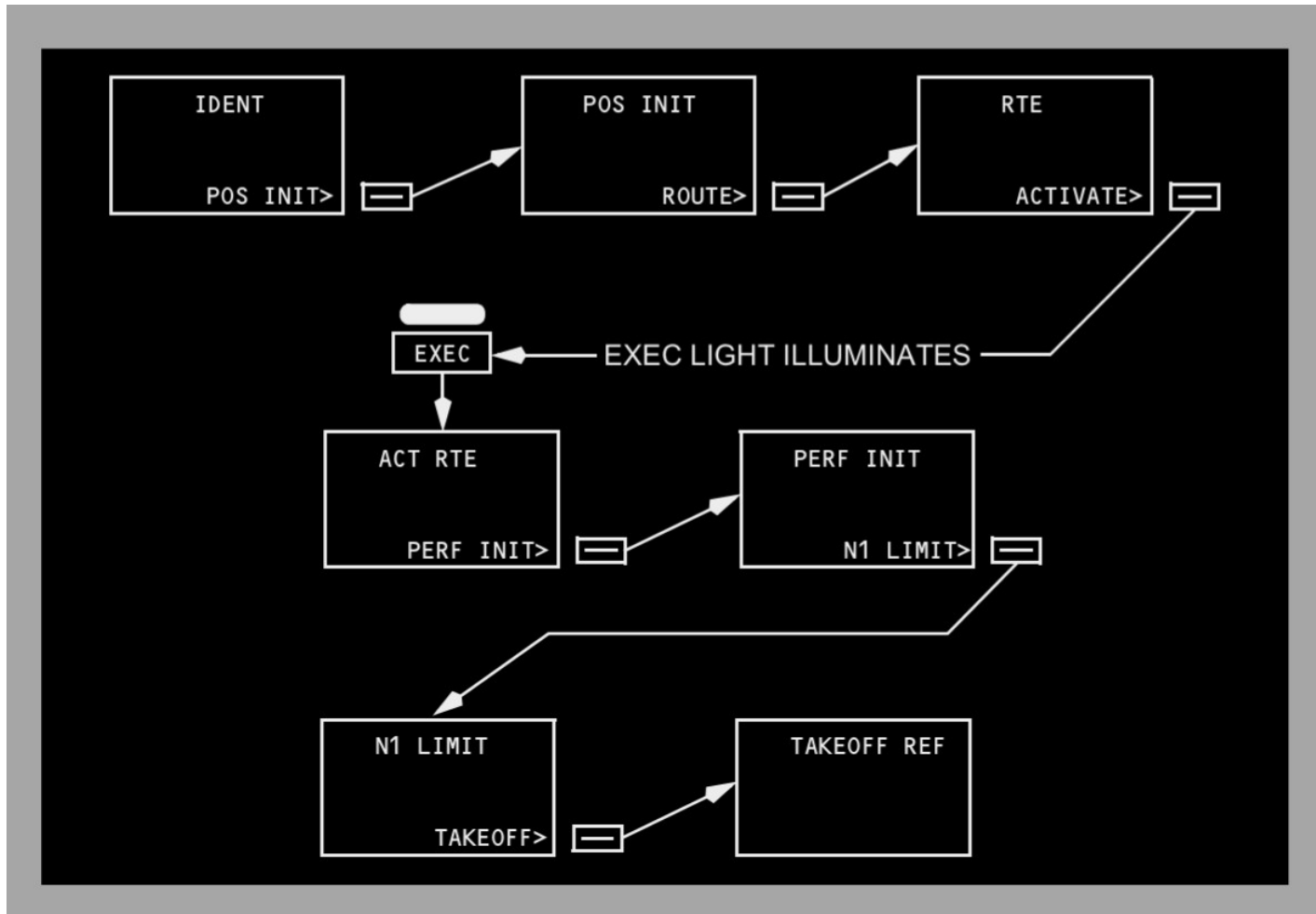
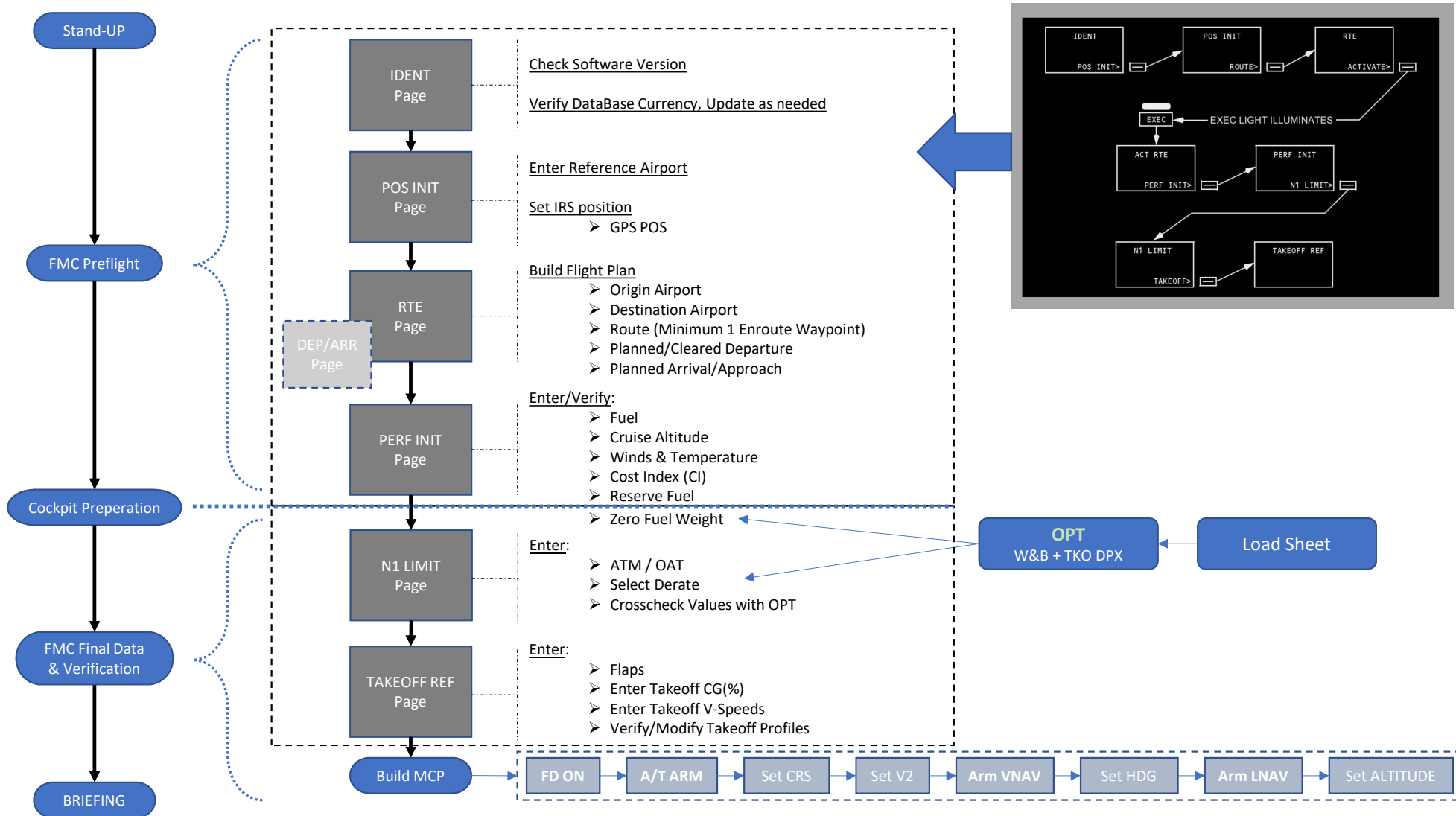
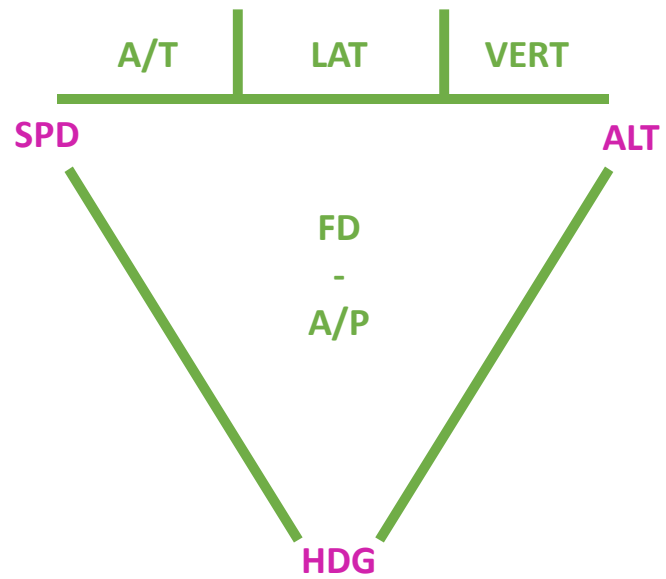
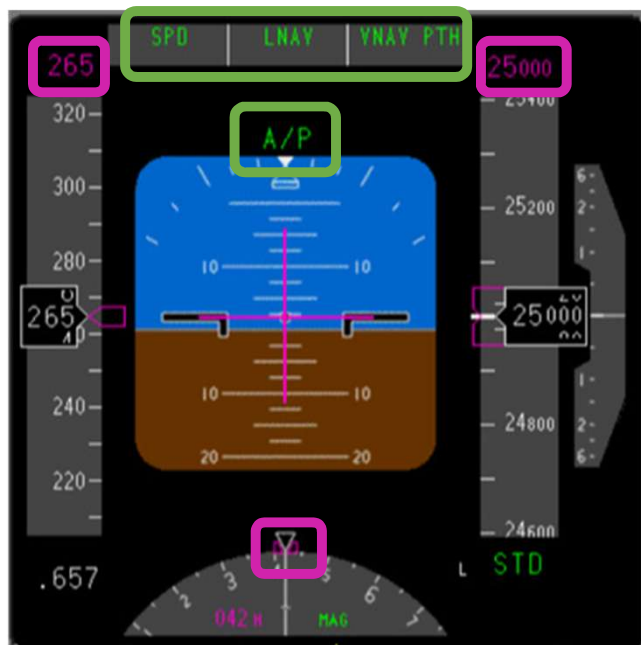


