UPSET PREVENTION AND RECOVERY TECHNIQUES A-320 INSTRUCTOR NOTES

DOCUMENT	TRG/F12
EDITION	1st Edition
REVISION	Revision # 00
ISSUE DATE	21st April 2025

ISSUED BY:

FLIGHT CREW TRAINING DIVISION

FLIGHT OPERATIONS DEPARTMENT

HEADQUARTERS
Pakistan Civil Aviation Authority
Flight Standards Directorate
Terminal-I, Jinnah Int'l. Airport
Karachi – 75200, Pakistan
Tel # (92-21) 99242766, 99072630-31
Fax # (92-21) 99242767
E-mail: FlightStandard.Directorate@caapakistan.com.pk
Website: www.caapakistan.com.pk

Ref: HQCAA / 1076 / 021 / FSAC /5609

Dated: 14 July, 2025

Dear Sir,

UPRT INSTRUCTOR NOTES A320
M/S PAKISTAN INTERNATIONAL AIRLINES CORPORATION LIMITED

Reference letter CPCT / R05 / 3408 dated 22nd April, 2025.

2. As requested, the ***UPRT Instructor Notes A320*** is hereby approved.

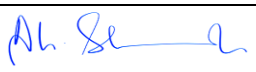
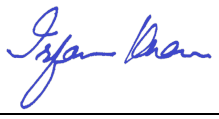
3. You are being advised to ensure that in case of any contradiction between the ***UPRT Instructor Notes A320*** and Civil Aviation Rules, Air Navigation Orders, Air Safety Circulars or any other Instructions/ Directives issued by Pakistan Civil Aviation Authority from time to time the later shall have precedence.

(CAPT. QAISER YAR KHAN)
Director Flight Standards

To,

Director Flight Operations,
M/s Pakistan International Airlines,
JIAP, Karachi

UPSET PREVENTION AND RECOVERY TECHNIQUES A-320
INSTRUCTOR NOTES APPROVAL

Activity	Name	Designation	Signature	Date
Prepared By	Capt. Vaqas Javed	Chief Pilot Tech		15th April 2025
Vetted By	Capt. Amir Hussain Shah	Instructor A-320		18th April 2025
	Capt. R. A. Hussain	Instructor A-320		18th April 2025
Reviewed By	Capt. Kamran Asghar	DCP A-320		21st April 2025
Approved By	Capt. Irfan Khan	Chief Pilot Crew Training		21st April 2025

TIME	DISCUSSION ITEM	BRIEFING
00:05	INTRODUCTION	
00:03	SECURITY/ HOUSE KEEPING/ SAFETY	INFORMATION
00:02	OBJECTIVE OF THE SESSION	INFORMATION
00:05	NORMAL LAW	FACILITATION
00:06	PROTECTION IN NORMAL LAW	FACILITATION
00:05	ALTERNATE LAW AND AIRCRAFT RESPONSE	FACILITATION
00:04	PROTECTIONS IN ALTERNATE LAW	FACILITATION
00:05	DIRECT LAW AND AIRCRAFT RESPONSE	FACILITATION
00:10	UPRT PREVENTION AND RECOVERY	FACILITATION

