

SAFETY INFORMATION NOTICE

SUBJECT: GENERAL

Vortex Ring State / Airbus Helicopters training recommendations and considerations about the “Vuichard recovery technique”

For the attention of



AIRCRAFT CONCERNED	Version(s)	
	Civil	Military
EC120	B	
AS350	B, BA, BB, B1, B2, B3, D	L1
AS550		A2, C2, C3, U2
AS355	E, F, F1, F2, N, NP	
AS555		AF, AN, SN, UF, UN, AP
EC130	B4, T2	
SA365 / AS365	C1, C2, C3, N, N1, N2, N3	F, Fs, Fi, K, K2
AS565		MA, MB, SA, SB, UB, MBe
SA366		GA
EC155	B, B1	
SA330	J	Ba, L, Jm, S1, Sm
SA341	G	B, C, D, E, F, H
SA342	J	L, L1, M, M1, Ma
ALOUETTE II	313B, 3130, 318B, 318C, 3180	
ALOUETTE III	316B, 316C, 3160, 319B	
LAMA	315B	
EC225	LP	
EC725		AP
AS332	C, C1, L, L1, L2	B, B1, F1, M, M1
AS532		A2, U2, AC, AL, SC, UE, UL
EC175	B	
H160	B	
EC339		KUH/Surion
BO105	C (C23, CB, CB-4, CB-5), D (DB, DBS, DB-4, DBS-4, DBS-5), S (CS, CBS, CBS-4, CBS-5), LS A-3	CBS-5 KLH, E-4
MBB-BK117	A-1, A-3, A-4, B-1, B-2, C-1, C-2, C-2e, D-2, D-2m, D-3, D-3m	D-2m, D-3m
EC135	T1, T2, T2+, T3, P1, P2, P2+, P3, EC635 T1, EC635 T2+, EC635 T3, EC635 P2+, EC635 P3, T3H, P3H, EC635 T3H, EC635 P3H	

Introduction

The purpose of revision 2 is to harmonize the “classical technique” in accordance with Safety Information Notice No. 3123-S-00 “Useful information about the Vortex Ring State (VRS) phenomenon”.

Following a publication on how to escape a Vortex Ring State (VRS) with the “Vuichard recovery technique”, Airbus Helicopters believes it is important to explain our position regarding Airbus Helicopters global training philosophy related to VRS and the consequences of the different techniques.

The “classical technique” for escaping from VRS is to check power and increase the collective pitch as required, simultaneously by applying decisively forward cyclic input to gain airspeed (1-2sec). Once sufficient airspeed is achieved (20-30kts), adjust the pitch attitude to level the helicopter.

The “Vuichard recovery technique” differs in that the pilot is required to use the collective pitch, while applying lateral cyclic and maintaining heading control with the pedals. Thus, this technique is designed to escape the column of descending air by moving laterally.

Vortex ring state and Airbus Helicopters recommendations for training

Entry into VRS can start with rotor thrust fluctuations, increased vibration levels. It continues with the feeling of lightness in the seat and if no immediate action is taken by the pilot, VRS quickly becomes a dangerous situation, especially when the helicopter is in close proximity to the surface. The aircraft may experience ever increasing rates of descent, up to several thousands of FPM, while also suffering from loss of effectiveness of cyclic and yaw control inputs. Without proper flight control inputs, and sufficient time to recover, VRS often results in an accident. Fully developed VRS is very dangerous and often fatal.

Early detection and avoidance of VRS is critical. Pilots should understand the importance of early recovery. Pilots should be trained to detect VRS at its incipient stage by recognizing the early warning signs. **The “classical technique” is effective in avoiding penetration beyond the incipient stage of VRS. However, the “Vuichard recovery technique” may be applied in case of early warning detection in specific operational conditions like rear wind in final approach or helicopter in front of an obstacle.**

Airbus Helicopters has performed tests to gather data for a more complete understanding of the aerodynamic loads on the helicopter. Airbus Helicopters does not consider VRS as a normal part of the flight domain of any rotorcraft. Dynamic loads on some components of the rotor system increase significantly in full VRS and are not completely taken into account in the components service life. **As an aircraft manufacturer, we do not recommend to place the helicopter in fully developed VRS.**

We believe that VRS training should concentrate on clear wording, thorough theoretical description/understanding, with an emphasis on early detection of VRS in order to avoid entering this situation. **Flight training should focus on early signs and initial actions: Recognize and Avoid.**

No. 3463-S-00

Recovery technique from fully developed VRS should not be practiced in flight. However, it could be performed without risk in a flight simulator if this one is considered as realistic enough. In flight simulator, both “classical technique” and “Vuichard technique” may be trained.

Classical technique and Vuichard recovery technique in fully developed VRS

In flight, in case the pilot has not recognized the early warnings and is in a fully developed VRS, the “classical technique” is effective for the recovery.

However, the “Vuichard recovery technique” may be applied in case of fully developed VRS in specific operational conditions like rear wind in final approach or helicopter in front of an obstacle.