FMC NORMAL OPERATIONS

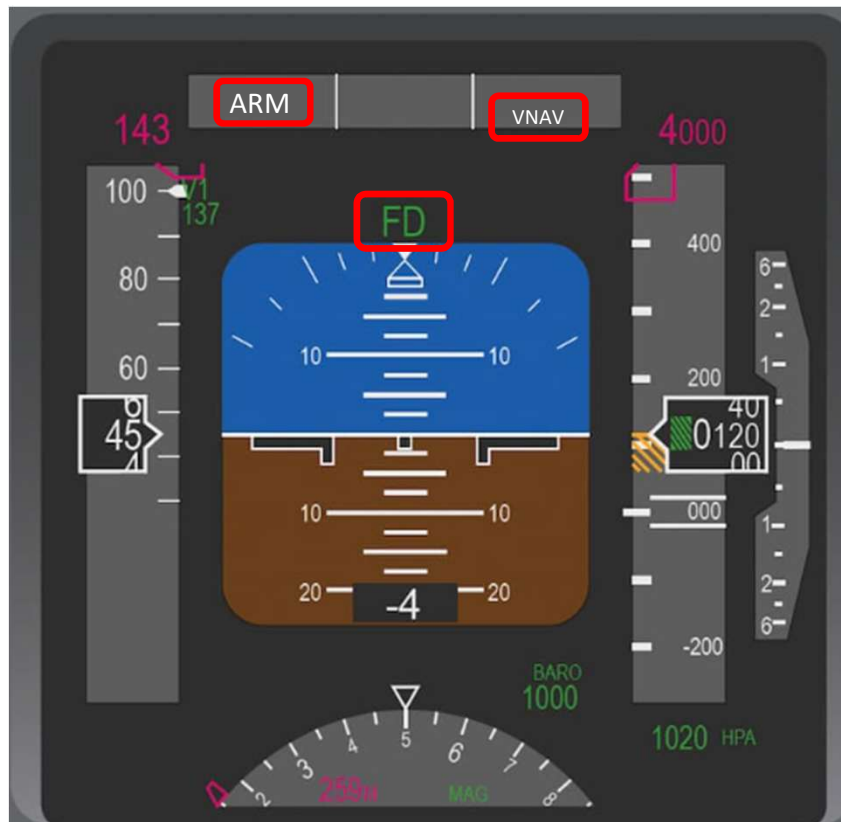




FMA
+
Selected Targets



« ARM, VNAV white, FD »



BRIEFING CARD



TAKEOFF

THREAT

« What's our Threats? »

TAKEOFF MALFUNCTION DAILY REVIEW

PLAN

- Takeoff Runway - (INTERSECTION)
- STD NAME - STD NOTES or DEPARTURE PLAN
- AUTOMATION MODES (REVIEW FMA)
- Thrust Reduction - Acceleration Altitude
- First Target (Selected) Altitude

CONSIDERATIONS

- COMPLEX ENGINE OUT SID
- BLEED AIR CONFIGURATION - USE OF ANT-ICE
- SUPPLEMENTAL PROCEDURES (O) - (M) ACTIONS - SOP DEVIATIONS
- MISCELLANEOUS - JUMPSEAT/OBSERVER BRIEFING

LANDING

THREAT

« What's our Threats? »

PLAN

- STAR NAME - STAR NOTES - RESTRICTIONS / MODIFIED WAYPOINTS (AS NEEDED)
- APPROACH NAME - APPROACH NOTES - MINIMUM SAFE ALTITUDES (AS NEEDED)
- LANDING DISTANCE AVAILABLE - RUNWAY SURFACE CONDITION
- SELECTED DECISION ALTITUDE (COLD WEATHER AND/OR DIP CORRECTIONS AS NEEDED)
- LANDING FLAPS - SPEED INCREMENT CORRECTIONS
- USE OF AUTOBRAKE - THRUST REVERSERS - PLANNED EXIT TAXIWAY

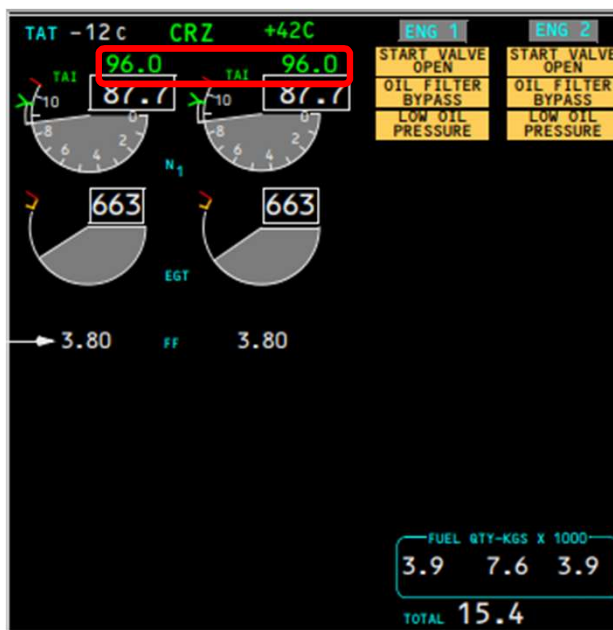
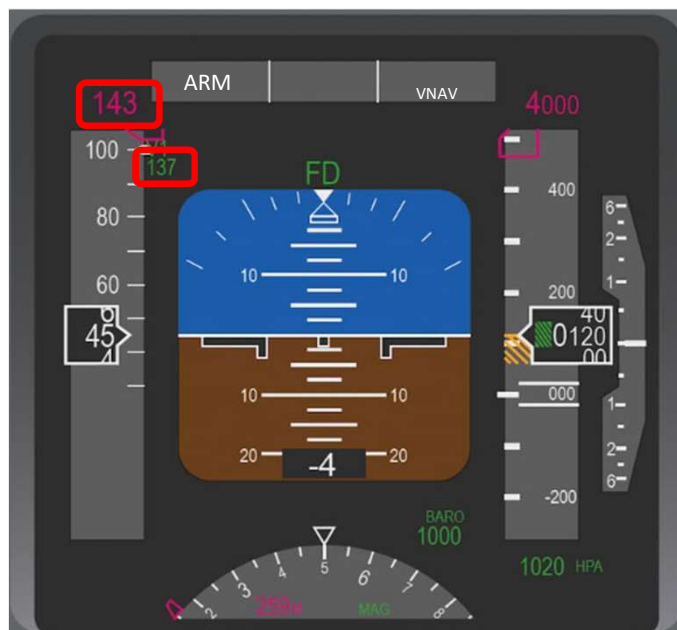
CONSIDERATIONS

- PMA or SCDA BRIEFING
- GO-AROUND PROCEDURE REVIEW / MISSED APPROACH TRAJECTORY - MAP ALTITUDE
- USE OF AUTOMATION
- USE OF ANTI-ICE
- FUEL MANAGEMENT - MIN DIV
- SUPPLEMENTAL PROCEDURES (O) ACTIONS - SOP DEVIATIONS
- MISCELLANEOUS - JUMPSEAT/OBSERVER BRIEFING

THREAT MITIGATION

ANOMALIES MEL / CDL	RSC - PERFORMANCE	WHITEOUT - BLACKHOLE	Jr STATUS
WXX - ALTERNATES	HOT SPOTS - LVOP	FATIGUE - DELAYS	NOTAMS
DEICING - ICING	COLD TEMPERATURE	TERRAIN	ENGINE OUT PROC.
LOGBOOK / MTCE	ATC - RE-ROUTE	AUTOMATION	CABIN - PASSENGERS

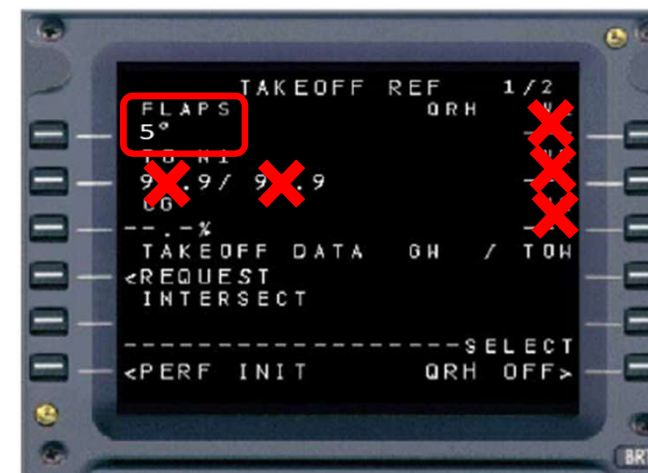
« V1 137, V2 143, N1 96.0, Flaps 5 »