TIME	DURATION			EVENTS		PF TRAINEE 1	
00:00	00:05	1	CREW INSTALLATION	FPV	AP	FD	A/THR
	• Performance preparation by instructor • Cockpit preparation by instructor • FMS preparation by instructor OPKC–OPIS, FL 350/-46, CI 10, Tailwind component 35 Kts • ZFW 56 tons, Fuel 10 Tons, ZFW CG and TOCG as per IOS, fuel freeze • Weather wind 280/10kts, temperature 33 C, QNH 1005, Visibility 8 KM, Cloud base 800 feet cloud top 36000 feet • Take Snap shot for the next session						
00:05	00:07	2	**TAKE OFF WITHOUT AUTO FLIGHT SYSTEM-CLIMB FL 100 RWY 25L**	FPV	AP	FD	A/THR
	Objective: to practice departure with no AP, No FD, No A/THR (basic pitch and thrust flight) **On the IOS fail AP, FD, A/THR** **Facilitate in procedure.** • Fly the SID without the automation • Thrust reduction/ pitch change • Acceleration/ pitch change • Clean up and accelerate to 250 Kts • **CLEAR MALFUNCTIONS FOR NEXT EXERCISE**						
00:12	00:06	3	**USE OF AUTO FLIGHT SYSTEMS**	FPV	AP	FD	A/THR
	Objective: To prevent aircraft upset due to improper use of the automation **Reposition at FL 100 IAS 250 Kts** • Ask PF to Disengage Reengage AP and FDs while respecting task sharing and standard callouts. Repeat till proficiency • A/THR disconnection and activation Ask PF to disconnect the A/THR by instinctive push button Ask pf to engage A/THR • **FOR DEMOSTRATION ONLY** When the trust is at idle **HILIGHT THAT DOING SO IS NOT RECOMENDED BY AIRBUS** Instructor presses the A/THR on the FCU • Comment on thrust lock function, the indicators and the locked thrust • Ask the PF to announce the reference thrust and bring back the thrust levers to the reference. • Ask PF reengage A/THRand reduce speed to Green Dot so the thrust comes to Idle. • Highlight potential risk of THR LK at idle. If not detected the speed will continue to decrease below target speed.						
00:18	00:08	4	**FLIGHT GUIDANCE AND MODE REVERSION**	FPV	AP	FD	A/THR
	Objective: To prevent some potential causes of upset linked to the misuse of flight guidance						

	1. Misusing the flight guidance **2. Mode reversions** **Reposition at FL 150 IAS 250 Kts ask to turn on a heading of 180 (to avoid GPWS)** **1. Misuse of flight guidance** • Ask the PF to pull first then turn the altitude knob to Initiate a climb or descend. **2. Mode Reversions** • Ask PF to proceed direct to NH in NAV mode and descend to FL 100, pull heading see mode reversion in V/S and observe double clicks. • Ask PF to proceed direct to NH in NAV mode and climb then pull heading see mode reversion in V/S and observe double clicks. • Ask the to Climb or descend. At ALT* ask them to change altitude and see mode reversion • **IAS 250 Kts ask to turn on a heading of 180 (to avoid GPWS)** • Ask PF to descend to 2000 with ROD -6000 • Show when VMAX is reached the V/S is boxed in amber and speed does not exceed VMAX							
00:26	00:07	5	**HIGH AND LOW SPEED AT LOW ALTITUDE WITH NO AUTOFLIGHT SYSTEM**	FPV	AP	FD	A/THR	
	Objective: To fly the aircraft at high and low speeds at low altitude **1. To remind normal law and protections** **2. To understand FPV and angle of attack awareness** **3. To fly at high an low speed and study energy management at low altitude** **Reposition at FL 100 IAS 250** **1. Normal law and associated protections** • Remind the behaviour of the aircraft in normal law • Facilitate in reminding the protections available in normal law. **2. Use of FPV** • Ask the flight crew to note the angle of attack. **3. Energy Management** • Set climb thrust • Observe the angle of attack reduction and acceleration capability • Observe the High-Speed Protection and ask the PF to counter the pitch up and maintain height till the speeds settles at VD then pitch down authority reduces. • Ask PF to set the side stick in neutral position. Aircraft comes back in the normal envelop. Overspeed warning stops. • Set thrust lever to idle • Observe the augmentation in the angle of attack and rate of deceleration ask the PF to extend the Speed Brakes and see deceleration and affect on VLS • Observe High Angle of Attack protection with side stick **neutral and then with full back deflection**							
00:33	00:06	6	**ALTERNATE/DIRECT LAW HANDLING AT LOW ALTITUDE**	FPV	AP	FD	A/THR	
	Objective: To fly the aircraft at low altitude in reconfiguration control laws **Reposition at FL 100 IAS 250, Bird on A/THR on *ALTERNATE LAW from IOS (UPRT-ALTERNATE LAW)*** **1. F/CTL ALTN LAW (PROT LOST)** • Facilitate indication of alternate law on PFD and on ECAM • Ask PF to turn either way and increase speed while maintaining level flight. Ask PF to feel the trim wheel and observe that auto trim is available. • Ask PF to reduce speed while maintaining level flight. Ask PF to feel the trim wheel and observe that auto trim is available. • Ask PF to reduce speed to Green dot, configure the aircraft for flaps 2 while reducing the							

