure and a multiple tire failure		X	X	The pilot may notice some yawing with a multiple tire failure selected on the same side. This should require the use of the pedal to maintain control of the helicopter. Dependent on helicopter type, a single tire failure may not be noticed by the pilot and may not cause any special motion effect. Sound or vibration may be associated with the actual tire losing pressure.
10. ....	<b>Engine malfunction and engine damage:</b> Procedure: The characteristics of an engine malfunction as prescribed in the malfunction definition document for the particular flight simulator must describe the special motion effects felt by the pilot. Note the associated engine instruments varying according to the nature of the malfunction and note the replication of the effects of the airframe vibration	X	X	X	
11. ....	<b>Tail boom strikes:</b> Procedure: Tail-strikes can be checked by over-rotation of the helicopter at a quick stop or autorotation to the ground	X	X	X	The motion effect should be felt as a noticeable nose down pitching moment.
12. ....	<b>Vortex Ring State (Settling with Power):</b> Procedure: Specific procedures may differ between helicopters and may be prescribed by the Helicopter Manufacturer or other subject matter expert. However, the following information is provided for illustrative purposes * * * To enter the maneuver, reduce power below hover power. Hold altitude with aft cyclic until the airspeed approaches 20 knots. Then allow the sink rate to increase to 300 feet per minute or more as the attitude is adjusted to obtain an airspeed of less than 10 knots		X	X	When the aircraft begins to shudder, the application of additional up collective increases the vibration and sink rate. One recovery method is to decrease collective to enter vertical autorotation and/or use cyclic inputs to gain horizontal airspeed and exit from vortex ring state.
13. ....	<b>Retreating Blade Stall:</b> Procedure: Specific procedures may differ between helicopters and may be prescribed by the Helicopter Manufacturer or other subject matter expert. However, the following information is provided for illustrative purposes: To enter the maneuver, increase forward airspeed; the effect will be recognized through the development of a low frequency vibration, pitching up of the nose, and a roll in the direction of the retreating blade. High weight, low rotor RPM, high density altitude, turbulence or steep, abrupt turns are all conducive to retreating blade stall at high forward airspeeds		X	X	Correct recovery from retreating blade stall requires the collective to be lowered first, which reduces blade angles and the angle of attack. Aft cyclic can then be used to slow the helicopter.