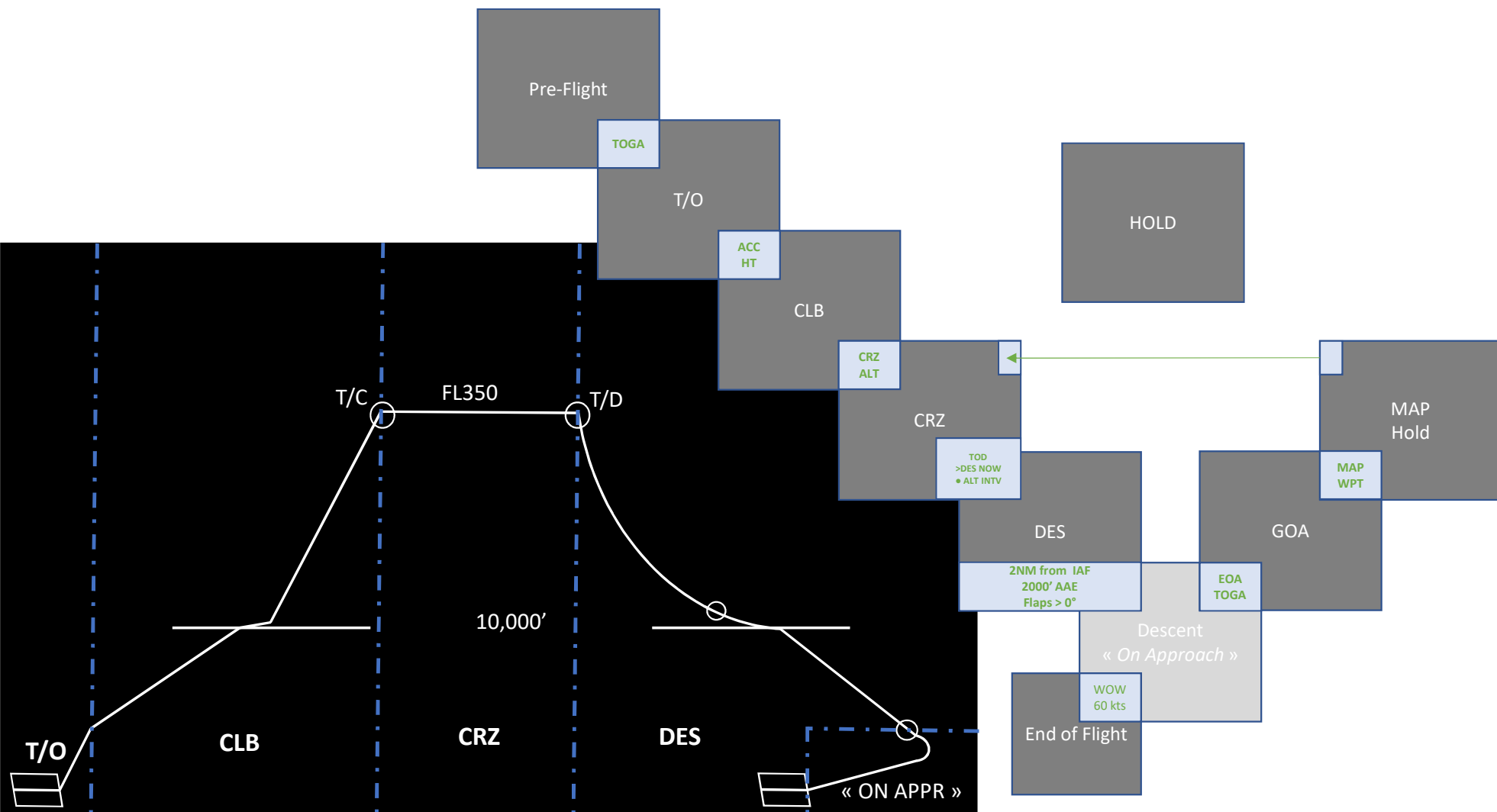


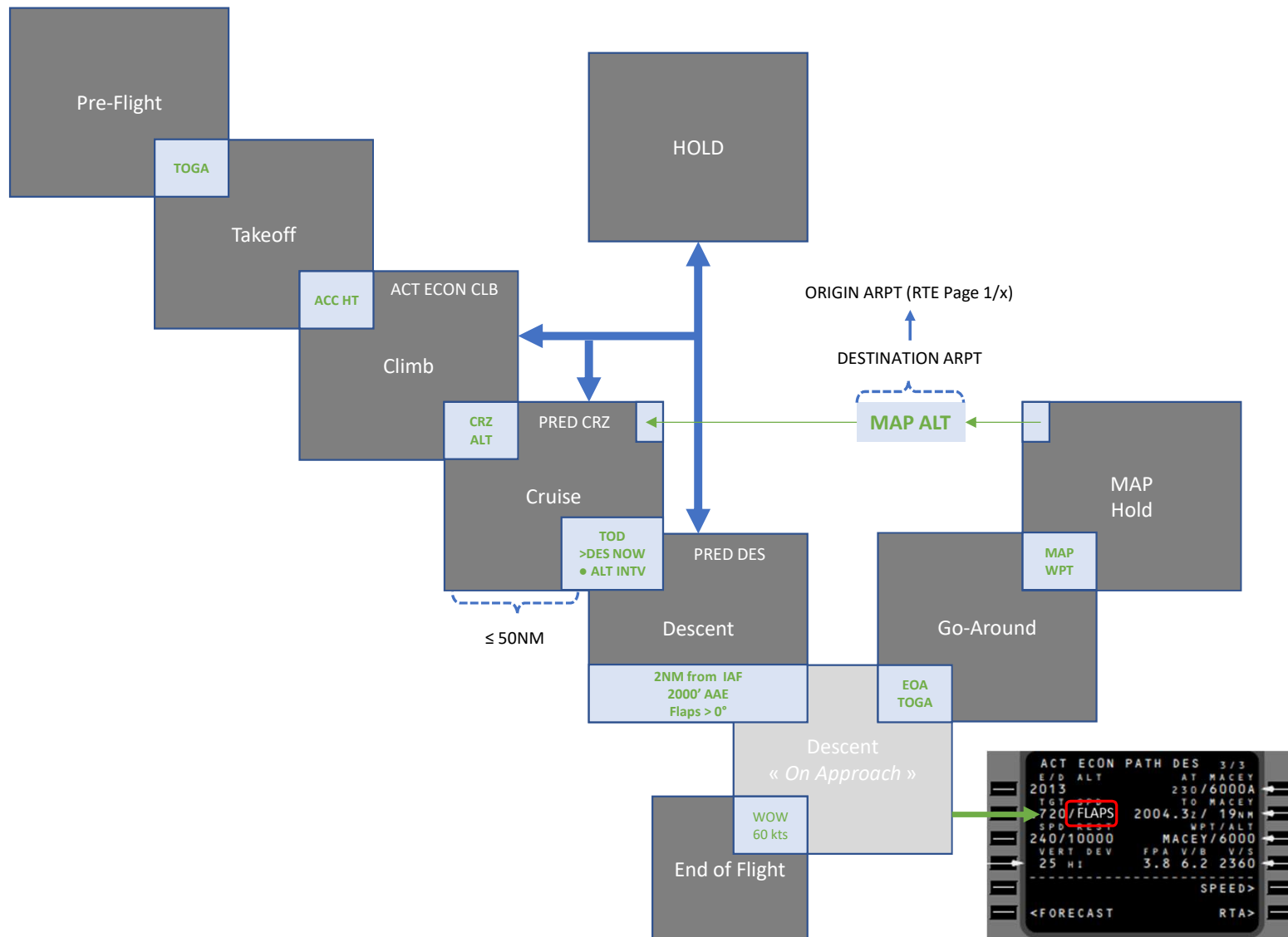
BEFORE START	
LOGBOOK/GEARPINS/PITOT COVERS	ON BOARD
OXYGEN and INTERPHONE	CHECKED
*PARKING BRAKE	SET
*FUEL	SET/ ___ REQ'D / ___ ONBOARD
EMERGENCY EXIT LIGHTS	ARMED
*FASTEN BELTS	ON
WINDOW HEAT	ON
*HYDRAULIC PUMP switches	SET
*PRESSURIZATION	SET
*OPT / TAKEOFF BRIEFING	COMPLETED
*TAKEOFF DATA	V1 __, V2 __, N1 __, FLAPS __
*ALTIMETERS	___' / ___ FEET
*AUTOBRAKE	RTO
STAB TRIM CUTOFF switches	NORMAL
*MDC Smoke/Fire Test	COMPLETED
*RUDDER and AILERON TRIM	SET

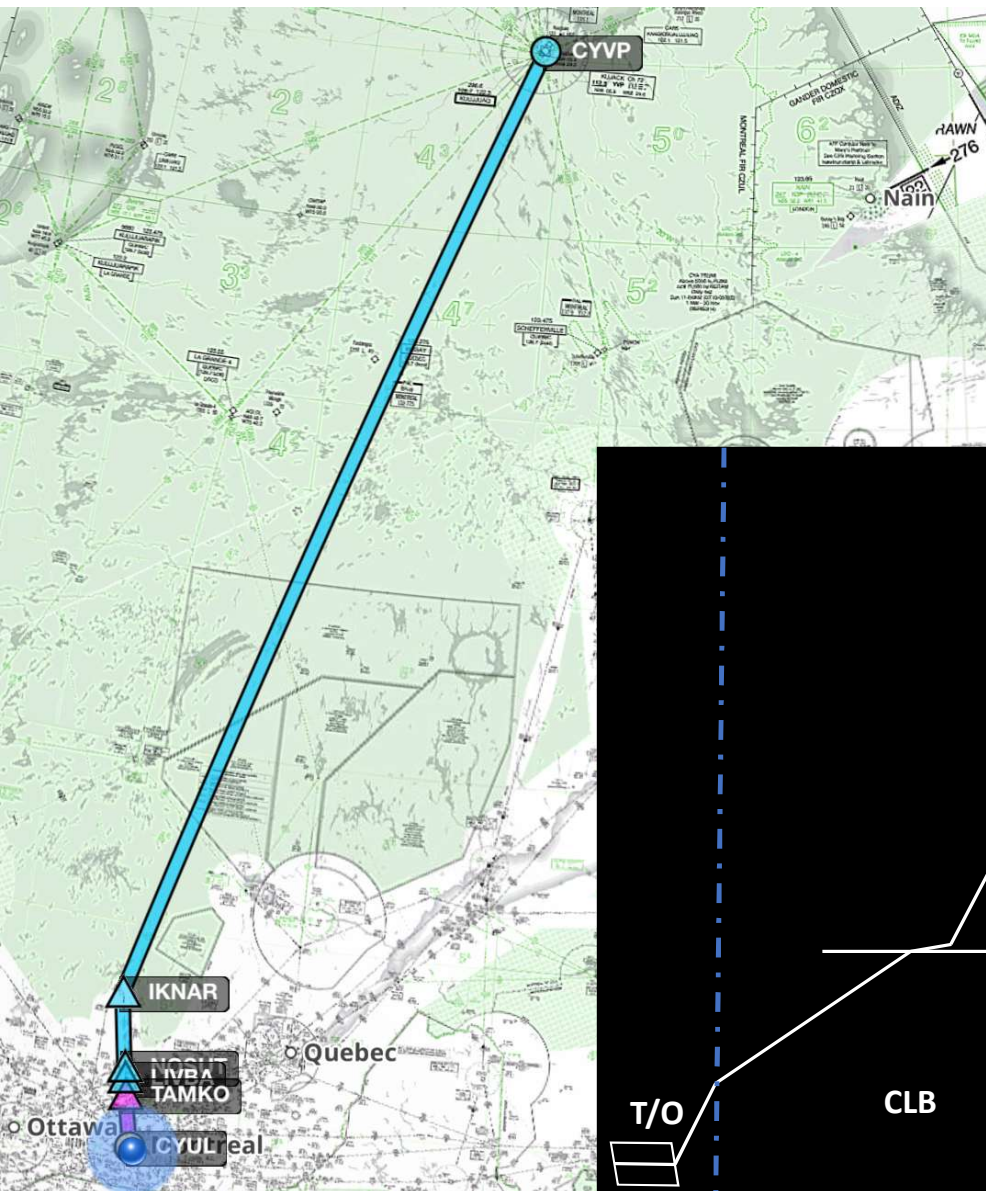
*WINDOWS & DOORS/MCD Lights	CLOSED / CHECK'D
*DEFOCS	COMPLETED
*ANTI-COLLISION	ON
*TRANSPONDER	As Needed