	speed then Gears down. **2. F/CTL DIRECT LAW (PROT LOST)** • Facilitate indication of direct law on PFD and on ECAM • Configure aircraft with configuration 3 and Gears Down. • Decelerate to F speed • Ask PF to maintain 3 deg path with ROD 700 ft/min • When stabilized in the descent ask the crew to execute a go around • Emphasise on the use of manual pitch trim • When gears are retracted the aircraft goes in **ALTN LAW**							
00:39	00:15	7	**STALL RECOVERY AT LOW ALTITUDE WITH ASE FUNCTION**	FPV	AP	FD	A/THR	
	Objective: To practice stall recovery at first stall indication at low altitude **Reposition at FL 100 IAS 250 bird on, *ALTERNATE LAW from IOS (UPRT-ALTERNATE LAW)*** **On IOS select load factor vs Airspeed diagram. REMIND LOSS OF ALTITUDE IS NOT A CONCERN** **1. Stall recovery clean configuration at first stall indication** • Aircraft in clean configuration • PF decelerates UPTO 25 deg of bank • During deceleration the PM announces Angle of Attack • At first stall indication PF Calls "Stall I have controls" and applies the stall recovery procedure • Point out that PF must reduce the Angle of attack first before recovering the bank. (lateral input leads to spoiler deployment and loss of lift. • Altitude can not be maintained and altitude loss is not of importance. • Pitch up effect with increase in thrust • Keep flaps 1 selection in recovery **2. Stal recovery in flaps 2 configuration (take-off configuration)** • Same as Exercise 1 **3. Aircraft in flap 3 and landing gear down configuration (landing configuration)** • Same as Exercise 1 4. **Aircraft in flap 3 landing gear down configuration (facilitate)*REMIND CREW THAT WE RECOVER THE AIRCRAFT AT THE FIRST INDICATION OF STALL THIS IS FOR TRAINING PURPOSE ONLY THAT WE WILL DEMONSTRATEHOW DEEP STALL LOOKS LIKE AND HOW TO RECOVER*** • Ask the PF not to touch the side stick and till I say to recover • **On IOS select load factor vs Airspeed diagram** • **On IOS UPRT select STALL** • With no side stick inputs the aircraft automatically decelerates to Full stall then stabilizes without freezing. • Facilitate in identifying aerodynamic buffet and then stall buffet • Ask the flight crew to apply the stall recovery procedure. **5. Aircraft in flap 3 landing gear down configuration (Exercise)** • In this recovery as the ***crew to identify aerodynamic buffet and then stall buffet*** • With no side stick inputs the aircraft automatically decelerates to Full stall then stabilizes without freezing • Ask the flight crew to recover							
00:54	00:06	8	**UPSET RECOVERY NOSE HIGH ATTITUDE AT LOW ALTITUDE**	FPV	AP	FD	A/THR	
	Objectives: **1. To recognize and confirm the upset situation**							