*Through flight







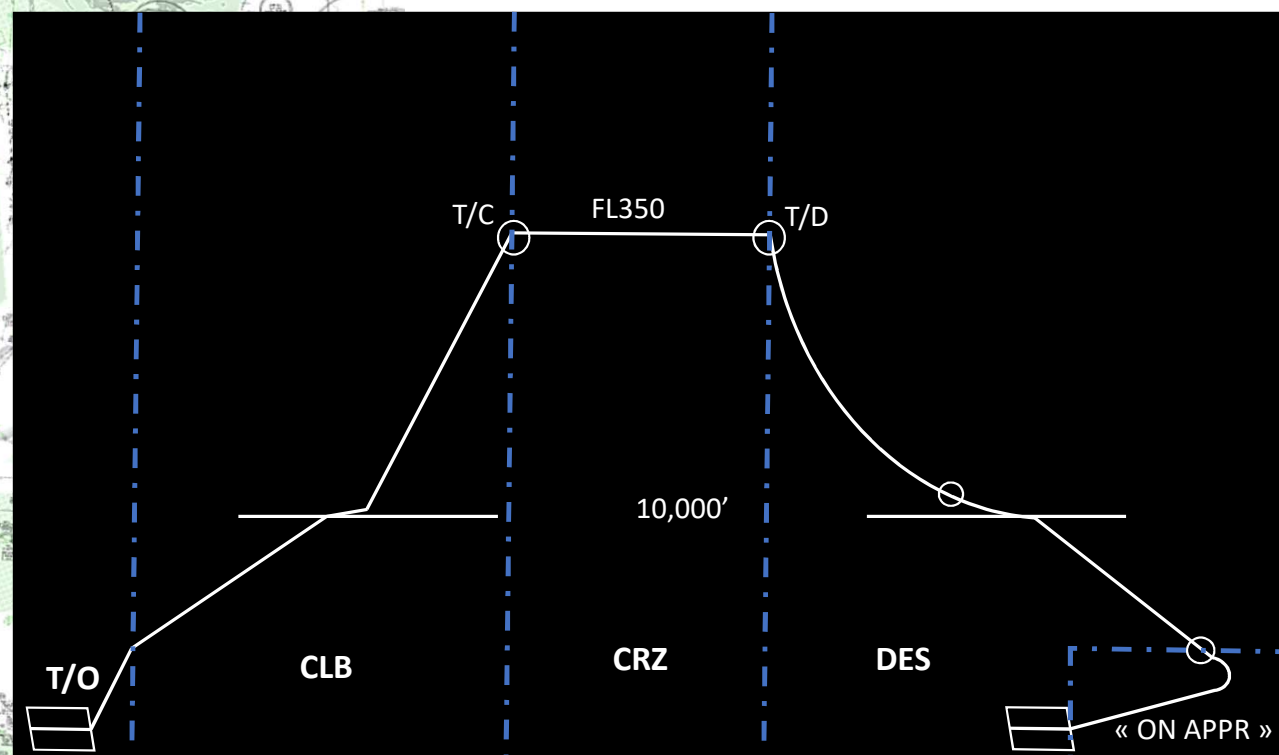


Origin: CYUL

Destination: CYVP

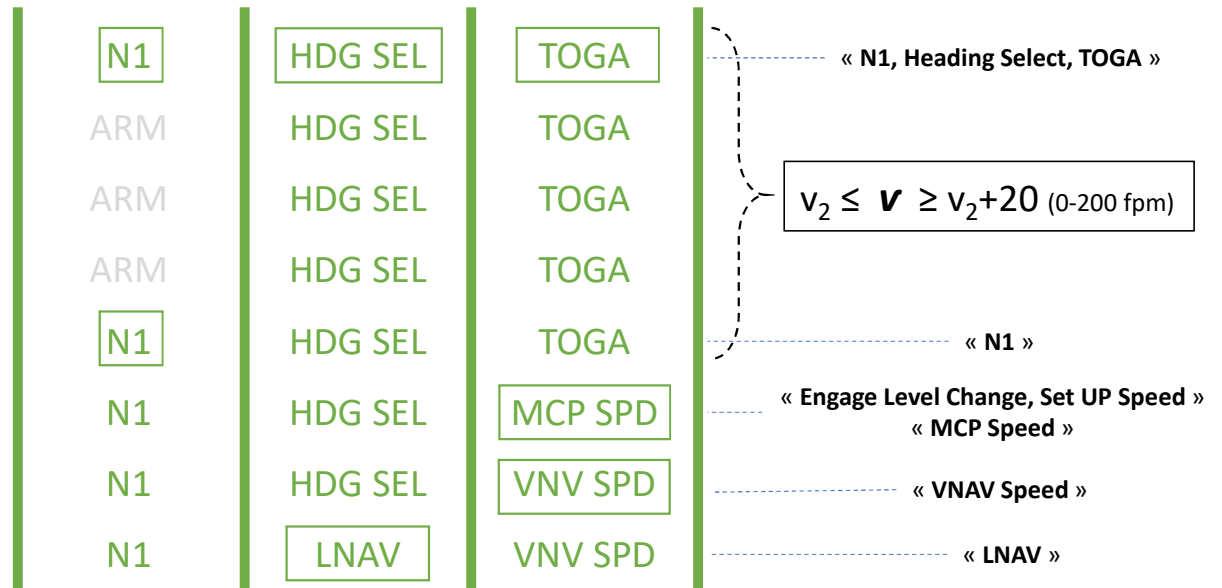
FLPN: TAMKO Q903 IKNAR DCT

SID: 24R
CYUL.5



TAKEOFF – Basic Modes

- TOGA
- 84 IAS
- 50' HGT
- 400' HGT
- THR REDUCT HGT
- ACCEL HGT
- Engage VNAV
- Engage LNAV



TAKEOFF – LNAV*

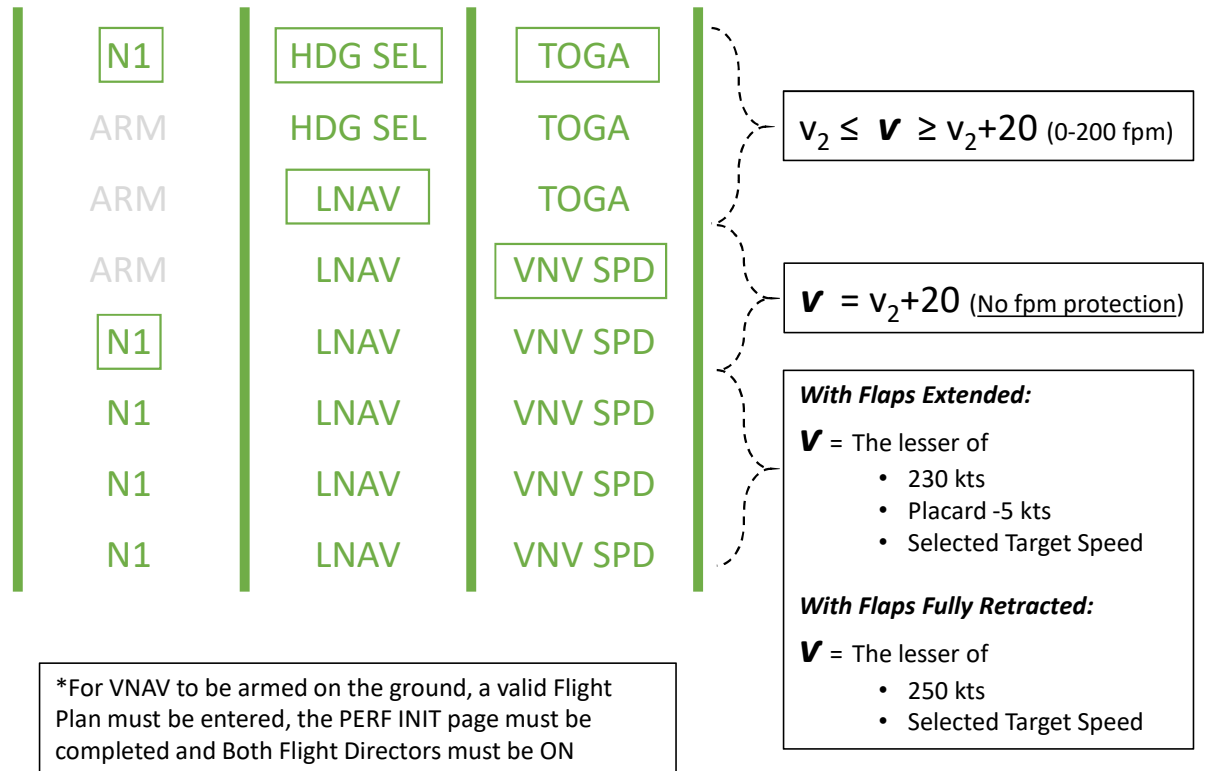
- TOGA
- 84 IAS
- 50' HGT
- 400' HGT
- THR REDUCT HGT
- ACCEL HGT
- Engage VNAV
- Engage LNAV

N1	HDG SEL	TOGA	$v_2 \leq \mathbf{v} \leq v_2+20$ (0-200 fpm)
ARM	HDG SEL	TOGA	
ARM	LNAV	TOGA	
ARM	LNAV	TOGA	
N1	LNAV	TOGA	
N1	LNAV	MCP SPD	
N1	LNAV	VNV SPD	
N1	LNAV	VNV SPD	

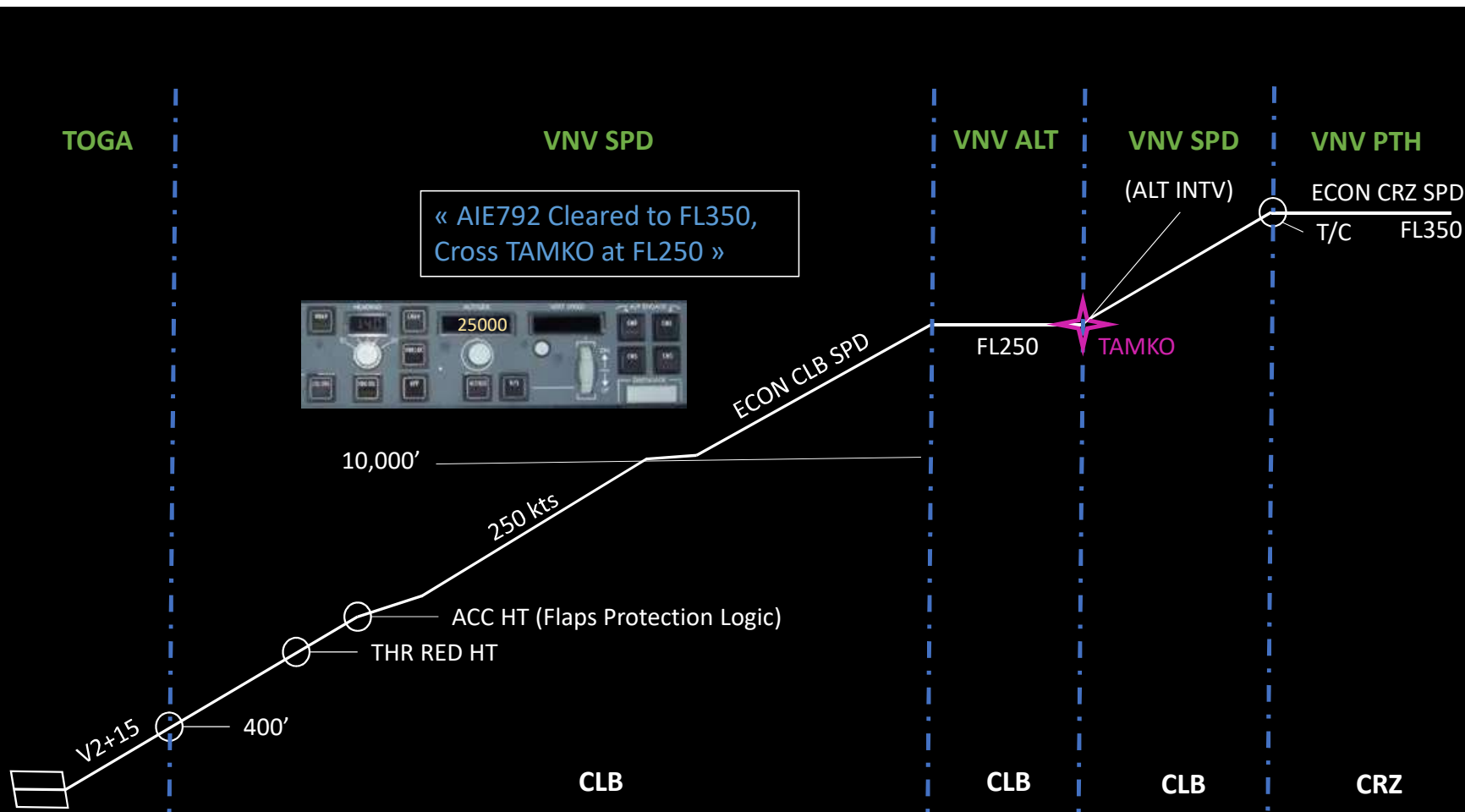
*The heading of the first leg in the flight plan must be within 5 degrees of the runway heading to arm LNAV prior to takeoff.

TAKEOFF – LNAV & VNAV (AEO)

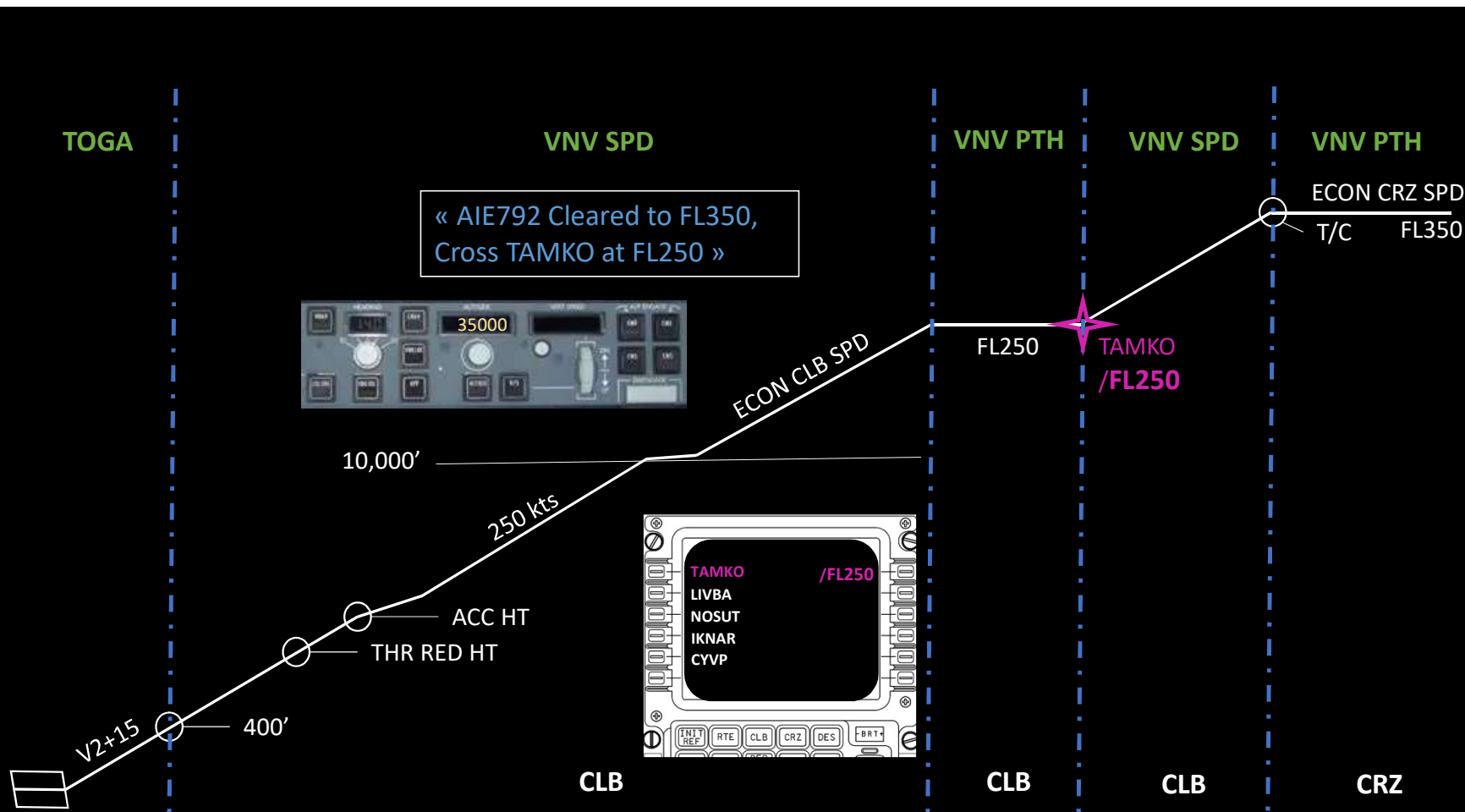
- TOGA
- 84 IAS
- 50' HGT
- 400' HGT
- THR REDUCT HGT
- ACCEL HGT
- Engage VNAV
- Engage LNAV



VNAV – TAKEOFF & CLIMB



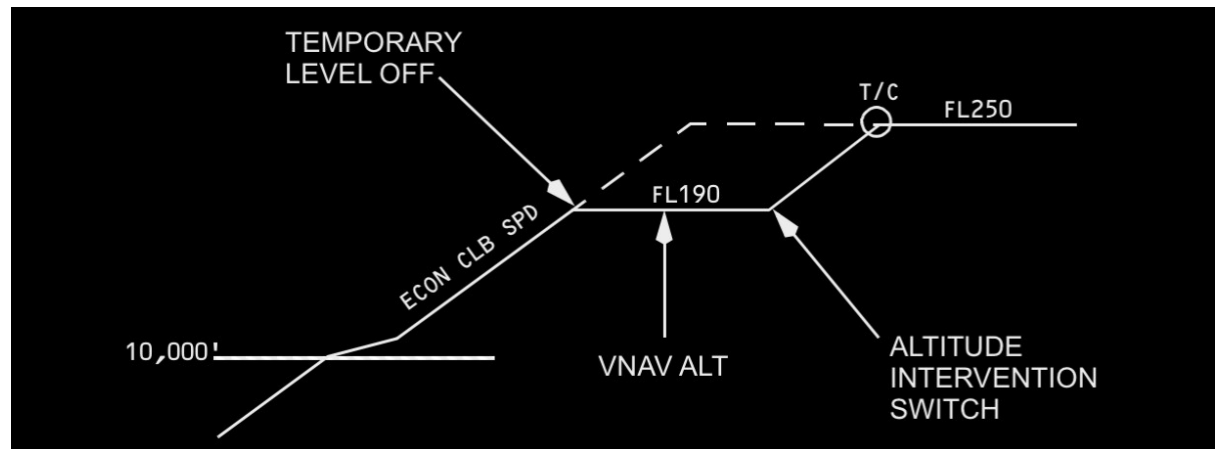
VNAV – TAKEOFF & CLIMB



ALT INTV - CLIMB

➤ TEMPORARY LEVEL OFF

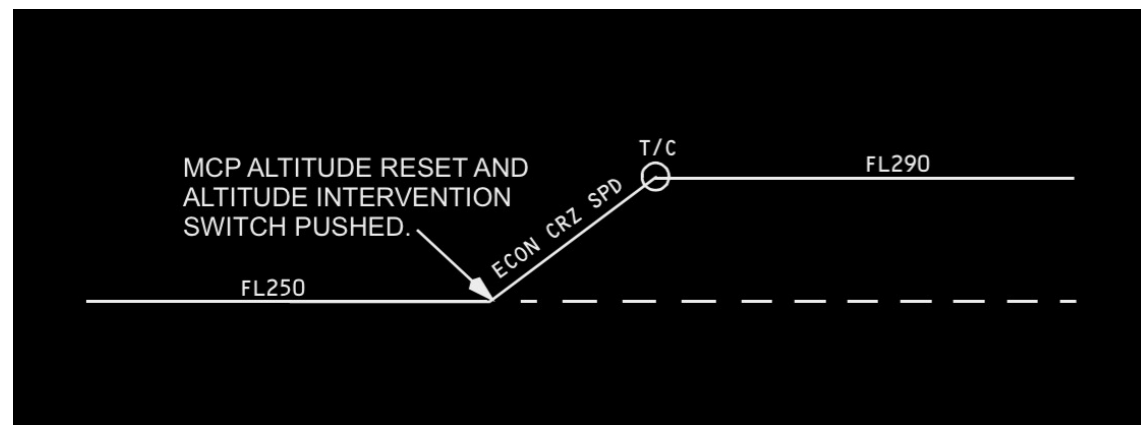
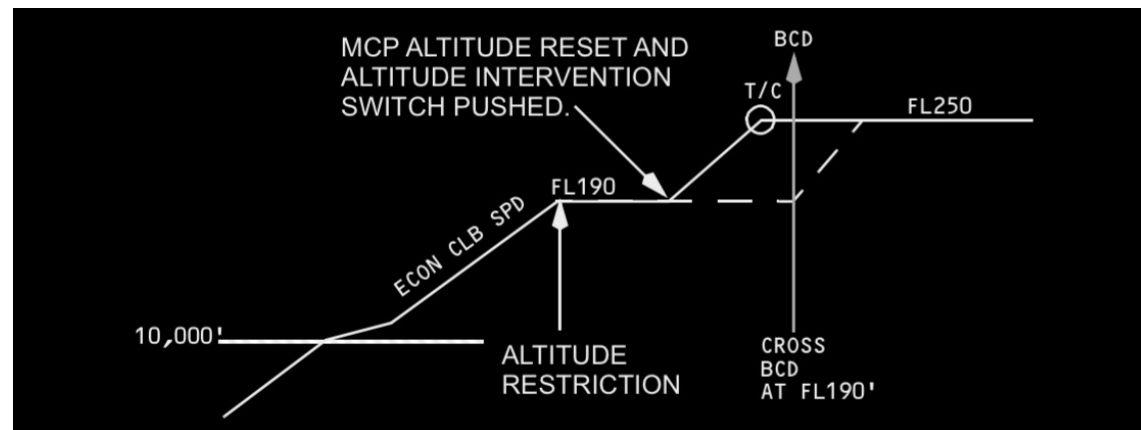
- MCP ALT lower than FMC Altitude Constraint or Cruise Altitude.
- **VNV ALT** engages.
- Set MCP ALT at a Higher Altitude
- Press ● **ALT INTV**
- **VNV SPD** engages.