	2. To practice the upset recovery nose high with and without bank at low altitude **AP OFF, FD OFF, Bird OFF, A/THR ON ALTERNATE LAW** **During Upset recoveries display on IOS select Load Factor vs Airspeed diagram this should be monitored to determine if appropriate flight control inputs have been applied during the recovery.** • Ask the trainees to close their eyes while the Simulator settles in the upset position **1. Select nose up wings level then select altitude then execute** • When the simulator settles **SELECT A/THR** unfreeze and ask the flight crew to recover. • The flight crew shall become situational aware and analyse the situation meaning asseses energy state, attitude and communicate with the other crew member before applying the recovery. • Ask the trainees to close their eyes while the Simulator settles in the upset position **1. Select nose up bank left or right then select altitude then execute(bank more than 90 deg should never be used to avoid negative transfer of training)** **2.** • When the simulator settles **SELECT A/THR** unfreeze and ask the flight crew to recover • The flight crew shall become situational aware and analyse the situation meaning assesses energy state, attitude and communicate with the other crew member before applying the recovery.						
01:00	00:06	9	**UPSET RECOVERY NOSE LOW ATTITUDE AT LOW ALTITUDE**	FPV	AP	FD	A/THR
	Objectives: **1. To recognize and confirm the upset situation** **2. To practice the upset recovery nose low with and without bank at low altitude** **AP OFF, FD OFF, Bird OFF, A/THR ON ALTERNATE LAW** **During Upset recoveries display on IOS select Load Factor vs Airspeed diagram this should be monitored to determine if appropriate flight control inputs have been applied during the recovery.** • Ask the trainees to close their eyes while the Simulator settles in the upset position **1. Select nose low wings level then select altitude then execute** • When the simulator settles **SELECT A/THR** unfreeze and ask the flight crew to recover. • The flight crew shall become situational aware and analyse the situation meaning assesses energy state, attitude and communicate with the other crew member before applying the recovery. • Ask the trainees to close their eyes while the Simulator settles in the upset position **2. Select nose low bank left or right then select altitude then execute (bank more than 90 deg should never be used to avoid negative transfer of training)** • When the simulator settles **SELECT A/THR** unfreeze and ask the flight crew to recover • The flight crew shall become situational aware and analyse the situation meaning assesses energy state, attitude and communicate with the other crew member before applying the recovery.						
01:06	00:10	10	**ILS WITHOUT AUTO FLIGHT SYSTEMS RWY 25l**	FPV	AP	FD	A/THR
	Objectives: Too practice instrument approach with no AP, No FD, No A/THR (basic pitch and thrust flight) **AP OFF, FD OFF, Bird OFF, A/THR, FPV OFF via IOS in the malfunctions NORMAL LAW** • **Select flaps 1 so that speed settles at correct speed. Thrust levers back at the selected position.** • **Position on the intercept heading release when the crew is comfortable** **1. Fly an early stabilized approach** • When stable in the approach tell them that you will induce a bounce at touchdown facilitate with the bounce procedure. • **Select environment/wind shear BOUNCE**						