ALT INTV - CLIMB

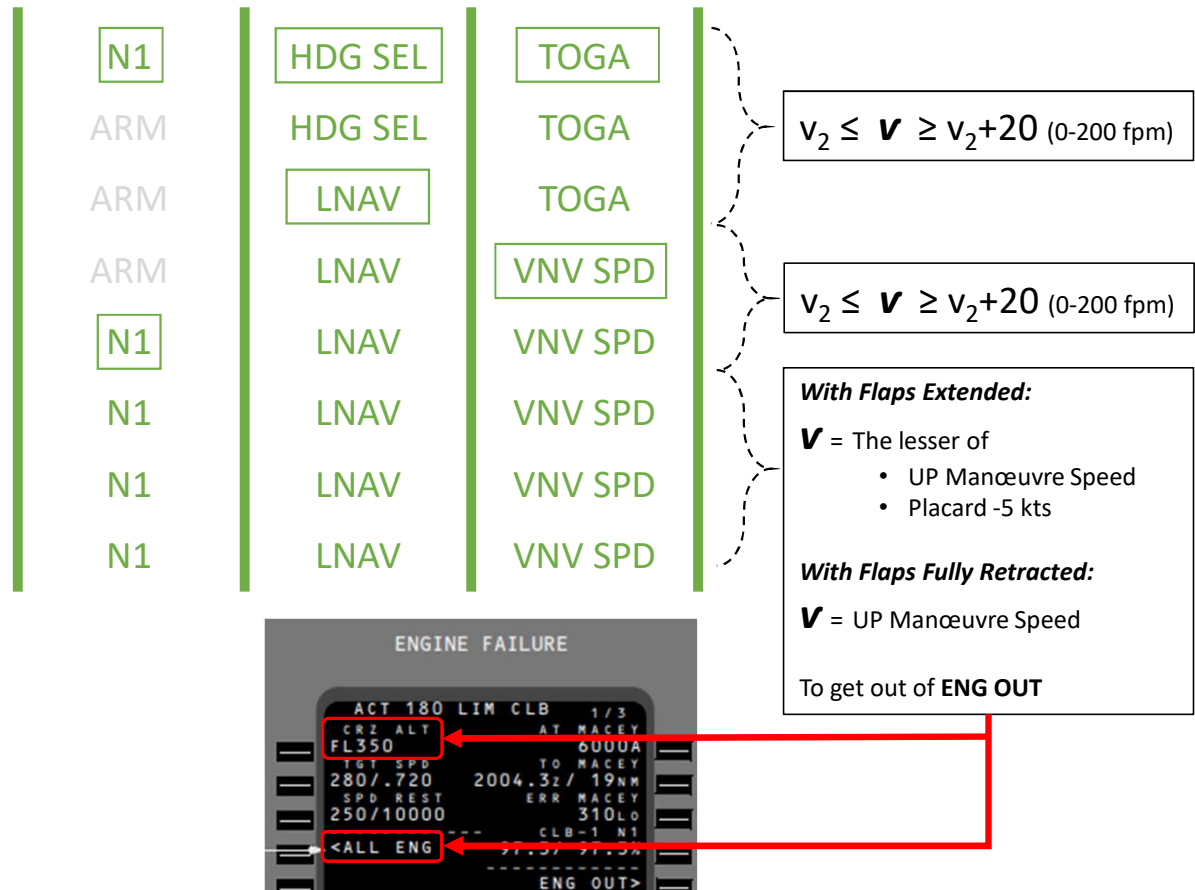
➤ DELETING ALTITUDE CONSTRAINTS

- Aircraft Altitude Lower than Altitude Constraint.
- MCP ALT Higher than Altitude Constraint.
- Pressing ● **ALT INTV** will delete next Altitude Constraint.
- When level at an Altitude Constraint; with MCP ALT set at a Higher Altitude; pressing ● **ALT INTV** will resume the climb prior the restriction waypoint.
- ● **ALT INTV** may also be used to increase the Cruise Altitude (considered as an Altitude Constraint),



TAKEOFF – LNAV & VNAV (OEI)

- TOGA
- 84 IAS
- 50' HGT
- 400' HGT
- THR REDUCT HGT
- ACCEL HGT
- Engage VNAV
- Engage LNAV



TAKEOFF in VNAV - OEI

ENGINE FAILURE

ACT 180 LIM CLB	1/3
CRZ ALT	AT MACEY
FL350	6000A
TGT SPD	TO MACEY
280/.720	2004.32 / 19NM
SPD REST	ERR MACEY
250/10000	310Lo
<ALL ENG	CLB-1 N1
	97.3/ 97.3%
	ENG OUT>

TOGA

VNV SPD

VNV PTH

CRZ ALT

$$v_2 \leq v \leq v_2 + 20 \text{ (0-200 fpm)}$$

UP SPEED

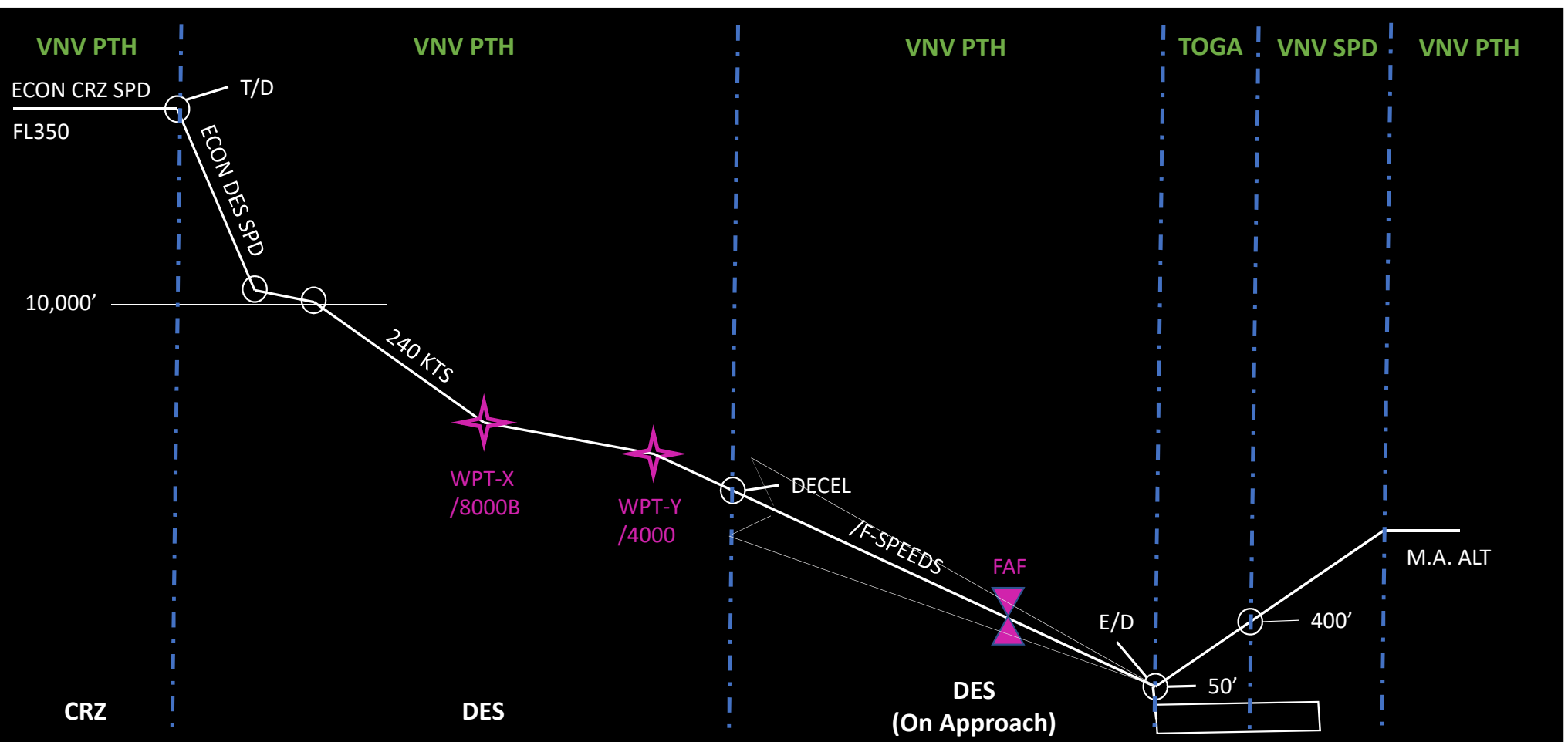
EO ACC HT

400'

CLB

CRZ

VNAV – CRUISE & PATH DESCENT



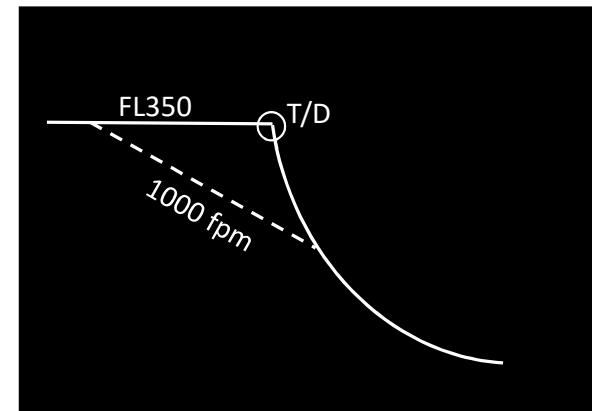
ALT INTV - DESCENT

➤ CRZ DES

- MCP ALT at a Lower Altitude.
(But higher than any Descent Constraints)
- More than 50NM from T/D.
- Pressing ● **ALT INTV**
- Also done by entering a new cruise altitude on the CRZ Page of the CDU with the MCP ALT set at a lower Altitude.

➤ EARLY DES

- MCP ALT at a Lower Altitude.
 - Less than 50NM from T/D or MCP ALT is set lower than any Descent Constraints.
 - Pressing ● **ALT INTV**
 - Also by pressing the DES NOW LSK on the CDU.
- 1000 feet per minute until:
- Vertical Path intercept
 - Next Constraint Altitude is reached
 - MCP ALT level off occurs (**VNV ALT**)



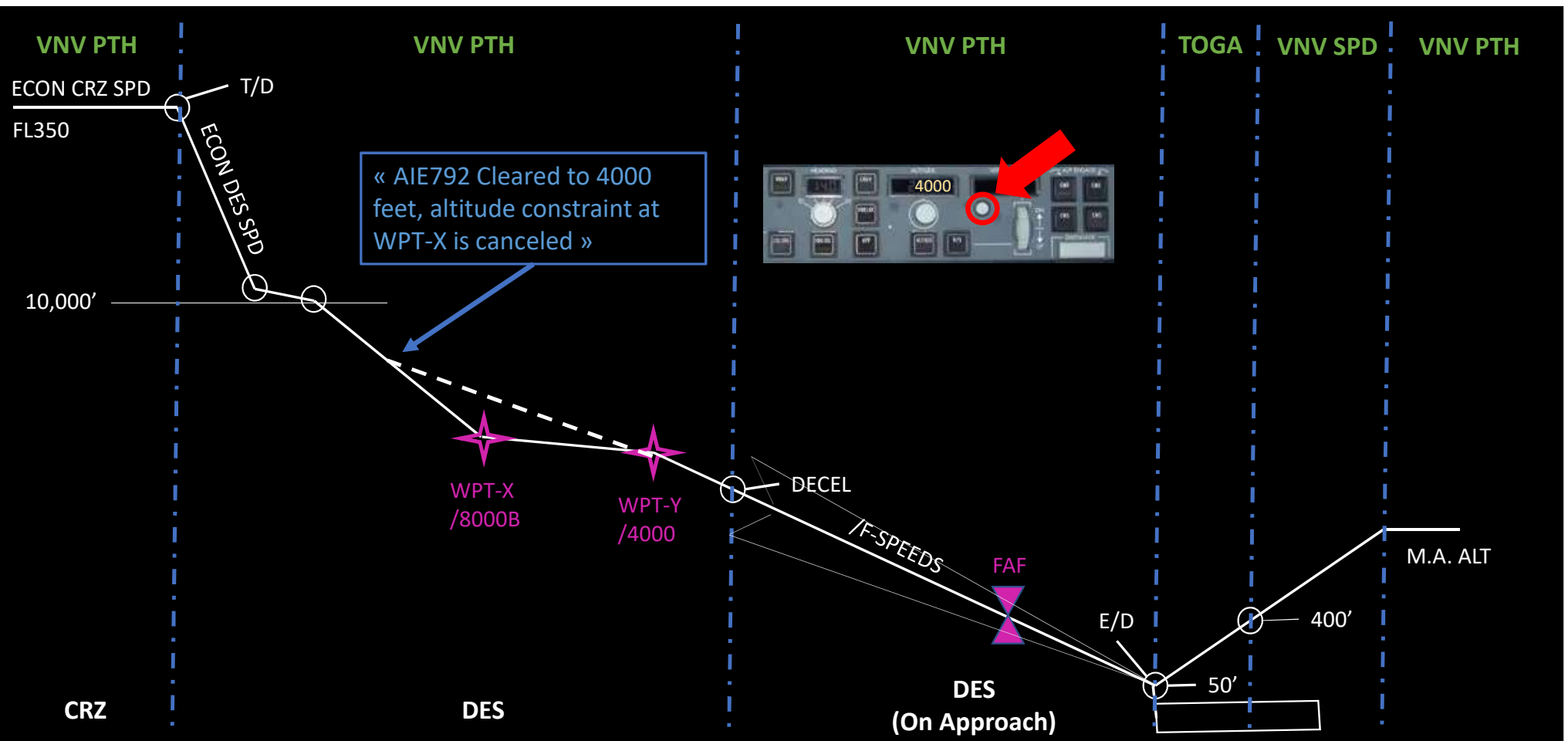
ALT INTV - DESCENT

➤ DELETING ALTITUDE CONSTRAINTS

- Aircraft Altitude Higher than Altitude Constraint.
- MCP ALT Lower than Altitude Constraint.
- Pressing ● **ALT INTV** will delete next Altitude Constraint.

- When level at an Altitude Constraint; with MCP ALT set at a Lower Altitude; pressing ● **ALT INTV** will resume the descent prior the restriction waypoint.

ALT INTV – DESCENT – Deleting Altitude Constraint

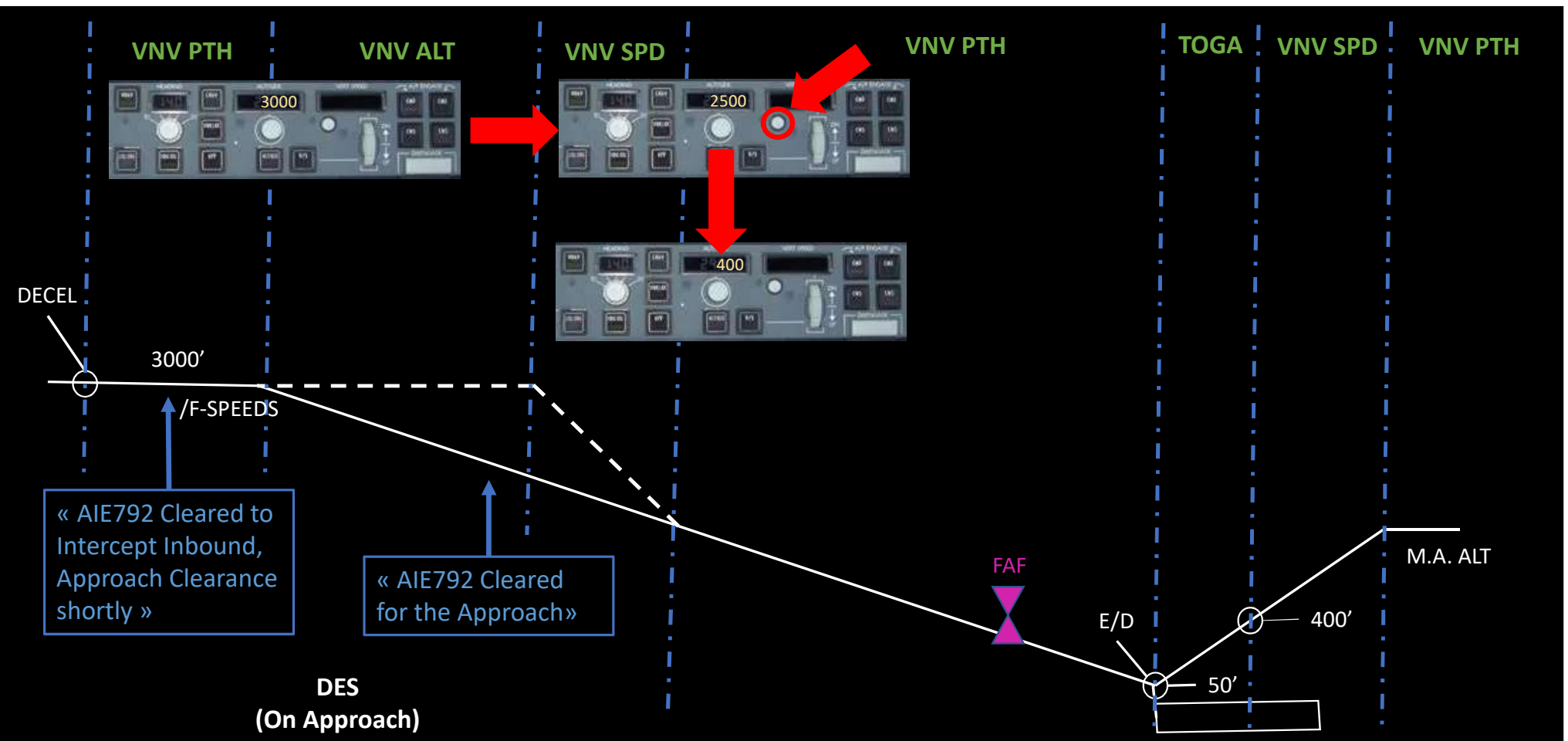


ALT INTV - DESCENT

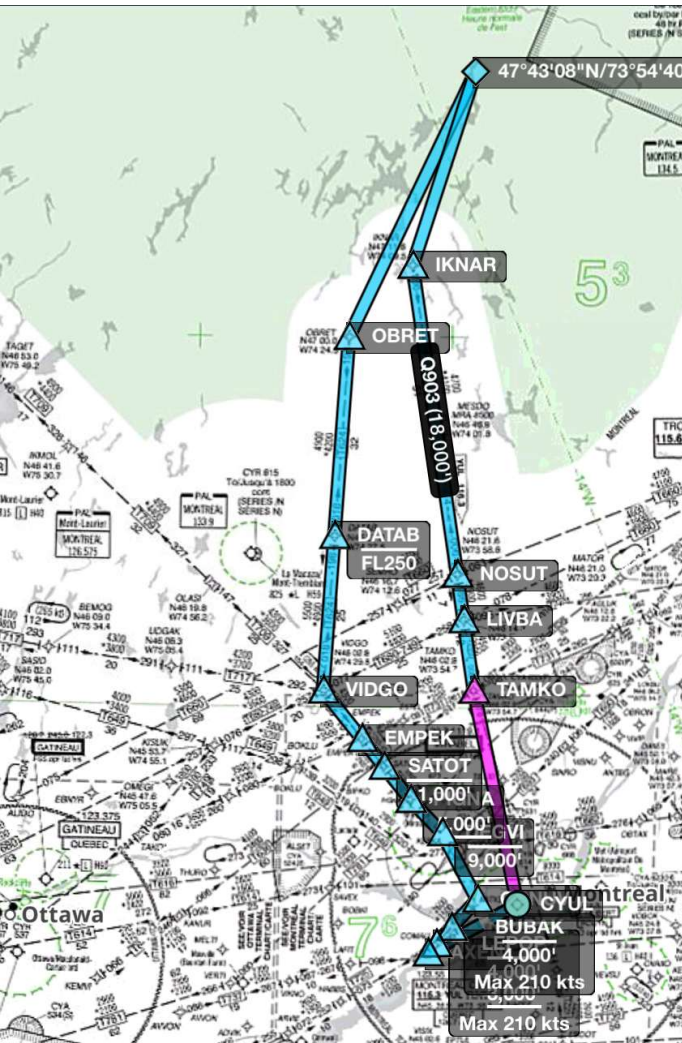
➤ TEMPORARY LEVEL OFF

- MCP ALT Higher than FMC Altitude Constraint.
- **VNV ALT** engages.
- Set MCP ALT at a Lower Altitude
- Press ● **ALT INTV**
- **VNV PTH** or **VNV SPD** engages.