	• Set CRASH INHIBIT to ON						
01:16	00:04	11	**GO AROUND AFTERR A HIGH BOUNCE**	FPV	AP	FD	A/THR
	Objectives: To practice Go Around in case of a high bounce **1. At touchdown loudly ANNOUNCE "BOUNCE" just to remind the flight crew to execute a go around** • PF executes a Go Around related to high bounce • Do not try to avoid the second touchdown during after the bounce • Delay flaps and landing gear retraction until safely established in the go around tragectory						
01:20	00:02	12	**STARTLE EFFECT**	FPV	AP	FD	A/THR
	Objectives: To evaluate the flight crew's capability to manage emotions following a startle effect **1. DO NOT INFORM THE CREW OF UPCOMMING STARTLE EFFECT** • After Clean up from the Go Around Give them turn left or right and give recovery • UPRT/ RECOVERY SENARIOS/ BANK LEFT OR RIGHT						
01:22	00:09	13	**HIGH ALTITUDE AERODYNAMICS**	FPV	AP	FD	A/THR
	Objectives: To Fly manually at high altitude and study energy management **1. Loss of automation at high altitude** **2. High altitude turns and effect of g-load at high altitude** **3. Effect of speed brake extension at high altitude** **4. Flight at green dot** **5. Flight at VLS (behind the power curve)** **FL 350 Ap on, FD on A/THR ON. Increase weight to 73 tons or more so that CRZ altitude is very near to the MAX REC** • **Highlight the reduced margins between VMO and V Alpha Max compared to at low altitude** **1. Insert AUTO FLIGHT AP 1+2 off** • At high altitudes and high Mach numbers **it is very important to adopt an especially calm and flexible attitude without aggressiveness** • **Remind** that minimal inputs are required to maintain the safe flight path in case of loss of automation at high altitudes • Ask PF to select FDs off A/THR off. For training purposes keep FPV Off • Note pitch and N1 Thrust settings. highlight their use in case of unreliable airspeed indications in cruise • Knowledge of the standard pitch and thrust values in cruise is of high importance **2. High altitude turns and effect at high altitude** • Ask pf to do a 20 deg bank turn either side • See the V Alpha PROT coming up • Ask PF to increase the bank until buffet occurs. Observe the impact of V Alpha Max and V Alpha Prot • Ask PF to maintain wings level **3. Ask PF to extend the speed brakes** • Highlight impact of VLS, V Alpha Max and V Alpha Prot. **4. Ask PF to reduce the speed to Green Dot by disconnecting A/THR** • At Green Dot not the pitch and thrust settings. • Ask the PF to set climb thrust while highlighting the low rate of acceleration **5. Ask PF to decelerate to VLS** • At VLS ask them to note pitch and thrust settings. • Emphasise on the high thrust and pitch settings to maintain altitude. • Ask PF to set climb thrust, then MCT and then TOGA. Highlight there is no difference in thrust ratings at this altitude. • Facilitate there is no acceleration since the aircraft is on the back side of the Total Drag Curve. Where drag has increased due to low speed. Highlight that there is no other way to accelerate other than to lower nose and lose a little height.						

01:31	00:04	14	ALTERNATE/DIRECT LAW AT HIGH ALTITUDE	FPV	AP	FD	A/THR

Objectives: To manually fly the aircraft at high altitude in reconfiguration control laws.

Reposition at FL 350 IAS Mach .78, Bird on A/THR on *ALTERNATE LAW from IOS (UPRT-ALTERNATE LAW)* set weight to 64.5 Tons.

1. **F/CTL ALTN LAW (PROT LOST)**

- Remind that high altitude descending by approximately 4000 ft below the REC MAX ALT reduces significantly the occurrence of stall warning in turbulence (FCTM)
- Facilitate indication of alternate law on PFD and on ECAM
- Ask PF to turn either way and increase speed while maintaining level flight. Ask PF to feel the trim wheel and observe that auto trim is available.
- Ask PF to reduce speed while maintaining level flight. Ask PF to feel the trim wheel and observe that auto trim is available.

Set Direct Law from IOS

2. **F/CTL DIRECT LAW (PROT LOST)**

- Facilitate indication of Direct Law on PFD and on ECAM
- Ask PF to make shallow turns and trim as required

01:35	00:10	15	STALL AT HIGH ALTITUDE WITH A.S.E FUNCTUON	FPV	AP	FD	A/THR

Objectives:

1. **To practice Stall recovery at First indication of Stall**
2. **To practice full stall recovery**

Reposition FL 350 IMC GW to MLW, Alternate law no Turbulence, Bird on, A/P off A/THR off. Display on IOS LOAD FACTOR vs AIRSPEED diagram this V-n diagram should be monitored to determine weather appropriate flight control inputs are applied during stall recoveries

For Operational training only: (DO NOT APPLY FOR LICENSE TRAINING). Each crew member has to complete these exercises as PF "from each seat in which his/her Airline duties require him/her to Operate" (EASA ORO.FC.220 & 230)

1. **Stall recovery at first indication (STALL BUFFET AT HIGH ALTITUDE COMES BEFORE THE STALL WARNING) Hight Loss is not of any concern**

- Aircraft clean configuration
- PF decelerates in level flight
- Ask PF to give Angle of Attack continuously
- Facilitate in identifying aerodynamic buffet then stall buffet
- On the onset of STALL BUFFET PF applies the recovery

2. **Recovery from full stall (facilitate)**

- Ask the PF not to touch the side stick and till I say to recover
- **On IOS UPRT select STALL**
- With no side stick inputs the aircraft automatically decelerates to Full stall then stabilizes without freezing.
- Facilitate in identifying aerodynamic buffet and then stall buffet and **stall warning**
- Ask the flight crew to apply the stall recovery procedure.