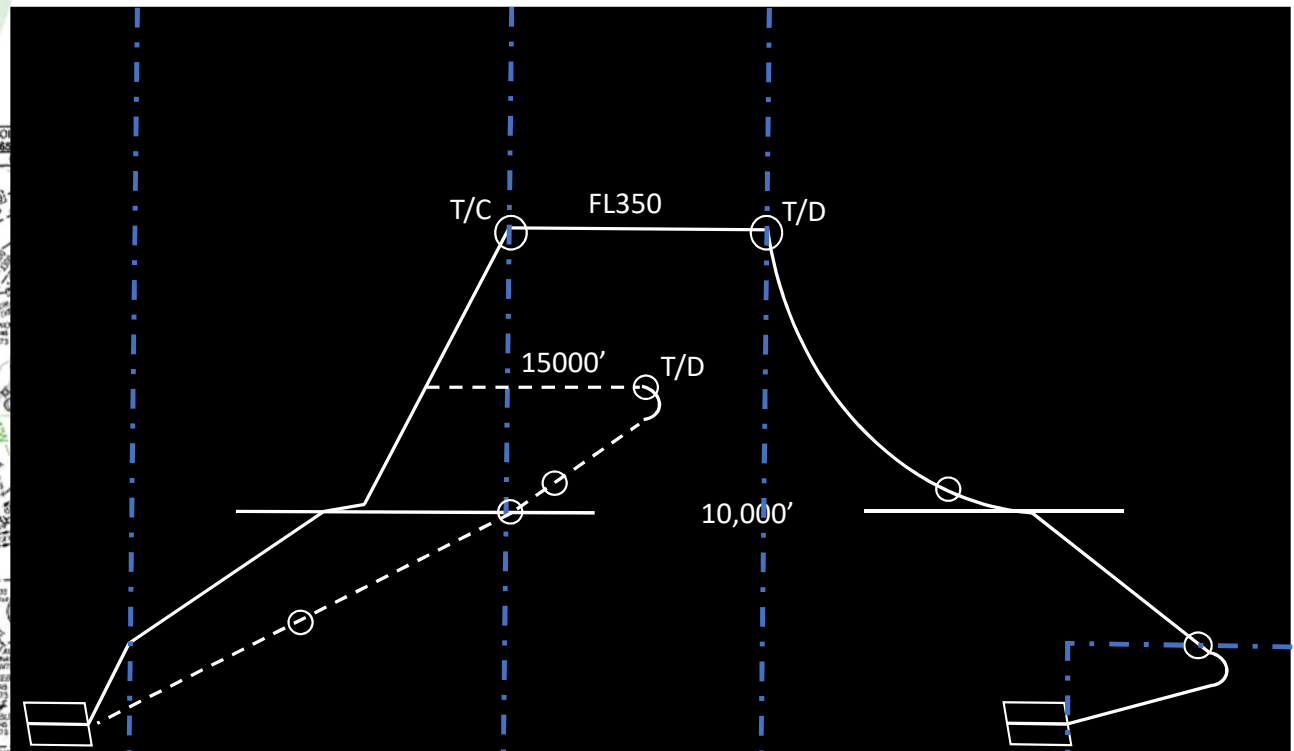
ALT INTV – DESCENT – Temporary Level Off

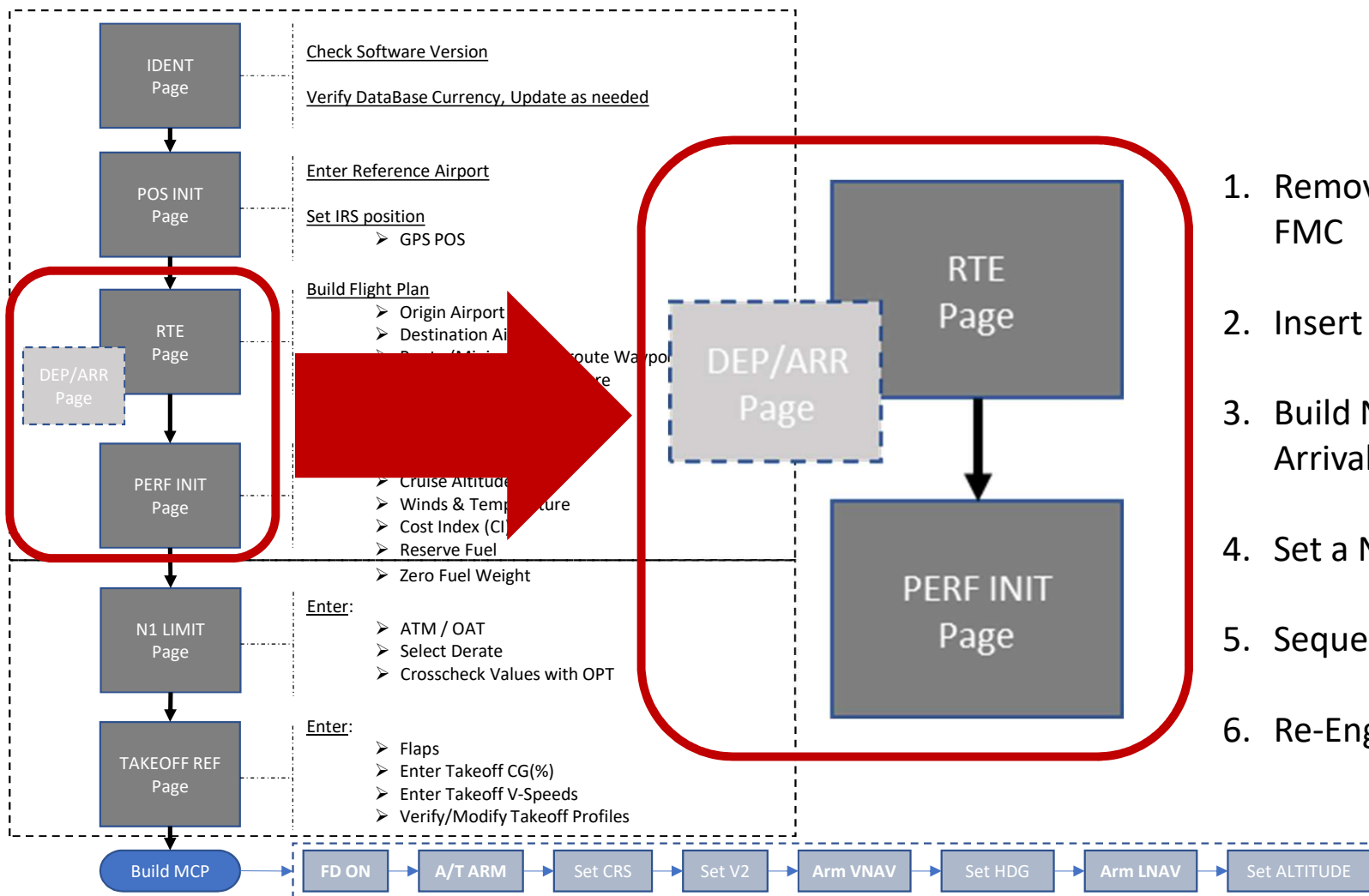


INFLIGHT TURN BACK

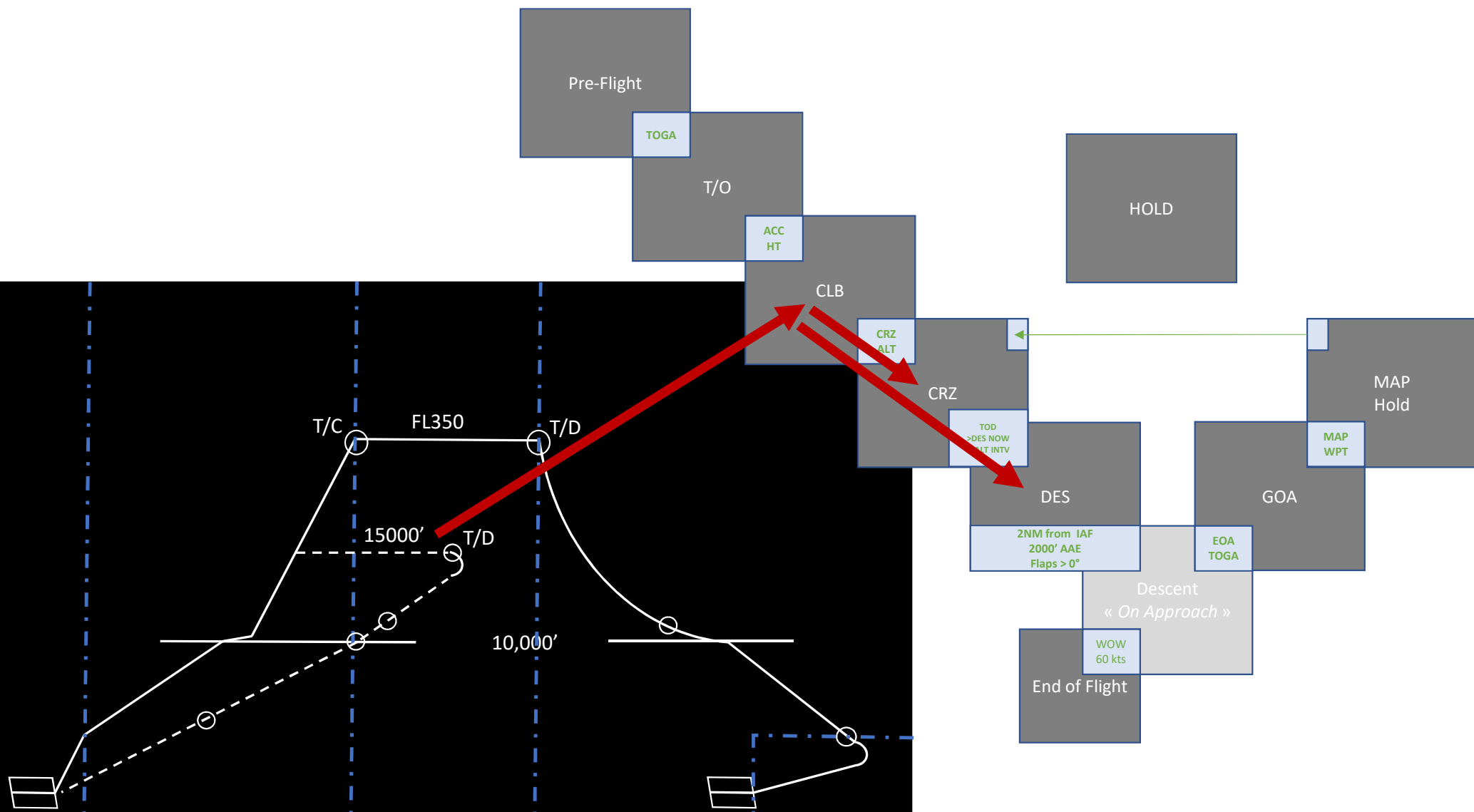


- First Option: ARR/DEP Turn Back Option – Ok for Emergency Return Immediately after Takeoff
- Second Option: RTE Page 1/x DESTINATION – Better option once established on route.





1. Remove Aircraft Control from FMC
2. Insert a new DESTINATION
3. Build New Route including Arrival and Approach
4. Set a New Cruise Altitude
5. Sequence the FMC / CLEAN UP
6. Re-Engage needed Modes



Vol CYUL – CYVP

- Anticiper les Modes FMA au Décollage et en Montée
- Mise en Palier à 17,000'
- Démontrer une connaissance des Modes de Performances en Montée et en Croisière.
- Retour à CYUL:
 - Programmation du Retour
 - Réintégration du FMC à l'autopilote
 - Anticiper les Modes FMA lors de la Descente
 - Anticiper la transition vers le Mode « On Approach »
 - « Cancel the Approach »
 - Retour pour une deuxième Approche avec gestion du VNV ALT