3. **Recovery from full stall (Exercise)**

- Ask the PF not to touch the side stick and till I say to recover**On IOS UPRT select STALL**
- With no side stick inputs the aircraft automatically decelerates to Full stall then stabilizes without freezing.
- Flight crew identifies aerodynamic buffet and then stall buffet and **stall warning**
- Ask the flight crew to apply the stall recovery procedure.

01:45	00:06	16	UPSET RECOVERY NOSE LOW ATTITUDE AT HIGH ALTITUDE	FPV	AP	FD	A/THR

Objectives:

1. **To recognize and confirm the upset situation**
2. **To practice the upset recovery nose low with and without bank at high altitude**

	For Operational training only: (DO NOT APPLY FOR LICENSE TRAINING). Each crew member has to complete these exercises as PF "from each seat in which his/her Airline duties require him/her to Operate" (EASA ORO.FC.220 & 230) **AP OFF, FD OFF, Bird OFF, A/THR ON ALTERNATE LAW** **During Upset recoveries display on IOS select Load Factor vs Airspeed diagram this should be monitored to determine if appropriate flight control inputs have been applied during the recovery.** • Ask the trainees to close their eyes while the Simulator settles in the upset position **2. Select nose low wings level then select altitude then execute** • **Remind trainees that at high altitudes and high Mach numbers it is very important to adopt an especially calm flexible flying attitude without aggressiveness.** • When the simulator settles **SELECT A/THR** unfreeze and ask the flight crew to recover. • The flight crew shall become situational aware and analyse the situation meaning assesses energy state, attitude and communicate with the other crew member before applying the recovery. • • Ask the trainees to close their eyeswhile the Simulator settles in the upset position **3. Select nose low bank left or right then select altitude then execute (bank more than 90 deg should never be used to avoid negative transfer of training)** • When the simulator settles **SELECT A/THR** unfreeze and ask the flight crew to recover • The flight crew shall become situational aware and analyse the situation meaning assesses energy state, attitude and communicate with the other crew member before applying the recovery.						
01:51	00:06	17	**UPSET RECOVERY NOSE HIGH ATTITUDE AT LOW ALTITUDE**	FPV	AP	FD	A/THR
	Objectives: **1. To recognize and confirm the upset situation** **2. To practice the upset recovery nose high with and without bank at High altitude** **For Operational training only: (DO NOT APPLY FOR LICENSE TRAINING). Each crew member has to complete these exercises as PF "from each seat in which his/her Airline duties require him/her to Operate" (EASA ORO.FC.220 & 230)** **AP OFF, FD OFF, Bird OFF, A/THR ON ALTERNATE LAW** **During Upset recoveries display on IOS select Load Factor vs Airspeed diagram this should be monitored to determine if appropriate flight control inputs have been applied during the recovery.** • Ask the trainees to close their eyes while the Simulator settles in the upset position **1. Select nose up wings level then select altitude then execute** • When the simulator settles **SELECT A/THR** unfreeze and ask the flight crew to recover. • The flight crew shall become situational aware and analyse the situation meaning asseses energy state, attitude and communicate with the other crew member before applying the recovery. • Ask the trainees to close their eyes while the Simulator settles in the upset position **2. Select nose up bank left or right then select altitude then execute (bank more than 90 deg should never be used to avoid negative transfer of training)** • When the simulator settles **SELECT A/THR** unfreeze and ask the flight crew to recover • The flight crew shall become situational aware and analyse the situation meaning assesses energy state, attitude and communicate with the other crew member before applying the recovery.						
1:57	00:10	BREAK 10 MIN					